



*foods and herbs
just might be the
first line of defence
for health instead
of modern
medications*

GreenMed*info*
The Science of Natural Healing

Nature's Pharmacy

EVIDENCE-BASED ALTERNATIVES TO DRUGS



with forewords by

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BA, DHMHS, PTS

and

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— Pamela Duff, RN, CSNC —

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PAMELA DUFF, RN, CSNC



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*Dedicated to all those
who are looking for ways
to improve health.*



FOREWORDS



Erin Toner BA, DHMHS, PTS

Since 2006, when I began postgraduate studies in homeopathy after a family tragedy, I have become increasingly aware that there is tremendous harm being done by conventional medicine, and not enough healing. Every case I encounter further solidifies my opinion that despite the time, research and funding pouring into pharmaceuticals and medical technology, our culture is one with widespread illness and death. This is due to a culture too willing to accept that there is a pill to fix everything quickly; we have lost sight of the more traditional forms of medicine in favour of medical ‘advances’ which may prolong life, but which certainly do not increase health.

When I first met Pam Duff, I immediately felt a connection; her knowledge, no-nonsense attitude and passion for health and helping people resonated with me. Having studied homeopathy, holistic nutrition and other health care modalities extensively, I share her disappointment in the current state of the health care system and the strong desire to change it. I have come to regard highly her opinion and have a tremendous amount of respect for her, both as a person and as a medical professional.

To say that I was excited to learn that she was writing this book would be to put it mildly. This book is what people working in holistic health fields, and those who take great interest in them, have been waiting for. It is the culmination of years of study, research and first-hand experience. Pam’s experience in the health care system, together with her knowledge and passion for holistic health, provide the reader with a book like no other, a book that will likely ruffle a few feathers in the conventional medical world.

This book comes at a very important time, a time when this culture is slowly, but surely awakening. Never before have we had access to so much information and misinformation, and we are hungry for knowledge and answers. Many people obtain their medical information from their physicians or from mass media, where the latest drugs and vaccines are forced upon them with the use of clever, colourful marketing tools, and are not exposed to other viewpoints or health modalities.

This is a very important text, which can be used as a reference tool for both the health professional and average citizen alike. Simply stated and clear-cut, Pam tells it like it is and presents medical and scientific fact. This book echoes the sentiments of many living in our time, those who are taking their health into their own hands.

It is a book that presents health alternatives, that challenges the current medical model and that displays Pam's tireless efforts to help people achieve health. I think the author can be confident that many people will gain a broader understanding of the health implications of pharmaceuticals and the effective alternatives that are available, because of her efforts.

~ Erin Toner

Parminder Kaur Khaira BSc, DC, CAFCI

I am honoured to write a forward to this excellent book on natural ways to take care of our health. Pam and I share a common background: We are both highly educated health professionals with extensive knowledge in holistic medicine. Pam is a retired registered nurse and I am a chiropractor. With my background it is very natural for me to use alternative medicine to treat and heal my family. I can diagnose a condition and find a natural solution that will work best. This approach works effectively for me because I have the background to make the right choices when it comes to selecting the correct treatment. I am fortunate to have this knowledge, however, not everyone has this depth of information.

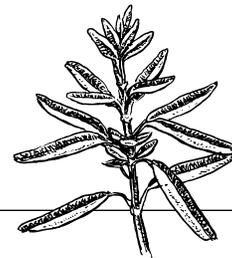
In our world the role of alternative medicine in our society is expanding exponentially. For those individuals who want to use natural alternatives, deciphering truths and facts from misleading information can be overwhelming. Our main source of information today is the internet and it is full of either fact or fiction. The public wants to explore options outside of conventional medicine to regain their health but how can this be done when there is an overabundance of information? How do we make sense of this information? How do we make the best choices for ourselves and our family?

Pam Duff's latest book fills the major gaps in health information about the use of natural medicine. By presenting a research-based book the consumer now has complete knowledge of their benefits, advantages and disadvantages. This book has been created in a particular format to help the reader understand what the condition is and which supplements will work best. The research studies that support the treatment are listed and if the reader wishes more information he may locate the study and read it completely. This is convenient and makes a research based book convenient, accessible, and friendly to the general public.

From reading this book it is clear that science supports natural medicine and this will aid consumers in taking control of their own health initiatives. This book is about educating the public with facts and sound advice that is supported by research. It is well written and up to date. It is an excellent resource for the public and health professionals. Enjoy the book and use it to regain your health.

~ Parminder Kaur Khaira

ACKNOWLEDGEMENTS



Although I spent several years researching for this book, others have helped me along the way.

I have always valued the opinion of my husband of 48 years, Duane Duff, a retired high school teacher. His support has been invaluable. He even proof-read the book while admitting he had no idea what he was reading but as long as the right punctuation and grammar were there, he was happy – and so was I. I can never thank him enough for all he has done for me.

Thank you goes to Alejandro Duff for the author photo. His natural keen eye for a great photograph came at a very young age. He can make anything look good, including his grandmother.

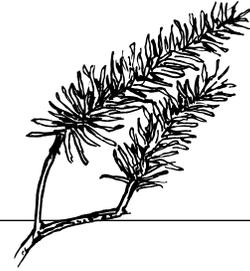
It was my clients and co-workers who kept prodding me for more and more information that gave rise to this task. If it wasn't for their insistence, I never would have started to climb this mountain nor finished it! I am truly grateful to them for pushing me beyond what I thought I was capable of doing.

I am inspired and grateful to all the enlightened conventional and alternative health care providers, authors, and websites that offer quality information. They have contributed to my knowledge as I try to bridge the gap between conventional and alternative healing. And a special thank you goes to all those bridges that continue to pop up.

To find evidence-based alternatives, I used Google Scholar and PubMed for many months. But when I stumbled upon **GreenMedInfo.com**, I thought I had died and gone to abstract heaven! This is a marvelous resource and one I highly recommend. Both Sayer Ji and Cameron Fillers promptly addressed all my questions. Their hard work is a much-needed resource and I am truly thankful to them for cutting down my search time.

~ Pamela Duff

ABOUT THE BOOK



This book is unorthodox in several ways.

First, it dares to suggest that foods and herbs just might be a first-line of defence for health instead of modern medications. Far too much emphasis is placed on using drugs first and ignoring what centuries of world-wide practise has shown that using plants prevent disease and restore health during illness.

Second, it uses book format to publicize hard-to-find pro-plant-based studies rather than utilizing other forms of technology. Not that there is anything wrong with that, but some practitioners still need a book-in-hand as a resource.

Third, it keeps studies right with statements instead of buried at the back of the book where few tend to look at the best of times.

That said, *Nature's Pharmacy: Evidence-Based Alternatives to Drugs* is meant to be a bridge between conventional and alternative practices. It is meant to give both sides to the story of healing practices. These days, we are only given one side of a preference and not the other. Both need to be taken into consideration so that individuals can make informed choices regarding their own health and that of their loved ones. Worse yet, harmful side effects of medications are glossed over until severe illness or death jolts people into finally looking at them and then, maybe an alternative.

Although there is room in the world of health for alternatives, the information provided here is to be used as an open door to both realms of healing. This book is meant to show that alternatives are not snake oil but have scientifically proven benefits just as conventional medicine claims to have had for years.

***Nature's Pharmacy: Evidence-Based Alternatives to Drugs* is NOT a means to diagnose, treat, or alter any course of action prescribed by a doctor.** Any change you might want to try must be discussed with him/her. If your doctor refuses to listen to you, find one that does because there are more and more of them out there now.

Remember: Herbs are Medicines. They can interact with pharmaceutical medications. Therefore, just because they are listed as alternatives, do not go out and try to replace what your doctor has already prescribed. Investigate everything you put into your mouth, whether it is medication, supplements, herbs, food or water. Then work with a professional to see if there is an alternative right for you.

Study both sides just as I did and then take charge of your own health.

~ Pamela Duff

INTRODUCTION



This book began as a few sheets of paper that were used as reference material for advisors at The Organic Grocer, an award-winning certified organic store in Surrey, BC, Canada. We have customers from around the world that come because they know they can obtain quality information from our professional staff.

Frequently frustrated, customers related stories about their doctors ignoring questions regarding taking medications with a supplement. Often they were treated like children and told to stay away from using nutrients for healing because they were nothing more than snake oil. That never sits well with people and only tends to drive them into the “other” camp. Those unsettling experiences led me into a fascinating area of study, one which, unknowingly, started many years ago.

I was forced to retire early as a registered nursing director. Antibiotics over long periods of time plummeted my condition and contributed to other health concerns. The stress, improper eating habits, and lack of rest deteriorated my health to such an extent that I basically went home to die. Instead, when I regained my health through the use of alternatives, I knew I could never go back to the solitary conventional methods. Today, my health and quality of life are better than they were almost 20 years ago when I left nursing.

I continued to study though, taking courses from both camps – conventional and alternative. After receiving several certifications in nutritional areas, I was asked to join the team of consultants at The Organic Grocer. There, I was, and still am, able to guide people toward better diets along with a wiser use of supplements in conjunction with their medications.

Patients are usually cautioned about drug to drug or drug to herb interactions. No one tells them, however, about the nutrients their medications are destroying nor are they told that taking supplements could offset this loss.

On the other hand, once someone is made aware that maybe their medications are depleting valuable nutrients, he/she assumes that medications can be taken together with their supplements. Such is not the case.

Studies have shown that almost all drugs deplete at least one nutrient needed by the body; most often it is the very nutrient required to correct the problem. Most medications deplete a long list of nutrients.

This book lists only the nutrient depletions that have been studied. More are suspected but, as yet, have not been “scientifically” proven.

For example, if a drug depletes one fat-soluble vitamin (A, D, E, or K) or one B-vitamin (there are about 14 in the family), then there is a strong likelihood that their relatives will succumb as well. Therefore, we should assume that destroying one member triggers a domino effect that could involve others. The same applies for minerals and proteins.

In an attempt to be fair, I have to say that doctors are not completely at fault for their lack of knowledge in nutrition. Such courses have not been taught at most medical schools and what are available, give the barest of outlines based on a food pyramid. What is unforgivable is their not wanting to even take a peak at what the alternative world of healing has to offer. A closed mind is a stagnant excuse for knowledge.

Doctors, instead of taking the time to find out, spew forth skewed information offered up by pharmaceutical representatives; information that does not include such facts as nutrient depletions and certainly, would never suggest that a plant could be used as an alternative.

Nature’s Pharmacy: Evidence-Based Alternatives to Drugs is by no means a comprehensive listing. There are thousands upon thousands of drugs and alternative studies so it would be humanly impossible to list them all, although I did try!

I chose to list drugs according to general categories of ailments for which they are used. I found that most people cannot name the drug they are taking but they did know why – usually.

I still recommend that if you are in doubt, check with your doctor or pharmacist. There are ones out there who do know this information or who are willing to learn. If yours does not, encourage him/her to find out or find someone who does know or willing to find out.

All drugs cause side effects as well as nutritional destruction. This is because they are usually based on one active ingredient. Foods contain hundreds of substances that work synergistically and rarely cause discomfort to the extreme of some medications.

Worse yet is this statistic. Since 2009, prescription drug deaths have outnumbered deaths from traffic accidents in the United States; claiming a life every fourteen minutes. (*LA Times*, Sept. 17, 2011)

Canada fares only slightly better.

According to the United States National Poison Data System, **NO DEATHS** have resulted from taking vitamins, minerals, proteins or herbs. Yet which ones are pulled off the shelves at the speed of light if someone reports a “stomach ache” that might be connected – not the drugs. Those are allowed to kill people and still remain available to repeat the practise yet herbs, with no history of mortality, are not allowed to be sold or severely restricted in some way.

Ironically, scare tactics seem to work when it comes to frightening people away from using anything natural in favour of prescribed synthetics. There is definitely something wrong with the priorities of our present-day so-called health care systems.

Suggested Alternatives are included with each category. These are only suggestions that should be investigated further and approved by your doctor or pharmacist since some can interfere with other medications. Often a medication can be substituted, although the medical profession does not want you to know that.

The alternative suggestions are those that have been studied by scientists and used by medical doctors, chiropractors, naturopaths, and other professional health care providers in their own practises.

If nothing else, replenish what your medication is destroying, but do so wisely. It is your quality of life that is in jeopardy and you should not be made to suffer needlessly through the dictates of those supposedly under the oath of “do no harm”.

The body needs nutrients in order to function. Think cars. If you were to put diesel fuel into a BMW or sugar into your gas tank, the car would soon stop running, with parts unable to function again. So it is with the human body. Give it the fuel it needs and it heals itself but give it junk instead, and the results are predicable with evidence all around us.

Dr. Carl Pfeiffer said it best: “For every drug that benefits a patient, there is a natural substance that can achieve the same effect.”

CAUTIONS

- ⚠ **Do not take any supplement at the same time as a medication** whether it is prescribed or over-the-counter. This includes herbs, vitamins and minerals. Unless completely contraindicated, taking supplements two to three hours away from medications usually prevents or minimizes any possible interference.
- ⚠ **Fruit and Fruit juices should not be used to take medications.** Fruit juices are powerful healers but, unfortunately, they can interfere with the action of medications. The one most studied is Grapefruit juice; but there have also been studies done on many other fruits (see the Appendix).
- ⚠ More than 20 years ago, grapefruit juice proved to alter the effectiveness of more than 30 prescription drugs. Since then, other fruits have been studied that mirror similar effects, although, with results not as drastic as in some cases with grapefruit interactions.
- ⚠ Grapefruit, and its juice, has the potential for the most harm. Grapefruit contains certain flavonoids (naringenin, quercetin, kaempferol) which increase the concentrations of many drugs, sometimes tripling the amount, and delaying their release to where the bloodstream can be flooded with the medication, occasionally with fatal results. Effects can last for three days or more so taking juice at a different time of the day is out of the question.

- ☞ Some interesting studies have also been performed on a few exotic tropical juices including Noni, Mangosteen, Goji, and Acai. Those brought out the benefits with none suggesting possible drug interactions. Despite the enormous health benefits that far out-weigh any possible damage done by taking them, it is still a good idea to avoid taking any medication with juice.
- ☞ Take medications with water only.
- ☞ **Do not take medications with Milk either.** Dairy products interfere with certain antibiotics, especially tetracyclines, osteoporosis-prevention medications, and laxatives, to name a few.
- ☞ **Do not take medications with Alcohol, Tea, Coffee, Sodas, Ma huang, bitter orange, or chocolate** or any other liquid except water.
- ☞ **Know your medication.** Know why you are taking it; what the side effects are; and what foods (yes, foods) might interact.
- ☞ **Above all, know what nutrients** you should take to compensate for what your drug is costing you.



ACID BLOCKERS/ANTACIDS/ANTI-ULCER

(USED TO TREAT GASTROINTESTINAL ULCERS, ACID REFLUX, OR HEARTBURN)

COMMON EXAMPLES:

Antacids

aluminum/magnesium – Gaviscon, Maalox, Mylanta, Milk of Magnesia, Amphojel

calcium carbonate – Tums, Titalac, Roloids, and others

sodium bicarbonate – baking soda

Anti-flatulent (anti-foaming agent)

Alka-Seltzer Gas Relief, Gas-X, Maalox Anti-Gas, Mylanta Gas, Mylicon Infant, Ovol, Phazyme Infant and many others

H2-Blockers (Histamine receptor antagonists)

cimetidine – Tagamet

famotidine – Pepcid

nizatidine – Axid

ranitidine – Zantac

Proton Pump Inhibitors (PPIs)

esomeprazole – Nexium

iansoprazole – Prevacid

omeprazole – Prilosec, Zegarid

pantoprazole – Protonix

rabeprazole - Aciphex

... and others

Others

sucralfate – Carafate

sulfasalazine – Azulfidine, Salazopyrin

DEplete:

A, beta carotene, B1, B2, B3, B6, B9, B12, C, D, E, K, calcium, chromium, copper, iron, magnesium, phosphorus, potassium, selenium, zinc, CoQ10, glutathione/NAC, melatonin, good intestinal bacteria

☞ **Acid Blockers** basically destroy all nutrients, or prevent them from being absorbed. Altering the pH balance of the digestive tract lays the groundwork for a whole host of diseases and disorders. Reducing stomach acids makes it harder for the body to digest food. Oftentimes, what appears

to be too much acid is really the opposite with food sitting too long in the stomach waiting for enough digestive juices to form in order to break it down.

- *Aymard et al: Haematological adverse effects of histamine H2-receptor antagonists. *Med Toxicol Adverse Drug Exp* 1988 Nov-Dec;3(6):430-48
- *Bohager 2009:39
- *Champagne: Low gastric hydrochloric acid secretion and mineral bioavailability. *Adv Exp Med Biol* 1989;249:173-84
- *Chapman et al: Adverse effects of long-term proton pump inhibitor use: a review for the otolaryngologist. *J Voice* 2010 Feb 6
- *Doornebal et al: An unknown but potentially serious side effect of proton pump inhibitors: hypomagnesaemia. *Ned Tijdschr Geneeskd* 2009;153:A711
- *Henry et al: Proton pump inhibitors reduce the bioavailability of dietary vitamin C. *Aliment Pharmacol Ther* 2005 Sep 15;22(6):539-45
- *Kroupa & Dolina: Risk of long-term antisecretory treatment. *Vnitr Lek* 2010 Feb;56(2):115-9
- *McColl: Effect of proton pump inhibitors on vitamins and iron. *Am J Gastroenterol* 2009 Mar;104 Suppl 2:S5-9
- *Oh: Proton pump inhibitors - uncommon adverse effects. *Aust Fam Physician* 2011 Sep;40(9):705-8
- *Russell et al: Effect of antacid and H2 receptor antagonists on the intestinal absorption of folic acid. *J Lab Clin Med* 1988;112:458-63
- *Skikne et al: Role of gastric acid in food iron absorption. *Gastroenterol* 1981 Dec;81(6):1068-71

☞ **Acid Blockers** cause a vitamin B12 deficiency. B12 requires adequate stomach acids in order to make intrinsic factor which is necessary to absorb the B12 molecule. It is often advisable to take a sublingual (SL – under the tongue) B12 supplement which bypasses the digestive system. Take note, that the amount required to correct a mild B12 deficiency in the elderly is 200 times greater than the RDA (recommended dietary allowance).

- *Dharmarajan et al: Do acid-lowering agents affect vitamin B12 status in older adults? *J Am Med Dir Assoc* 2008 Mar;9(3):162-7
- *Eussen et al: Oral cyanocobalamin supplementation in older people with vitamin B12 deficiency: a dose-finding trial. *Arch Toxicol* 2011 Jan 26
- *Saltzman et al: Effect of hypochlorhydria due to omeprazole treatment or atrophic gastritis on protein-bound vitamin B12 absorption. *J Am Coll Nutr* 1994 Dec;13(6):544-5

☞ **Acid Blockers** are linked to muscle weakness (myopathy), infertility and stomach cancer. They are also not an effective treatment for infantile symptoms of GERD (gastroesophageal reflux disease).

- *Agrawal & Jose: Anti-ovulatory activity of H2 receptor blockers in albino rabbits--a preliminary study. *Eur J Contracept Reprod Health Care* 2011 Apr;16(2):142-6
- *Betton et al: Gastric ECL-cell hyperplasia and carcinoids in rodents following chronic administration of H2-antagonists SK&F 93479 and oxmetidine and omeprazole. *Toxicol Pathol* 1988;16(2):288-98
- *Carlsson et al: Pharmacology and toxicology of omeprazole--with special reference to the effects on the gastric mucosa. *Scand J Gastroenterol Suppl* 1986;118:31-8
- *Clark & Strandell: Myopathy including polymyositis: a likely class adverse effect of proton pump inhibitors? *Eur J Clin Pharmacol* 2006 Jun;62(6):473-9
- *Håkanson & Sundler: Proposed mechanism of induction of gastric carcinoids: the gastrin hypothesis. *Eur J Clin Invest* 1990 Oct;20 Suppl 1:S65-71
- *Havu: Enterochromaffin-like cell carcinoids of gastric mucosa in rats after life-long inhibition of gastric secretion. *Digestion* 1986;35 Suppl 1:42-55
- *Higginbotham: Effectiveness and safety of proton pump inhibitors in infantile gastroesophageal reflux disease. *Ann Pharmacother* 2010 Mar;44(3):572-6

*Orenstein et al: Multicenter, double-blind, randomized, placebo-controlled trial assessing the efficacy and safety of proton pump inhibitor lansoprazole in infants with symptoms of gastroesophageal reflux disease. *J Pediatr* 2009 Apr;154(4):514-520.e4

☞ **PPIs** are the most potent of the acid-reducing medications. They reduce stomach acid production up to 99% which strongly interferes with nutrient absorption. Ironically, they are also capable of inducing acid-related symptoms. PPIs are the most common cause of diarrhea and pneumonia in the elderly and in children. One study revealed that doses taken for a year or more, more than doubled the risk of osteoporosis and hip fractures. They concluded that the increased risk was likely the depletion of calcium and vitamin D, which hampered the body's ability to build new bone.

*Canani et al: Therapy with gastric acidity inhibitors increases the risk of acute gastroenteritis and community-acquired pneumonia in children. *Pediatrics* 2006 May;117(5):e817-20

*Corley et al: Proton pump inhibitors and histamine-2 receptor antagonists are associated with hip fractures among at-risk patients. *Gastroenterol* 2010 Jul;139(1):93-101

*Cunningham & Dial: Is over-use of proton pump inhibitors fuelling the current epidemic of *Clostridium difficile*-associated diarrhoea? *J Hosp Infect* 2008 Sep;70(1):1-6

*Eurich et al: Recurrent community-acquired pneumonia in patients starting acid-suppressing drugs. *Am J Med* 2010 Jan;123(1):47-53

*Laheij et al: Risk of community-acquired pneumonia and use of gastric acid-suppressive drugs. *JAMA* 2004 Oct 27;292(16):1955-60

*McGowan et al: Prescribing of anti-osteoporotic therapies following the use of proton pump inhibitors in general practice. *Pharmacoepidemiol Drug Saf* 2010 Jul;19(7):763-9

*Reimer et al: Proton-pump inhibitor therapy induces acid-related symptoms in healthy volunteers after withdrawal of therapy. *Gastroentero* 2009 Jul;137(1):80-7,87e1

*Teramura-Grönblad et al: Use of proton-pump inhibitors and their associated risks among frail elderly nursing home residents. *Scand J Prim Health Care* 2010 Sep;28(3):154-9

*Yang et al: Long-term proton pump inhibitor therapy and risk of hip fracture. *JAMA* 2006 Dec;296(24):2947-53

☞ **PPIs** significantly increase the risk of acquiring the deadly superbug, *C. difficile* by 320% after just 30 days of use (Saputo video) by both adults and children.

*Akhtar & Shaheen: Increasing incidence of *clostridium difficile*-associated diarrhea in African-American and Hispanic patients: association with the use of proton pump inhibitor therapy. *J Natl Med Assoc* 2007 May;99(5):500-4

*Dial et al: Use of gastric acid-suppressive agents and the risk of community-acquired *Clostridium difficile*-associated disease. *JAMA* 2005 Dec 21;294(23):2989-95

*Dial et al: Risk of *Clostridium difficile* diarrhea among hospital inpatients prescribed proton pump inhibitors: cohort and case-control studies. *CMAJ* 2004 Jul 6;171(1):33-8

*Howell et al: Iatrogenic gastric acid suppression and the risk of nosocomial *Clostridium difficile* infection. *Arch Intern Med* 2010 May 10;170(9):784-90

*Saputo: Acid Blockers Triple Risk of *C. diff* Infections online video

*Turco et al: Proton pump inhibitors as a risk factor for paediatric *Clostridium difficile* infection. *Aliment Pharmacol Ther* 2009 Dec 29

☞ **PPIs** can induce dangerously low sodium levels to the point of delirium and cause rhabdomyolysis (destruction of the skeletal muscle tissue).

*Bebarta et al: Proton pump inhibitor-induced rhabdomyolysis and hyponatremic delirium. *Am J Emerg Med* 2008 May;26(4):519.e1-2

☞ **PPIs** are associated with a number of metabolic, infectious, cardiac, and orthopedic health problems.

*Chapman et al: Adverse effects of long-term proton pump inhibitor use: a review for the otolaryngologist. J Voice 2010 Feb 6

☞ **Various factors** contribute to inflammatory bowel disease that seemingly require acid blockers or other drugs but which often inflame an already bad condition: medications, MMR (measles, mumps, rubella) vaccines, oral contraceptives, some iron supplement forms, cola drinks, chocolate and alcohol consumption, sucralose and so on. Sucralose is a sweetener used in the food processing industry, especially in Canada, where they have the highest incidence of inflammatory bowel disease in the world.

*Cornish et al: The risk of oral contraceptives in the etiology of inflammatory bowel disease: a meta-analysis. Am J Gastroenterol 2008 Sep;103(9):2394-400

*Erichsen et al: Low-dose oral ferrous fumarate aggravated intestinal inflammation in rats with DSS-induced colitis. Inflamm Bowel Dis 2005 Aug;11(8):744-8

*Fayaz et al: Mesalazine-induced eosinophilic variant of Wegener's granulomatosis in an ulcerative colitis patient. J Ayub Med Coll Abbottabad 2009 Oct-Dec;21(4):171-3

*Kawashima et al: Detection and sequencing of measles virus from peripheral mononuclear cells from patients with inflammatory bowel disease and autism. Dig Dis Sci 2000 Apr;45(4):723-9

*Qin: What made Canada become a country with the highest incidence of inflammatory bowel disease: Could sucralose be the culprit? Can J Gastroenterol 2011 Sep;25(9):511

*Rea et al: Ulcerative colitis after statin treatment. Postgrad Med J 2002 May;78(919):286-7

*Russel et al: Modern life in the epidemiology of inflammatory bowel disease: a case-control study with special emphasis on nutritional factors. Eur J Gastroenterol Hepatol 1998 Mar;10(3):243-9

SUGGESTED ALTERNATIVES:

Aloe vera juice or gel helps calm and heal the digestive tract and is particularly helpful in treating inflammatory bowel diseases.

*Davis et al: Randomised double-blind placebo-controlled trial of aloe vera for irritable bowel syndrome. Int J Clin Pract 2006 Sep;60(9):1080-6

*Korkina et al: The protective and healing effects of a natural antioxidant formulation based on ubiquinol and Aloe vera against dextran sulfate-induced ulcerative colitis in rats. Lancet 2001 Dec 15;358(9298):2026-33

*Langmead et al: Randomized double-blind placebo-controlled trial of oral aloe vera gel for active ulcerative colitis. Aliment Pharmacol Ther 2004 Apr 1;19(7):739-47

*Langmead et al: Randomized, double-blind, placebo-controlled trial of oral aloe vera gel for active ulcerative colitis. Ann Allergy Asthma Immunol 2003 Apr;90(4):371-7;quiz 377-8, 421

Alkaline foods – eat more of them! A good listing can be found online.

*www.rense.com/1.mpicons/acidalka.htm

American Ginseng decreases colitis inflammation.

*Jin et al: American ginseng suppresses colitis through p53-mediated apoptosis of inflammatory cells. Cancer Prev Res (Phila Pa) 2010 Feb 23

*Angelica is an herb that helps decrease symptoms of ulcerative colitis and other inflammatory bowel diseases.

*Wong et al: Protective effect of polysaccharides from Angelica sinensis on ulcerative colitis in rats. Inflammopharma 2008 Aug;16(4):162-7

*Ye et al: Effect of polysaccharides from Angelica sinensis on gastric ulcer healing. Radiat Res 2006 May;165(5):546-52

Apples inhibit *H. pylori* bacterium; decrease damage to the gastric mucosa; and prevent the development of inflammatory bowel disease. Be sure to eat only **organic** apples because conventionally grown apples are the number one fruit for chemical content.

- *Apples worst for pesticides on produce list. CBC News, Jun 14, 2011
- *Castagnini et al: Reduction of colonic inflammation in HLA-B27 transgenic rats by feeding Marie M nard apples, rich in polyphenols. *Br J Nutr* 2009 Dec;102(11):1620-8
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. *WebMD Health News* June 13, 2011
- *Pastene et al: In vitro inhibitory effect of apple peel extract on the growth of *Helicobacter pylori* and respiratory burst induced on human neutrophils. *J Agric Food Chem* 2009 Sep 9;57(17):7743-9
- *Shabecoff: 100 Chemicals for Apples Add Up to Enigma on Safety. *NY Times* Feb 5, 1989
- *Splinter et al: The effect of preoperative apple juice on gastric contents, thirst, and hunger in children. *Can J Anesth* 1989 Jan;36(1):55-58
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/
- *Yoshioka et al: Orally administered apple procyanidins protect against experimental inflammatory bowel disease in mice. *Int Immunopharmacol* 2008 Dec 20;8(13-14):1802-7

Arginine (an amino acid) and **Garlic** help prevent acid-induced ulcerative colitis.

- *Harisa et al: L-arginine augments the antioxidant effect of garlic against acetic acid-induced ulcerative colitis in rats. *Pak J Pharm Sci* 2009 Oct;22(4):373-80

Artichoke, Dandelion root, Turmeric, and Rosemary relieve symptoms of dyspepsia (impaired digestion).

- *Sannia: Phytotherapy with a mixture of dry extracts with hepato-protective effects containing artichoke leaves in the management of functional dyspepsia symptoms. *Minerva Gastroenterol Dietol* 2010 Jun;56(2):93-9

Astaxanthin is a potent antioxidant (500 times greater than vitamin E) with anti-inflammatory properties that help treat dyspepsia (indigestion). It is this carotenoid derived from algae sources that give some fish and flamingos their pink colour.

- *Kidd: Astaxanthin, cell membrane nutrient with diverse clinical benefits and anti-aging potential. *Altern Med Rev* 2011 Dec;16(4):355-64
- *Kupcinskis et al: Efficacy of the natural antioxidant astaxanthin in the treatment of functional dyspepsia in patients with or without *Helicobacter pylori* infection: A prospective, randomized, double blind, and placebo-controlled study. *Phytomed* 2008 Jun;15(6-7):391-9
- *Yasui et al: Dietary inhibits colitis and colitis-associated colon carcinogenesis in mice via modulation of the inflammatory cytokines. *Chem Biol Interact* 2011 May 20

Ayurvedic Herbal combination is just as effective as steroids in treating inflammatory bowel disease and without the side effects: Bilwa (*Aegle marmeloes*), Dhanyak (*Coriandrum sativum*), Musta (*Cyperus rotundus*), Vala (*Vetiveria zinzanioids*).

- *Jagtap et al: Effect of polyherbal formulation on experimental models of inflammatory bowel diseases. *Reprod Toxicol* 2007 Feb;23(2):182-91

Banana powder suppresses ulcer formation.

- *Goel et al: Anti-ulcerogenic effect of banana powder (*Musa sapientum* var. *paradisiaca*) and its effect on mucosal resistance. *J Ethnopharmacol* 1986 Oct;18(1):33-44
- *Mukhopadhyaya et al: Effect of banana powder (*Musa sapientum* var. *paradisiaca*) on gastric mucosal shedding. *J Ethnopharmacol* 1987 Sep-Oct;21(1):11-9

Bay leaves prevent ulcer formation.

- *Affi et al: Evaluation of the gastroprotective effect of *Laurus nobilis* seeds on ethanol induced gastric ulcer in rats. *J Ethnopharmacol* 1997 Sep;58(1):9-14

Bitter Herbs help improve poor digestion. Swedish bitters is a combination of herbs that have been used for decades. Some bitter herbs include arugula (rocket), dandelion, gentian, goldenseal, garlic mustard, milk thistle, watercress, and yarrow. Use them often in salads or green smoothies.

- *Abascal & Yarnell: Combining herbs in a formula for irritable bowel syndrome. *Alt Compl Ther* 2005 Feb;11(1):17-23
- *Alqasoumi et al: Rocket "*Eruca sativa*": a salad herb with potential gastric anti-ulcer activity. *World J Gastroenterol* 2009 Apr 28;15(16):1958-65
- *Challem: Bitter herbs for better digestion: looking for a safe and natural alternative to antacids? Try the remedy used for years by Europeans for upset stomach and digestive troubles. *Better Nutrition* February 2007 online article
- *Lamy et al: Antigenotoxic properties of *Eruca sativa* (rocket plant), erucin and erucolin in human hepatoma (HepG2) cells towards benzo(a)pyrene and their mode of action. *Food Chem Toxicol* 2008 Jul;46(7):2415-21
- *Li et al: Effects of common-used bitter-cold herbs on gastrointestinal hormone in rats. *J Trad Chin Med* 2007 Jan
- *Snow & Spelman: The influence of bitter, aromatic, and pungent medicinal plants on gut function. *Gastro Liver Dis Nutr Desk Ref* 17:237-49

B-complex, Melatonin, Amino acids, and Hydrochloric acid combination prove to be more effective than omeprazole (a PPI) in treating acid reflux.

- *de Souza Pereira et al: Regression of gastroesophageal reflux disease symptoms using dietary supplementation with melatonin, vitamins and amino acids: comparison with omeprazole. *J Pineal Res* 2006 Oct;41(3):195-200

Beta glucans are polysaccharides derived from oats, mushrooms, or yeasts. Beta glucans are safe and effectively used to treat a number of diseases including colitis and stomach cancer as well as simple colds and flus. (see more under Anti-virals and Cancer)

- *Daddaoua et al: Active hexose correlated compound acts as a prebiotic and is antiinflammatory in rats with hapten-induced colitis. *J Nutr* 2007 May;137(5):1222-8

Boswellia (Frankincense) gum resin decreases ulcers, regulates the digestive tract and improves nutrient absorption.

- *Gupta et al: Effects of gum resin of *Boswellia serrata* in patients with chronic colitis. *Plant Med* 2001 Jul;67(5):391-5
- *Gupta et al: Effects of *Boswellia serrata* gum resin in patients with ulcerative colitis. *Eur J Med Res* 1997 Jan;2(1):37-43
- *Madisch et al: *Boswellia serrata* extract for the treatment of collagenous colitis. A double-blind, randomized, placebo-controlled, multicenter trial. *Int J Colorectal Dis* 2007 Dec;22(12):1445-51

Bromelain is a combination of protein-digesting enzymes extracted from pineapple. Bromelain effectively treats digestive disorders by enhancing absorption and permeability while decreasing inflammation.

- *Grabovac & Bernkop-Schnürch: Improvement of the intestinal membrane permeability of low molecular weight heparin by complexation with stem bromelain. *Arch Intern Med* 2005 Jan 24;165(2):200-6
- *Hale et al: Dietary supplementation with fresh pineapple juice decreases inflammation and colonic neoplasia in IL-10-deficient mice with colitis. *Inflamm Bowel Dis* 2010 Dec;16(12):2012-21

- *Hale et al: Treatment with oral bromelain decreases colonic inflammation in the IL-10-deficient murine model of inflammatory bowel disease. *Clin Immunol* 2005 Aug;116(2):135-42
- *Onken et al: Bromelain treatment decreases secretion of pro-inflammatory cytokines and chemokines by colon biopsies in vitro. *Clin Immunol* 2008 Mar;126(3):345-52
- *Pellicano et al: Benefit of dietary integrators for treating functional dyspepsia: a prospective pilot study. *Clin Exp Allergy* 2009 Jun;39(6):875-82

Butterbur is an herb from the daisy family that helps prevent ulcers. It is also an effective remedy for migraines.

- *Brune et al: Gastro-protective effects by extracts of *Petasites hybridus*: the role of inhibition of peptido-leukotriene synthesis. *Planta Med* 1993 Dec;59(6):494-6
- *Lipton et al: *Petasites hybridus* root (butterbur) is an effective preventive treatment for migraine. *Ann N Y Acad Sci* 2009 Feb;1155:278-83
- *Wang et al: Calcium-antagonizing activity of S-petasin, a hypotensive sesquiterpene from *Petasites formosanus*, on inotropic and chronotropic responses in isolated rat atria and cardiac myocytes. *Naunyn Schmiedebergs Arch Pharmacol* 2004 Mar;369(3):322-9

Cambuca (*Plinia edulis*), a Brazilian herb, proves more effective than lansoprazole in preventing ulcers.

- *Ishikawa et al: Evaluation of gastroprotective activity of *Plinia edulis* (Vell.) Sobral (Myrtaceae) leaves in rats. *J Ethnopharma* 2008 Aug 13;118(3):527-9

Cardamom seeds protect the gastric system.

- *Jamal et al: Gastroprotective effect of cardamom, *Elettaria cardamomum* Maton fruits in rats. *J Ethnopharmacol* 2006 Jan 16;103(2):149-53

Carotenoids from red bananas and paprika, Golden Delicious apples, and Valencia oranges has an effect on the *H. pylori* bacterium and some multi-drug resistant strains.

- *Englberger et al: Carotenoid and vitamin content of Karat and other Micronesian banana cultivars. *Int J Food Sci Nutr* 2006 Aug-Sep;57(5-6):399-418
- *Englberger et al: Carotenoid-rich bananas: a potential food source for alleviating vitamin A deficiency. *Food Nutr Bull* 2003 Dec;24(4):303-18
- *Molnár et al: Carotenoids with anti-*Helicobacter pylori* activity from Golden delicious apple. *Phytother Res* 2010 May;24(5):644-8
- *Molnár et al: Biological activity of carotenoids in red paprika, Valencia orange and Golden delicious apple. *Phytother Res* 2005 Aug;19(8):700-7

Catechins are a group of flavonoids that have the same effects as PPIs but without the side effects. Catechins can be found in such foods as green tea, açai fruit, dark chocolate and berries.

- *Murakami et al: Gastric H⁺, K⁽⁺⁾-ATPase inhibition by catechins. *J Pharm Pharmacol* 1992 Nov;44(11):926-8

Celery extract significantly protects the digestive tract.

- *Al-Howiriny et al: Gastric antiulcer, antisecretory and cytoprotective properties of celery (*Apium graveolens*) in rats. *Pharm Biol* 2010 Jul;48(7):786-93

CLA (conjugated linoleic acid) reduces bacteria-induced colitis and often helps with weight-loss.

- *Hontecillas et al: Nutritional regulation of porcine bacterial-induced colitis by conjugated linoleic acid. *J Nutr* 2002 Jul;132(7):2019-27

Cloves and **Cinnamon** are particularly effective against the *H. pylori* bacterium that often causes ulcers.

- *Bhamarapravati et al: Extracts of spice and food plants from Thai traditional medicine inhibit the growth of the human carcinogen *Helicobacter pylori*. *Indian J Ophthalmol* 2009 May-Jun;57(3):185-9
- *Tabak et al: Cinnamon extracts' inhibitory effect on *Helicobacter pylori*. *J Ethnopharma* 1999 Nov 30;67(3):269-77

Coconut Water or **Coconut Milk** helps prevent ulcers and reduces the toxic effects of aluminum poisoning. By replacing part of omega-6 fatty acid supplementation with medium-chain fatty acids of Coconut, colitis attacks are decreased.

- *Mañé et al: Partial replacement of dietary (n-6) fatty acids with medium-chain triglycerides decreases the incidence of spontaneous colitis in interleukin-10-deficient mice. *J Nutr* 2009 Mar;139(3):603-10
- *Nneli et al: Antiulcerogenic effects of coconut (*Cocos nucifera*) extract in rats. *Phytother Res* 2008 Jul;22(7):970-2
- *Shadnia et al: Successful treatment of acute aluminium phosphide poisoning: possible benefit of coconut oil. *Hum Exp Toxicol* 2005 Apr;24(4):215-8

Colic in infants is a legitimate digestive complaint caused by a variety of reasons. A safe herbal treatment was found to be effective within one week by using Fenugreek, Fennel and Melissa (lemonbalm). A weak tea can be fed to the infant, if possible, and/or taken by the breast-feeding mother.

- *Savino et al: A randomized double-blind placebo-controlled trial of a standardized extract of *Matricaria recutita*, *Foeniculum vulgare* and *Melissa officinalis* (ColiMil) in the treatment of breastfed colicky infants. *Phytother Res* 2005 Apr;19(4):335-40

Cow milk elimination helps infants overcome GERD that is not responsive to medications. Probiotics also help with infant and adult GERD (see below).

- *Farahmand et al: Cow's milk allergy among children with gastroesophageal reflux disease. *Gut Liver* 2011 Sep;5(3):298-301

Curcumin (the active substance in Turmeric) reduces a number of chemicals that lead to colitis and damage the digestive tract. Since much of what we consume or put on our bodies have loads of chemicals, it is wise to take Curcumin as a supplement or use Turmeric in cooking as often as possible in order to decrease the harm caused by chemicals.

- *Arafa et al: Prophylactic role of curcumin in dextran sulfate sodium (DSS)-induced ulcerative colitis murine model. *J Pharm Pharmacol* 2007 Jun;59(6):849-56
- *Camacho-Barquero et al: Curcumin, a *Curcuma longa* constituent, acts on MAPK p38 pathway modulating COX-2 and iNOS expression in chronic experimental colitis. *Int Immunopharmacol* 2007 Mar;7(3):333-42
- *Cong et al: Curcumin induces the tolerogenic dendritic cell that promotes differentiation of intestine-protective regulatory T cells. *Eur J Immunol* 2009 Nov;39(11):3134-46
- *Deguchi et al: Curcumin prevents the development of dextran sulfate Sodium (DSS)-induced experimental colitis. *Dig Dis Sci* 2007 Nov;52(11):2993-8
- *Hanai et al: Curcumin maintenance therapy for ulcerative colitis: randomized, multicenter, double-blind, placebo-controlled trial. *Clin Gastroenterol Hepatol* 2006 Dec;4(12):1502-6
- *Hanai & Sugimoto: Curcumin has bright prospects for the treatment of inflammatory bowel disease. *J Lab Clin Med* 1997 Dec;130(6):576-84
- *Jian et al: Preventive and therapeutic effects of NF-kappaB inhibitor curcumin in rats colitis induced by trinitrobenzene sulfonic acid. *World J Gastroenterol* 2005 Mar 28;11(12):1747-52
- *Jiang et al: Curcumin-attenuated trinitrobenzene sulphonic acid induces chronic colitis by inhibiting expression of cyclooxygenase-2. *World J Gastroenterol* 2006 Jun 28;12(24):3848-53

- *Lubbad et al: Curcumin reverses attenuated carbachol-induced contraction of the colon in a rat model of colitis. *Scand J Gastroenterol* 2009;44(2):187-94
- *Lubbad et al: Curcumin attenuates inflammation through inhibition of TLR-4 receptor in experimental colitis. *Mol Cell Biochem* 2009 Feb;322(1-2):127-35
- *Rafiee et al: Effect of curcumin on acidic pH-induced expression of IL-6 and IL-8 in human esophageal epithelial cells (HET-1A): role of PKC, MAPKs, and NF-kappaB. *Am J Physiol Gastroint Liver Physiol* 2009 Feb;296(2):G388-98
- *Salh et al: Curcumin attenuates DNB-induced murine colitis. *Am J Physiol Gastrointest Liver Physiol* 2003 Jul;285(1):G235-43
- *Sethi et al: Curcumin attenuates aluminium-induced functional neurotoxicity in rats. *Pharmacol Biochem Behav* 2009 Jul;93(1):31-9
- *Sugimoto et al: Curcumin prevents and ameliorates trinitrobenzene sulfonic acid-induced colitis in mice. *Gastroenterol* 2002 Dec;123(6):1912-22
- *Ukil et al: Curcumin, the major component of food flavour turmeric, reduces mucosal injury in trinitrobenzene sulphonic acid-induced colitis. *Br J Pharmacol* 2003 May;139(2):209-18
- *Ung et al: Oral administration of curcumin emulsified in carboxymethyl cellulose has a potent anti-inflammatory effect in the IL-10 gene-deficient mouse model of IBD. *Dig Dis Sci* 2010 May;55(5):1272-7
- *Venkataranganna et al: NCB-02 (standardized Curcumin preparation) protects dinitrochlorobenzene-induced colitis through down-regulation of NFkappa-B and iNOS. *World J Gastroenterol* 2007 Feb 21;13(7):1103-7
- *Yadav et al: Novel formulation of solid lipid microparticles of curcumin for anti-angiogenic and anti-inflammatory activity for optimization of therapy of inflammatory bowel disease. *J Pharm Pharmacol* 2009 Mar;61(3):311-21
- *Yadav et al: Effect of cyclodextrin complexation of curcumin on its solubility and antiangiogenic and anti-inflammatory activity in rat colitis model. *AAPS PharmSciTech* 2009;10(3):752-62
- *Zhang et al: Curcumin regulated shift from Th1 to Th2 in trinitrobenzene sulphonic acid-induced chronic colitis. *Acta Pharmacol Sin* 2006 Aug;27(8):1071-7
- *Zhang et al: Curcumin inhibits trinitrobenzene sulphonic acid-induced colitis in rats by activation of peroxisome proliferator-activated receptor gamma. *Int Immunopharmacol* 2006 Aug;6(8):1233-42

Damiana is an herb that has significant antacid and anti-ulcer effects.

- *de Souza Gracioso et al: Effects of tea from *Turnera ulmifolia* L. on mouse gastric mucosa support the Turneraceae as a new source of antiulcerogenic drugs. *Biol Pharm Bull* 2002 Apr;25(4):487-91

Dandelion, Fennel, Lemonbalm, Marigold (Calendula), St. Johns Wort are herbs that effectively treat colitis and diarrhea.

- *Chakürski et al: Treatment of chronic colitis with an herbal combination of *Taraxacum officinale*, *Hipericum perforatum*, *Melissa officinalis*, *Calendula officinalis* and *Foeniculum vulgare*. *Vutr Boles* 1981;20(6):51-4

Dates are comparable to lansoprazole in preventing gastric ulcers.

- *Al-Qarawi et al: The ameliorative effect of dates (*Phoenix dactylifera* L.) on ethanol-induced gastric ulcer in rats. *J Ethnopharmacol* 2005 Apr 26;98(3):313-7

Diet rich in fruits, vegetables and fiber significantly decrease digestive disorders including Barrett's esophagus, as well as all types of cancers (see separately), diabetes, and heart disease.

- *Gramenzi et al: Association between certain foods and risk of acute myocardial infarction in women. *Diabetes Metab Res Rev* 2003 Jan-Feb;19(1):69-75
- *Kubo et al: Effects of dietary fiber, fats, and meat intakes on the risk of Barrett's esophagus. *Nutr Cancer* 2009;61(5):607-16

Digestive Enzymes and/or **Hydrochloric acid (HCl)** at every meal enhances digestion and the immune system.

*Bohager 2009:65-69

DGL (deglycyrrhizinated licorice root) before a meal helps protect the stomach lining especially if there is an ulcer present.

*Bennett et al: Aspirin-induced gastric mucosal damage in rats: cimetidine and deglycyrrhizinated liquorice together give greater protection than low doses of either drug alone. *J Pharm Pharmacol* 1980 Feb;32(2):151

*Feldman & Gilat: A trial of deglycyrrhizinated liquorice in the treatment of duodenal ulcer. *Gut* 1971;12:449

*Johnston & Mclsaac: The effects of deglycyrrhizinated liquorice and cimetidine on resting gastric mucosal blood flow in man. *Br J Pharmacol* 1981;74:971-972

*Morgan et al: The effect of deglycyrrhizinated liquorice on the occurrence of aspirin and aspirin plus bile acid-induced gastric lesions, and aspirin absorption in rats. *Gastroenterol* 1982;82:1134

*Rees et al: Effect of deglycyrrhizinated liquorice on gas-tric mucosal damage by aspirin. *Scand J Gastroenterol* 1979;14(5):605-7

*Russell et al: Studies on the protective effect of deglycyrrhizinated liquorice against aspirin (ASA) and ASA plus bile acid-induced gastric mucosal damage, and ASA absorption in rats. *Scand J Gastroenterol Suppl* 1984;92:97-100

*van Marle et al: Deglycyrrhizinated liquorice and the renewal of rat stomach epithelium. *Eur J Pharmacol* 1981;72:219-225

Dong quai (*Angelica sinensis*), also known as the female ginseng, naturally increases estrogen levels but it also decreases the effects of ulcerative colitis.

*Wong et al: Protective effect of polysaccharides from *Angelica sinensis* on ulcerative colitis in rats. *Inflammopharma* 2008 Aug;16(4):162-7

*Ye et al: Effect of polysaccharides from *Angelica sinensis* on gastric ulcer healing. *Rad Res* 2006 May;165(5):546-52

Ellagic acid, found in red raspberries, has the same effect as PPIs but without the side effects.

*Murakami et al: Inhibition of gastric H⁺, K⁽⁺⁾-ATPase and acid secretion by ellagic acid. *Mol Nutr Food Res* 2008 Jun;52(6):692-700

Essential oils have gastro-protective effects; help to regulate bowel flora; improve digestion; and some are effective in preventing *H. pylori*. They can safely be taken internally by adults or children although infants should be massaged with the oils in a carrier oil instead of giving internally: Caraway, Fennel, Lavender, Lemon, Marjoram, Neroli, Nutmeg, Orange, Oregano, and Peppermint (especially effective).

*Alexandrovich et al: The effect of fennel (*Foeniculum Vulgare*) seed oil emulsion in infantile colic: a randomized, placebo-controlled study. *Altern Ther Health Med* 2003 Jul-Aug;9(4):58-61

*Bergonzelli et al: Essential oils as components of a diet-based approach to management of Helicobacter infection. *Antimicrob Agents Chemother* 2003 Oct;47(10):3240-46

*Cappello et al: Peppermint oil (Mintoil) in the treatment of irritable bowel syndrome: a prospective double blind placebo-controlled randomized trial. *Dig Liver Dis* 2007 Jun;39(6):530-6

*Freise & Köhler: Peppermint oil-caraway oil fixed combination in non-ulcer dyspepsia--comparison of the effects of enteric preparations. *Pharmazie* 1999 Mar;54(3):210-5

*Grigoleit & Grigoleit: Peppermint oil in irritable bowel syndrome. *Phytomed* 2005 Aug;12(8):601-6

*Hawrelak et al: Essential oils in the treatment of intestinal dysbiosis: A preliminary in vitro study. *Altern Med Rev* 2009 Dec;14(4):380-4

- *Hiki et al: Peppermint oil reduces gastric spasm during upper endoscopy: a randomized, double-blind, double-dummy controlled trial. *Gastrointest Endosc* 2003 Apr;57(4):475-82
- *Hiki et al: Peppermint oil reduces gastric spasm during upper endoscopy: a randomized, double-blind, double-dummy controlled trial. *J Clin Gastroenterol* 2001 Jul;33(1):27-31
- *Inamori et al: Early effects of peppermint oil on gastric emptying: a crossover study using a continuous real-time ¹³C breath test (BreathID system). *J Gastroenterol* 2007 Jul;42(7):539-42
- *Kline et al: Enteric-coated, pH-dependent peppermint oil capsules for the treatment of irritable bowel syndrome in children. *J Pediatr* 2001 Jan;138(1):125-8
- *May et al: Efficacy and tolerability of a fixed combination of peppermint oil and caraway oil in patients suffering from functional dyspepsia. *Aliment Pharmacol Ther* 2000 Dec;14(12):1671-7
- *Merat et al: The effect of enteric-coated, delayed-release peppermint oil on irritable bowel syndrome. *Dig Dis Sci* 2010 May;55(5):1385-90
- *Moraes et al: Effects of limonene and essential oil from *Citrus aurantium* on gastric mucosa: role of prostaglandins and gastric mucus secretion. *Chem Biol Interact* 2009 Aug 14;180(3):499-505

Fish oil, FOS (prebiotic food), Soluble fiber, Gum arabic and Antioxidants reduce the need for steroids in ulcerative colitis.

- *Aslan & Triadafilopoulos: Fish oil fatty acid supplementation in active ulcerative colitis: a double-blind, placebo-controlled, crossover study. *Am J Gastroenterol* 1992 Apr;87(4):432-7
- *Seidner et al: An oral supplement enriched with fish oil, soluble fiber, and antioxidants for corticosteroid sparing in ulcerative colitis: a randomized, controlled trial. *Clin Gastroenterol Hepatol* 2005 Apr;3(4):358-69

Flavonoids (bioflavonoids) are the what give fruits and vegetables their colour. They have a wide variety of health benefits include gastro-protective effects.

- *Odvina: Comparative value of orange juice versus lemonade in reducing stone-forming risk. *Clin J Am Soc Nephrol* 2006 Nov;1(6):1269-74
- *Zayachkivska et al: Gastroprotective effects of flavonoids in plant extracts. *J Physiol Pharmacol* 2005 Mar;56 Suppl 1:219-31

Gallstones (as well as liver and kidney stones) are signs of poor digestion. They can be eliminated using various techniques including Garlic oil or Chanca piedra (Spanish for “stone crusher”).

- *Moritz: *The Liver and Gallbladder Miracle Cleanse*, Ulysses Press, 2007
- *Nijhawan et al: Evaluation of garlic oil as a contact dissolution agent for gallstones: comparison with monoctanoin. *Trop Gastroenter* 2000 Oct-Dec;21(4):177-9
- *Raintree Tropical Plant Database - www.rain-tree.com/chanca.htm

Ginger is a valuable herbal root that prohibits ulcer formation, protects the digestive tract from aluminum damage, and is up to eight times more effective than lansoprazole.

- *Moselhy et al: Role of ginger against the reproductive toxicity of aluminium chloride in albino male rats. *Reprod Domest Anim* 2011 Jul 26
- *Nanjundaiah et al: Gastroprotective effect of ginger rhizome (*Zingiber officinale*) extract: role of gallic acid and cinnamic acid in H⁺, K⁺-ATPase/H. pylori Inhibition and anti-oxidative mechanism. *Evid Based Compl Alt Med* 2009 Jul 1
- *Siddaraju & Dharmesh: Inhibition of gastric H⁺, K⁺-ATPase and *Helicobacter pylori* growth by phenolic antioxidants of *Zingiber officinale*. *Mol Nutr Food Res* 2007 Mar;51(3):324-32

Ginkgo biloba is an herb often used to improve memory (mainly because it improves circulation). It also has anti-inflammatory effects that help reduce colitis symptoms.

- *Kotakadi et al: Ginkgo biloba extract EGb 761 has anti-inflammatory properties and ameliorates colitis in mice by driving effector T cell apoptosis. *Carcinogen* 2008 Sep;29(9):1799-806

Glucosamine is an essential sugar required by many cells in the body for proper functioning. It is effective for decreasing the effects of such autoimmune disorders as inflammatory bowel diseases and arthritis.

- *Russell: Glycoaminoglycan (GAG) deficiency in protective barrier as an underlying, primary cause of ulcerative colitis, Crohn's disease interstitial cystitis and possibly Reiter's syndrome. *Med Hypoth* 1999 Apr;52(4):297-301
- *www.innvista.com/health/nutrition/sugars/glucosamine.htm
- *Yomagida et al: Glucosamine, a naturally occurring amino monosaccharide, suppresses dextran sulfate sodium-induced colitis in rats. *Int J Mol Med* 2008 Sep;22(3):317-23

Glutamine is a non-essential amino acid that plays a role in gut-healing, especially after a bowel resection or in premature infants. Along with Arginine (another amino acid), Honey or Curcumin, Glutamine's effects are increased.

- *Basivireddy et al: Oral glutamine attenuates indomethacin-induced small intestinal damage. *Clin Sci (Lond)* 2004 Sep;107(3):281-9
- *Eyarefe et al: Small bowel responses to enteral honey and glutamine administration following massive small bowel resection in rabbit. *Afr J Med Med Sci* 2008 Dec;37(4):309-14
- *Kul et al: Enteral glutamine and/or arginine supplementation have favorable effects on oxidative stress parameters in neonatal rat intestine. *J Pediatr Gastroenterol Nutr* 2009 Jul;49(1):85-9
- *Ohno et al: Glutamine decreases the duration of postoperative ileus after abdominal surgery: an experimental study of conscious dogs. *Dig Dis Sci* 2009 Jun;54(6):1208-13
- *Rapin & Wiernsperger: Possible links between intestinal permeability and food processing: A potential therapeutic niche for glutamine. *Clinics (Sao Paulo)* 2010 Jun;65(6):635-43
- *Roth: Nonnutritive effects of glutamine. *J Nutr* 2008 Oct;138(10):2025S-2031S
- *Zhou et al: Glutamine enhances the gut-trophic effect of growth hormone in rat after massive small bowel resection. *Arch Dermatol Res* 1986;278(6):433-6

Goldenseal and **Bloodroot** are herbs that inhibit the *H. pylori* bacteria, often the cause of stomach ulcers.

- *Mahady et al: In vitro susceptibility of *Helicobacter pylori* to isoquinoline alkaloids from *Sanguinaria canadensis* and *Hydrastis canadensis*. *J Med Food* 2007 Dec;10(4):694-701

Grapes protect against the *H. pylori* bacterium. Buy only **organic grapes** as they are #7 on the list of foods that are highest in pesticides, which are known carcinogens.

- *Martini et al: Antibacterial activity of grape extracts on cagA-positive and -negative *Helicobacter pylori* clinical isolates. *J Chemother* 2009 Nov;21(5):507-13
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Hawthorn is an herb often used to strengthen the heart muscle but it also has other multi-beneficial effects including gastro-protective.

- *Tadić et al: Anti-inflammatory, gastroprotective, free-radical-scavenging, and antimicrobial activities of hawthorn berries ethanol extract. *J Agric Food Chem* 2008 Sep 10;56(17):7700-9

Homeopathic treatment in areas of anxiety, depression, and irritable bowel proves to be more than 75% positive.

- *Mathie & Robinson: Outcomes from homeopathic prescribing in medical practice: a prospective, research-targeted, pilot study. *Homeopathy* 2006;95:199-205

Honey (non-pasteurized or Manuka), **Olive oil**, and **Beeswax** is a safe and effective combination to use on painful hemorrhoids or anal fissures that often develop after prolonged digestive problems. **Manuka honey** is an effective rehydration additive for infants and children after a bout of gastroenteritis; lessens inflammatory bowel

diseases; and helps overcome stomach ulcers caused by *H. Pylori* (warning: it will also feed *Candida* yeast that often accompanies *H. pylori*). Use only unpasteurized or Manuka honey as the average “grocery store honey” is not real honey and therefore, not medicinally effective.

- *Abdulrhman et al: Bee honey added to the oral rehydration solution in treatment of gastroenteritis in infants and children. *J Med Food* 2010 Jun;13(3):605-9
- *Al-Waili et al: The safety and efficacy of a mixture of honey, olive oil, and beeswax for the management of hemorrhoids and anal fissure: a pilot study. *Sci World J* 2006 Feb 2;6:1998-2005
- *Medhi et al: Effect of Manuka honey and sulfasalazine in combination to promote antioxidant defense system in experimentally induced ulcerative colitis model in rats. *Indian J Exp Biol* 2008 Aug;46(8):583-90
- *Prakash et al: Effect of different doses of Manuka honey in experimentally induced inflammatory bowel disease in rats. *Phytother Res* 2008 Aug 7
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7
- *Somal et al: Susceptibility of *Helicobacter pylori* to the antibacterial activity of manuka honey. *J R Soc Med* 1994 Jan;87(1):9-12

Indian Oyster Mushroom reduces colitis inflammation.

- *Lavi et al: Orally administered glucans from the edible mushroom *Pleurotus pulmonarius* reduce acute inflammation in dextran sulfate sodium-induced experimental colitis. *Br J Nutr* 2009 Sep 22:1-10

Iron supplements are often necessary but can aggravate colitis. **Vitamin E** can lessen these effects but iron supplements should always be taken with food. Some forms are easier to absorb than others but which ones depends on the person. Ferrous fumarate is a form often prescribed and very difficult to absorb with most causing constipation. Because of poor absorption, iron deficiency anemia is common in those with celiac disease, *H. pylori* and GERD.

- *Carrier et al: Iron supplementation increases disease activity and vitamin E ameliorates the effect in rats with dextran sulfate sodium-induced colitis. *J Nutr* 2002 Oct;132(10):3146-50
- *Erichsen et al: Low-dose oral ferrous fumarate aggravated intestinal inflammation in rats with DSS-induced colitis. *Inflamm Bowel Dis* 2005 Aug;11(8):744-8
- *Fayed et al: Prevalence of celiac disease, *Helicobacter pylori* and gastroesophageal reflux in patients with refractory iron deficiency anemia. *J Trop Pediatr* 2008 Feb;54(1):43-53

Japanese apricots lessen the effects of ulcerative colitis and help heal stomach lesions caused by *H. pylori*.

- *Otsuka et al: Suppressive effects of fruit-juice concentrate of *Prunus mume* Sieb. et Zucc. (Japanese apricot, Ume) on *Helicobacter pylori*-induced glandular stomach lesions in Mongolian gerbils. *Asian Pac J Cancer Prev* 2005 Jul-Sep;6(3):337-41
- *Singh et al: Exploring the ameliorative potential of *Punica granatum* in dextran sulfate sodium induced ulcerative colitis in mice. *Phytother Res* 2009 Apr 15

Magnesium deficiency can cause seizures in those taking PPIs for a long time.

- *Cundy & Dissanayake: Severe hypomagnesaemia in long-term users of proton-pump inhibitors. *Clin Endocrinol (Oxf)* 2008 Aug;69(2):338-41

Mango flowers and leaves protect the gastric system and help heal ulcers.

- *Lima et al: Can the aqueous decoction of mango flowers be used as an antiulcer agent? *Planta Med* 2004 Aug;70(8):745-52
- *Severi et al: Polyphenols with antiulcerogenic action from aqueous decoction of mango leaves (*Mangifera indica* L.). *Molecul* 2009;14(3):1098-110

Mangosteen is a fruit with numerous health benefits including anti-inflammatory and analgesic (pain-relieving) action.

- *Cui et al: New medicinal properties of mangostins: analgesic activity and pharmacological characterization of active ingredients from the fruit hull of *Garcinia mangostana* L. *Anticancer Res* 1998 Sep-Oct;18(5A):3487-91

Melatonin not only can be used to induce sleep but provides a safe and effective alternative to PPIs; improves symptoms of colitis and GERD (gastroesophageal reflux disease); reduces aging effects in the digestive tract; and decreases gallbladder inflammation.

- *Akbulut et al: Melatonin decreases apoptosis in gastric mucosa during aging. *Aging Clin Exp Res* 2011 Mar 14
- *Kandil et al: The potential therapeutic effect of melatonin in Gastro-Esophageal Reflux Disease. *BMC Gastroenterol* 2010;10:7
- *Koppiseti et al: Reactive oxygen species and the hypomotility of the gall bladder as targets for the treatment of gallstones with melatonin: a review. *Dig Dis Sci* 2008 Oct;53(10):2592-603
- *Mazzon et al: Melatonin modulates signal transduction pathways and apoptosis in experimental colitis. *J Pineal Res* 2006 Nov;41(4):363-73
- *Werbach: Melatonin for the treatment of gastroesophageal reflux disease. *Altern Ther Health Med* 2008 Jul-Aug;14(4):54-8

Melatonin and Curcumin protect against the development of medication-induced gastric ulcers.

- *Ganguly et al: Hydrogen peroxide-mediated downregulation of matrix metalloprotease-2 in indomethacin-induced acute gastric ulceration is blocked by melatonin and other antioxidants. *Free Radic Biol Med* 2006 Sep 15;41(6):911-25

MSM (methylsulfonylmethane) is a non-odorous sulfur compound and metabolite of DMSO. Derived from either wood pulp or fossil fuels, it is nearly impossible to determine which supplement comes from which source. However, it appears to have anti-inflammatory effects for colitis and osteoarthritis.

- *Amirshahrokhi et al: The effect of methylsulfonylmethane on the experimental colitis in the rat. *Toxicol Appl Pharmacol* 2011 Jun 15;253(3):197-202

Neem is an herb with natural anti-microbial properties and therefore useful in preventing bacteria-caused ulcers as well as having other gastro-protective effects.

- *Bandyopadhyay et al: Clinical studies on the effect of Neem (*Azadirachta indica*) bark extract on gastric secretion and gastroduodenal ulcer. *Life Sci* 2004 Oct 29;75(24):2867-78
- *Dorababu et al: Effect of aqueous extract of neem (*Azadirachta indica*) leaves on offensive and defensive gastric mucosal factors in rats. *Indian J Physiol Pharmacol* 2006 Jul-Sep;50(3):241-9

Noni fruit controls nausea and vomiting after surgery. It also decreases symptoms of reflux esophagitis and gastric ulcers.

- *Mahattanadul et al: Effects of *Morinda citrifolia* aqueous fruit extract and its biomarker scopoletin on reflux esophagitis and gastric ulcer in rats. *J Ethnopharmacol* 2011 Mar 24 ;134(2):243-50
- *Prapaitrakool & Itharat: *Morinda citrifolia* Linn. for prevention of postoperative nausea and vomiting. *J Med Assoc Thai* 2010 Dec;93 Suppl 7:S204-9

Olive leaves (yes, from the olive tree) have numerous health benefits including preventing the development of non-alcoholic fatty liver.

- *Omagari et al: Olive leaf extract prevents spontaneous occurrence of non-alcoholic steatohepatitis in SHR/NDmcr-cp rats. *Pathol* 2010 Jan;42(1):66-72

Orange or Lemon juice helps reduce the formation of kidney stones better than potassium citrate. Stones are often a sign of poor digestion and made worse by antacids.

- *Aras et al: Can lemon juice be an alternative to potassium citrate in the treatment of urinary calcium stones in patients with hypocitraturia? A prospective randomized study. *Urol Res* 2008 Dec;36(6):313-7
- *Kang et al: Long-term lemonade based dietary manipulation in patients with hypocitraturic nephrolithiasis. *J Urol* 2007 Apr;177(4):1358-62;disc 1362; quiz 1591
- *Odvina et al: Comparative value of orange juice versus lemonade in reducing stone-forming risk. *Clin J Am Soc Nephrol* 2006 Nov;1(6):1269-74

Papaya fruit (unripened) has beneficial effects on gastric ulcers. It is able to detoxify gliadin, a protein found in wheat that an increasing number of people are unable to digest.

- *Cornell et al: Papaya latex enzymes capable of detoxification of gliadin. *Amino Acids* 2009 Jan 21
- *Ezike et al: Carica papaya (Paw-Paw) unripe fruit may be beneficial in ulcer. *Int J Oncol* 2004 Dec;25(6):1809-15

Papaya leaf extract protects the gastric system and has antioxidant effects similar to vitamin E.

- *Protective effect of Carica papaya L leaf extract against alcohol induced acute gastric damage and blood oxidative stress in rats. *West Indian Med J* 2008 Sep;57(4):323-6
- *Mehdipour et al: Antioxidant potentials of Iranian Carica papaya juice in vitro and in vivo are comparable to alpha-tocopherol. *Phytother Res* 2006 Jul;20(7):591-4

Pectin liquid helps overcome GERD in children with cerebral palsy.

- *Miyazawa et al: Effects of pectin liquid on gastroesophageal reflux disease in children with cerebral palsy. *BMC Gastroenterol* 2008 Apr 16;8:11

Peppermint oil eases irritable bowel symptoms.

- *Cappello et al: Peppermint oil (Mintoil) in the treatment of irritable bowel syndrome: a prospective double blind placebo-controlled randomized trial. *Dig Liver Dis.* 2007 Jun;39(6):530-6
- *Freise and Köhler: Peppermint oil-caraway oil fixed combination in non-ulcer dyspepsia--comparison of the effects of enteric preparations. *Pharmazie* 1999 Mar;54(3):210-5
- *Grigoleit and Grigoleit: Peppermint oil in irritable bowel syndrome. *Phytomed* 2005 Aug;12(8):601-6
- *Kline et al: Enteric-coated, pH-dependent peppermint oil capsules for the treatment of irritable bowel syndrome in children. *J Pediatr* 2001 Jan;138(1):125-8
- *Liu et al: Enteric-coated peppermint-oil capsules in the treatment of irritable bowel syndrome: a prospective, randomized trial. *J Gastroenterol* 1997 Dec;32(6):765-8
- *May et al: Efficacy and tolerability of a fixed combination of peppermint oil and caraway oil in patients suffering from functional dyspepsia. *Aliment Pharmacol Ther* 2000 Dec;14(12):1671-7
- *Merat et al: The effect of enteric-coated, delayed-release peppermint oil on irritable bowel syndrome. *Dig Dis Sci* 2010 May;55(5):1385-90

Pineapple juice (fresh) has natural enzymes that decrease inflammatory bowel symptoms.

- *Hale et al: Dietary supplementation with fresh and colonic neoplasia in IL-10-deficient mice with colitis. *Inflamm Bowel Dis* 2010 Dec;16(12):2012-21

Pomegranates are fruits that protect the digestive tract from alcohol and aspirin-induced damage and prevents the kidneys from forming stones. Pomegranates also increase good bacteria (probiotics) which are vital for good digestion and the immune system.

- *Ajaikumar et al: The inhibition of gastric mucosal injury by Punicagranatum L. (pomegranate) methanolic extract. *J Ethnopharmacol* 2005 Jan 4;96(1-2):171-6

- *Bialonska et al: The effect of pomegranate (*Punica granatum* L.) byproducts and ellagitannins on the growth of human gut bacteria. *J Agric Food Chem* 2009 Sep 23;57(18):8344-9
- *Singh et al: Exploring the ameliorative potential of *Punica granatum* in dextran sulfate sodium induced ulcerative colitis in mice. *Phytother Res* 2009 Apr 15
- *Tugcu et al: Protective effect of a potent antioxidant, pomegranate juice, in the kidney of rats with nephrolithiasis induced by ethylene glycol. *Bone* 2010 Nov;47(5):926-37

Probiotics improve digestion and inflammatory bowel conditions in adults and infants; strengthen the immune system in adults and infants; play an important role in the prevention of superbugs and various autoimmune disorders; are more effective and safer than simethicone for colicky babies.

- *Chermesh I, Eliakim R. Probiotics and the gastrointestinal tract: where are we in 2005? *World J Gastroenterol* 2006;12:853-57
- *Duff: Probiotics at a Glance - www.innvista.com/health/nutrients/probiotics/default.htm
- *Eren et al: Clinical efficacy comparison of *Saccharomyces boulardii* and yogurt fluid in acute non-bloody diarrhea in children: a randomized, controlled, open label study. *Am J Trop Med Hyg* 2010 Mar;82(3):488-91
- *Forchielli & Walker: The role of gut-associated lymphoid tissues and mucosal defence. *Br J Nutr* 2005;93(Supp 1):S41-8
- *Gotteland et al: Systematic review: are probiotics useful in controlling gastric colonization by *Helicobacter pylori*? *Aliment Pharmacol Ther* 2006;23:1077-86
- *Guyonnet et al: Effect of a fermented milk containing *Bifidobacterium animalis* DN-173 010 on the health-related quality of life and symptoms in irritable bowel syndrome in adults in primary care: a multicentre, randomized, double-blind, controlled trial. *Aliment Pharmacol Ther.* 2007 Aug 1;26(3):475-86
- *Hajela et al: Are probiotics a feasible intervention for prevention of diarrhoea in the developing world? *Gut Pathog* 2010;2(1):10
- *Heydari et al: A comparison between traditional yogurt and probiotic yogurt in non-inflammatory acute gastroenteritis. *Saudi Med J* 2010 Mar;31(3):280-3
- *Heyman: Effect of lactic acid bacteria on diarrheal diseases. *J Am Coll Nutr* 2000;19:137S-46S
- *Hun: *Bacillus coagulans* significantly improved abdominal pain and bloating in patients with IBS. *Postgrad Med* 2009 Mar;121(2):119-24
- *Indrio et al: *Lactobacillus reuteri* accelerates gastric emptying and improves regurgitation in infants. *Eur J Clin Invest* 2011 Apr;41(4):417-22
- *Johnson-Henry et al: Probiotics reduce bacterial colonization and gastric inflammation in *H. pylori*-infected mice. *Dig Dis Sci* 2004;49:1095-102
- *Ki et al: In vitro inhibition of *Helicobacter pylori* growth and of adherence of *cagA*-positive strains to gastric epithelial cells by *Lactobacillus paraplantarum* KNUC25 isolated from kimchi. *J Med Food* 2010 Jun;13(3):629-34
- *Konieczna et al: *Bifidobacterium infantis* 35624 administration induces Foxp3 T regulatory cells in human peripheral blood: potential role for myeloid and plasmacytoid dendritic cells. *Gut* 2012 Mar;61(3):354-66
- *Kukkonen et al: Long-term safety and impact on infection rates of postnatal probiotic and prebiotic (synbiotic) treatment: randomized, double-blind, placebo-controlled trial. *Pediatrics* 2008;122(1):8-12
- *Lee et al: The effect of *Saccharomyces boulardii* on human colon cells and inflammation in rats with trinitrobenzene sulfonic acid-induced colitis. *Dig Dis Sci* 2008 Jul 10
- *Mennigen & Bruewer: Effect of probiotics on intestinal barrier function. *Ann N Y Acad Sci* 2009 May;1165:183-9
- *Mohamadzadeh & Owen: Reprogramming intestinal immunity is the answer to induced pathogenic inflammation. *Immunother* 2011 Dec;3(12):1415-7
- *Oelschlaeger: Mechanisms of probiotic actions - A review. *Int J Med Microbiol* 2010;300(1):57-62
- *Ogawa et al: Protective effect of *Lactobacillus casei* strain Shirota on Shiga toxin-producing *Escherichia coli* O157:H7 infection in infant rabbits. *Infect Immun* 2001;69:1101-8

- *Pascual et al: Lactobacillus salivarius CTC2197 prevents Salmonella enteritidis colonization in chickens. Appl Environ Microbiol 1999;65:4981-6
- *Paton et al: Designer probiotics for prevention of enteric infections. Nat Rev Microbiol 2006;4:193-200
- *Paton et al: Recombinant probiotics for treatment and prevention of enterotoxigenic Escherichia coli diarrhea. Gastroentero 2005;128:1219-28
- *Pina et al: Improvement of intestinal function in cystic fibrosis patients using probiotics. An Pediatr (Barc) 2008 Dec;69(6):501-5
- *Resta-Lenert & Barrett: Modulation of intestinal barrier properties by probiotics: role in reversing colitis. Ann N Y Acad Sci 2009 May;1165:175-82
- *Sahin et al: Effects of the probiotic agent Saccharomyces Boulardii on the DNA damage in acute necrotizing pancreatitis induced rats. Hum Exp Toxicol 2007 Aug;26(8):653-61
- *Savino et al: Lactobacillus reuteri (American Type Culture Collection Strain 55730) versus simethicone in the treatment of infantile colic: a prospective randomized study. Pediatrics 2007 Jan;119(1):e124-30
- *Sheehan et al: Improving gastric transit, gastrointestinal persistence and therapeutic efficacy of the probiotic strain Bifidobacterium breve UCC2003. Microbiol 2007;153:3563-71
- *Shornikova et al: Bacteriotherapy with Lactobacillus reuteri in rotavirus gastroenteritis. Pediatr Infect Dis J 1997;16:1103-7
- *Solis et al: Probiotics as a help in children suffering from malnutrition and diarrhoea. Eur J Clin Nutr 2002;56(Suppl 3):S57-9
- *Tursi et al: Mesalazine and/or Lactobacillus casei in maintaining long-term remission of symptomatic uncomplicated diverticular disease of the colon. Hepatogastroentero 2008 May-Jun;55(84):916-20
- *Uchida et al: Yogurt containing Lactobacillus gasseri OLL 2716 (LG21 yogurt) accelerated the healing of acetic acid-induced gastric ulcer in rats. Biosci Biotechnol Biochem 2010 Sep 23;74(9):1891-4
- *Van Niel et al: Lactobacillus therapy for acute infectious diarrhea in children: a meta-analysis. Pediatrics 2002;109:678-84
- *Vilela et al: Influence of Saccharomyces boulardii on the intestinal permeability of patients with Crohn's disease in remission. Scand J Gastroenterol 2008;43(7):842-8
- *Wu & Vallance: Saccharomyces boulardii ameliorates Citrobacter rodentium-induced colitis through actions on bacterial virulence factors. Am J Physiol Gastrointest Liver Physiol 2008 Jan;294(1):G295-306
- *Wullt et al: Lactobacillus plantarum 299v enhances the concentrations of fecal short-chain fatty acids in patients with recurrent clostridium difficile-associated diarrhea. Dig Dis Sci 2007 Sep;52(9):2082-6

Psyllium is a soluble fiber that often helps to correct digestive disorders and proves to be as effective as mesalamine (an anti-inflammatory drug) for treating ulcerative colitis.

- *Bijkerk et al: Soluble or insoluble fibre in irritable bowel syndrome in primary care? Randomised placebo controlled trial. BMJ 2009 Aug 27;339:b3154
- *Fernández-Bañares et al: Randomized clinical trial of Plantago ovata seeds (dietary fiber) as compared with mesalamine in maintaining remission in ulcerative colitis. Spanish Group for the Study of Crohn's Disease and Ulcerative Colitis (GETECCU). Am J Gastroenterol 1999 Feb;94(2):427-33
- *Karhunen et al: A psyllium fiber-enriched meal strongly attenuates postprandial gastrointestinal peptide release in healthy young adults. J Nutr 2010 Apr;140(4):737-44
- *Rodríguez-Cabezas et al: Dietary fiber down-regulates colonic tumor necrosis factor alpha and nitric oxide production in trinitrobenzenesulfonic acid-induced colitic rats. J Nutr 2002 Nov;132(11):3263-71

Psyllium, Mint, Coriander, and Lemonbalm are all effective for treating IBS (irritable bowel syndrome).

- *Vejdani et al: The efficacy of an herbal medicine, Carmint, on the relief of abdominal pain and bloating in patients with irritable bowel syndrome: a pilot study. Dig Dis Sci 2006 Aug;51(8):1501-7

Quercetin and **Vitamin E** dramatically reduce the severity of esophageal reflux and without damage to the gastrointestinal tract.

*Murakami et al: Inhibition of gastric H⁺, K⁽⁺⁾-ATPase by quercetin. J Enzyme Inhib 1992;5(4):293-8

*Venkateswara & Vijayakumar: Effect of quercetin, flavonoids and alpha-tocopherol, an antioxidant vitamin, on experimental reflux oesophagitis in rats. J Agric Food Chem 2005 Dec 28;53(26):10306-9

Red Yeast Rice is usually given to lower cholesterol levels but it can also increase bile acid excretion which helps digestion.

*Ma et al: Red yeast rice increases excretion of bile acids in hamsters. Biomed Environ Sci 2009 Aug;22(4):269-77

Reishi mushrooms speed the healing of acid-induced ulcers.

*Gao et al: Ganoderma lucidum polysaccharide fractions accelerate healing of acetic acid-induced ulcers in rats. J Med Food 2004 Winter;7(4):417-21

Resveratrol and **Piceatannol** (a metabolite of Resveratrol) are powerful antioxidants that prevent colitis and reduce the risk of colon cancer often associated with severe and prolonged colitis.

*Cui et al: Resveratrol suppresses colitis and colon cancer associated with colitis. Cancer Prev Res (Phila) 2010 Apr;3(4):549-59

*Sánchez-Fidalgo et al: Dietary supplementation of resveratrol attenuates chronic colonic inflammation in mice. Asia Pac J Clin Nutr 2010;19(1):142-50

*Singh et al: Resveratrol (trans-3,5,4'-trihydroxystilbene) induces silent mating type information regulation-1 and down-regulates nuclear transcription factor-kappaB activation to abrogate dextran sulfate sodium-induced colitis. J Pharmacol Exp Ther 2010 Mar;332(3):829-39

*Yao et al: Anti-oxidant effects of resveratrol on mice with DSS-induced ulcerative colitis. Arch Med Res 2010 May;41(4):288-94

*Youn et al: Resveratrol and piceatannol inhibit iNOS expression and NF-kappaB activation in dextran sulfate sodium-induced mouse colitis. Nutr Cancer 2009;61(6):847-54

Rooibos Tea is native to South Africa and used for centuries to relieve spasms and help calm a hyperactive gastrointestinal tract. It is safe even for babies.

*Gilani et al: Antispasmodic effects of Rooibos tea (*Aspalathus linearis*) is mediated predominantly through K⁺ -channel activation. Basic Clin Pharmacol Toxicol 2006 Nov;99(5):365-73

Sage and **Red Sage** have the same effects as PPIs but without the side effects and should not be taken with other PPIs.

*Mayer et al: Gastroprotective constituents of *Salvia officinalis* L. Fitoterapia. 2009 Oct;80(7):421-6

*Murakami et al: Effect of salvianolic acid A, a depside from roots of *Salvia miltiorrhiza*, on gastric H⁺,K⁽⁺⁾-ATPase. Planta Med 1990 Aug;56(4):360-3

Slippery elm bark is soothing to the digestive tract.

*Natural Medicines Comprehensive Database

*University of Maryland Medical Centre [www.umm.edu/altmed/articles/slippery-elm-000274.htm]

Spices improve the intestinal villi quality which is vital for proper nutrient absorption. Spices tested included black and red peppers and ginger.

*Prakash & Srinivasan: Beneficial influence of dietary spices on the ultrastructure and fluidity of the intestinal brush border in rats. Br J Nutr 2010 Feb 24;113:1-9

Spirulina is a blue-green algae derived from aquatic cyanobacteria, *Arthrospira platensis* (Africa, Asia, South America), *Arthrospira pacifica* (Hawaiian Islands) or *Arthrospira maxima* (Central America). It has long been used for its many health benefits including the prevention and healing of bowel inflammations. One reason may be its **Selenium** and **B12** content which are deficient in those with colitis.

- *Bogatov: Selenium deficiency and its dietary correction in patients with irritable bowel syndrome and chronic catarrhal colitis. *Vopr Pitan* 2007;76(3):35-9
- *Coskun et al: The study of biochemical and histopathological effects of spirulina in rats with TNBS-induced colitis. *Bratisl Lek Listy* 2011;112(5):235-43
- *Kumudha et al: Purification, identification, and characterization of methylcobalamin from *Spirulina platensis*. *J Agric Food Chem* 2010 Sep 22;58(18):9925-30

Sprouted Barley improves inflammatory bowel conditions. When grains, seeds and legumes are sprouted (germinated), the effect improves the availability of nutrients, sometimes increasing their nutrient content. The process also improves the digestion of the fiber which makes a good food source for probiotics and called prebiotics.

- *Araki et al: Germinated barley foodstuff suppresses dextran sulfate experimental colitis in rats: the role of mast cells. *Int J Mol Med* 2007 Feb;19(2):257-62
- *Hanai et al: Germinated barley foodstuff prolongs remission in patients with ulcerative colitis. *Int J Mol Med* 2004 May;13(5):643-7
- *Kanauchi et al: Treatment of ulcerative colitis by feeding with germinated barley foodstuff: first report of a multicenter open control trial. *J Gastroenterol* 2002 Nov;37 Suppl 14:67-72

Steam cooking improves the bile acid-binding effects of foods.

- *Kahlon et al: Steam cooking significantly improves in vitro bile acid binding of collard greens, kale, mustard greens, broccoli, green bell pepper, and cabbage. *Nutr Res* 2008 Jun;28(6):351-7

Teas (herbal) after a meal help digestion of adults and improves infantile colic. Drops of Essential oils can also be put into hot water and taken as a tea: Fenugreek, Fennel, Ginger, Melissa, Peppermint are the most effective either as an herbal tea or an essential oil.

- *Ghayur & Gilani: Pharmacological basis for the medicinal use of ginger in gastrointestinal disorders. *Dig Dis Sci* 2005 Oct;50(10):1889-97
- *Hu et al: Effect of ginger on gastric motility and symptoms of functional dyspepsia. *World J Gastroenterol* 2011 Jan 7;17(1):105-10
- *Nanjundiah et al: Gastroprotective Effect of Ginger Rhizome (*Zingiber officinale*) Extract: Role of Gallic Acid and Cinnamic Acid in H⁺, K⁺-ATPase/H. pylori Inhibition and Anti-oxidative Mechanism. *Evid Based Complement Alternat Med* 2009 Jul 1
- *No authors listed: Herbal remedies for dyspepsia: peppermint seems effective. *Prescrire Int* 2008 Jun;17(95):121-3
- *Prakash & Srinivasan: Beneficial influence of dietary spices on the ultrastructure and fluidity of the intestinal brush border in rats. *Br J Nutr* 2010 Feb 24;112:1-9
- *Savino et al: A randomized double-blind placebo-controlled trial of a standardized extract of *Matricaria recutita*, *Foeniculum vulgare* and *Melissa officinalis* (ColiMil) in the treatment of breastfed colicky infants. *Phytother Res* 2005 Apr;19(4):335-40
- *Yamahara et al: The anti-ulcer effect in rats of ginger constituents. *Med Hypoth* 2009 Sep;73(3):306-8
- *Yamahara et al: The anti-ulcer effect in rats of ginger constituents. *J Ethnopharmacol* 1988 Jul-Aug;23(2-3):299-304

Water safely and effectively reduces stomach acids without the use of medications. It is best to drink filtered water and not tap water.

- *Karamanolis et al: A glass of water immediately increases gastric pH in healthy subjects. *Dig Dis Sci* 2008 Dec;53(12):3128-32

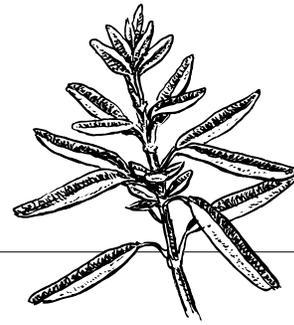
Wheatgrass juice is an effective treatment for ulcerative colitis.

- *Ben-Arye et al: Wheat grass juice in the treatment of active distal ulcerative colitis: a randomized double-blind placebo-controlled trial. *Scand J Gastroenterol* 2002 Apr;37(4):444-9

Yacón root is native to the Andes mountains and showing promise in several health areas. Its prebiotic properties have beneficial effects in treating colitis by stimulating the growth of the protiotic Lactobacillus and Bifidobacterium strains.

*Alvarez et al: Prebiotic inulin/oligofructose in Yacón root (*Smallanthus sonchifolius*), phytochemistry and standardization as basis for clinical and pre-clinical research. Rev Gastroenterol Peru 2008 Jan-Mar;28(1):22-7

ACNE



COMMON EXAMPLES:

retinoids (retinoids)

adapalene [Differin]

isotretinoin [Accutane]

tazarotene [Tazorac, Avage, Zorac]

tretinoin [Retin-A, Vesanoid]

steroid creams, lotions, ointments (see even more Depletions from that list)

Antibiotics are often prescribed (see even more Depletions from that list)

... and others

DEplete:

A, E, zinc (the very nutrients needed to improve skin conditions)

SUGGESTED ALTERNATIVES:

AVOID!

☞ **Dairy** (there are over 60 hormones in dairy including raw, organic milk) and watch the sugar/carbohydrate/fat intake

*Acne: Are Milk and Sugar the Causes? By Mark Hyman, MD, online article in the Huffington Post

*Adebamowo et al: Milk consumption and acne in teenaged boys. J Am Acad Dermatol 2008 May;58(5):787-93

*Adebamowo et al: Milk consumption and acne in adolescent girls. Dermatol Online J 2006;12(4):1

*Adebamowo et al: High school dietary dairy intake and teenage acne. J Am Acad Dermatol 2005, Feb;52(2):207-214

*James et al: Dietary polyunsaturated fatty acids and inflammatory mediator production. Am J Clin Nutr 2000 Jan;71(1 Suppl):343S-8S

*Kaymak et al: Dietary glycemic index and glucose, insulin, insulin-like growth factor-I, insulin-like growth factor binding protein 3, and leptin levels in patients with acne. J Am Acad Dermatol 2007 Nov;57(5):819-23

*Melnik et al: Evidence for acne-promoting effects of milk and other insulinotropic dairy products. Nestle Nutr Workshop Ser Pediatr Program 2011 ;67:131-45

*Smith et al: The effect of a low glycemic load diet on acne vulgaris and the fatty acid composition of skin surface triglycerides. J Dermatol Sci 2008 Jul;50(1):41-52

*Smith et al: The effect of a high-protein, low glycemic-load diet versus a conventional, high glycemic-load diet on biochemical parameters associated with acne vulgaris: a randomized, investigator-masked, controlled trial. J Am Acad Dermatol 2007 Aug;57(2):247-56

*Smith et al: A low-glycemic-load diet improves symptoms in acne vulgaris patients: a randomized controlled trial. *Am J Clin Nutr* 2007 Jul;86(1):107-15

☞ **Fast food**

*Litt: McDonald's Acne. *Arch Dermatol* 1974;110(6):956

☞ **Chocolate (high fat content)**

*Fulton et al: Effect of Chocolate on Acne Vulgaris. *JAMA* 1969;210(11):2071-2074

*Mackie and Mackie: Chocolate and Acne. *Australasian J Derma* 1974 Dec;15(3):103-109

Alternative and Complementary medicine is preferable to acne-sufferers than conventional medicine.

*Magin et al: Complementary and alternative medicine therapies in acne, psoriasis, and atopic eczema: results of a qualitative study of patients' experiences and perceptions. *J Altern Complement Med* 2006;12:451-7

Antioxidants reduce acne and skin aging. Acne can appear at any age as a result of hormonal changes, poor diet, or stress. Antioxidants improve skin conditions of all age groups and include vitamins E and C, CoQ10, alpha-lipoic acid, glutathione, and others. A diet containing plenty of fresh fruits and vegetables, fermented soy products, goji berries, flaxseed and borage oils, aloe vera, and pomegranates have proven to be important along with exercise.

*Bouroshaki et al: Protective effect of pomegranate seed oil on hexachlorobutadiene-induced nephrotoxicity in rat kidneys. *Ren Fail* 2010 Jun;32(5):612-7

*Cho et al: Dietary aloe vera supplementation improves facial wrinkles and elasticity and it increases the type I procollagen gene expression in human skin in vivo. *Ann Dermatol* 2009 Feb;21(1):6-11

*Lacroix et al: Supplementation with a complex of active nutrients improved dermal and epidermal characteristics in skin equivalents generated from fibroblasts from young or aged donors. *Gastroenterol Hepatol* 1997 Apr;20(4):172-4

*Neukam et al: Supplementation of flaxseed oil diminishes skin sensitivity and improves skin barrier function and condition. *Skin Pharmacol Physiol* 2010 Nov 18;24(2):67-74

*Puizina-Ivić: Skin aging. *Acta Dermatovenerol Alp Panonica Adriat* 2008 Jun;17(2):47-54

*Reeve et al: Mice drinking goji berry juice (*Lycium barbarum*) are protected from UV radiation-induced skin damage via antioxidant pathways. *Photochem Photobiol Sci* 2010;9:601-607

*Spirt et al: Intervention with flaxseed and borage oil supplements modulates skin condition in women. *Br J Nutr* 2009 Feb;101(3):440-5

*Wang et al: Effects of wolfberry fruit on rat's cryotolerance oxytolerance and fatigue-tolerance. *J Qiqihar Med* 2002-01

*Yoshimura et al: Inhibitory effect of an ellagic acid-rich pomegranate extract on tyrosinase activity and ultraviolet-induced pigmentation. *Biosci Biotechnol Biochem* 2005 Dec;69(12):2368-73

Beta carotene (vitamin A) and **Vitamin E** play important roles in reducing and preventing acne.

*El-Akawi et al: Does the plasma level of vitamins A and E affect acne condition? *Clin Exp Dermatol* 2006 May;31(3):430-4

*Labadarios et al: Vitamin A in acne vulgaris. *Clin Exp Dermatol* 1987;12:432-6

Brewer's Yeast (*Saccharomyces cerevisiae*) is not the same as *Candida* yeast and, therefore, a beneficial food high in trace nutrients, especially the B-vitamins.

*Weber et al: Treatment of acne with a yeast preparation. *Fortschr Med* 1989 Sep 10;107(26):563-6

Diet changes toward proper nutrition are crucial – which will not only help acne but mood and depression as well which often go hand-in-hand with acne. Good nutrition is vital for any age but especially for teens who are going through hormonal changes.

- *Adebamowo et al: High school dietary dairy intake and teenage acne. J Am Acad Dermatol 2005 Feb;52(2):207-14
- *Anderson: Foods as the cause of acne. Am Fam Physician 1971 Mar;3(3):102-3
- *Cordain, PhD: Implications for the Role of Diet in Acne. Seminars in Cutaneous Medicine and Surgery 2005 June;24(2):84-91
- *Cordain et al: Diet and Acne Revisited. Arch Dermatol 2002;138(12):1591-1592
- *Cordain et al: Acne vulgaris: a disease of Western civilization. Arch Dermatol 2002 Dec;138(12):1584-90
- *Danby: Nutrition and acne. Clinics in Dermatol 2010;28:598-604
- *Logan et al: Dietary fat, fiber, and acne vulgaris. J Am Acad Derma 2007;57(6):1092-93
- *Rasmussen et al: Diet and Acne. Inter J Derma 1977 Jul;16(6):488-92
- *Smith et al: The effect of a high-protein, low glycemic-load diet versus a conventional, high glycemic-load diet on biochemical parameters associated with acne vulgaris: A randomized, investigator-masked, controlled trial. J Am Acad Derma 2007 Aug;57(2):247-256
- *Spencer et al: Diet and acne: a review of the evidence. Int J Dermatol 2009 Apr;48(4):339-47
- *Wolf et al: Acne and diet. Clinic Derma 2004 Sep-Oct;22(5):387-393

Echinacea is an herb well-known for its immune-boosting antimicrobial properties. It reduces acne by inhibiting bacterial-induced inflammation.

- *Sharma et al: The potential use of Echinacea in acne: control of Propioni bacterium acnes growth and inflammation. Phytother Res 2010 Sep 9

EGCG (epigallocatechin-3-gallate) is a potent antioxidant found in Green Tea that can improve hormone-induced acne.

- *Shaw: Green tea polyphenols may be useful in the treatment of androgen-mediated skin disorders. Arch Dermatol 2001;137:664
- *Vignes et al: Anxiolytic properties of green tea polyphenol (-)-epigallocatechin gallate (EGCG). Brain Res 2006;1110:102-15

Essential oils are potent antimicrobials that can be applied topically to reduce acne infections: Basil, Rosemary, and Tea Tree (Melaleuca).

- *Bassett et al: A comparative study of tea-tree oil versus benzoylperoxide in the treatment of acne. Med J Aust 1990 Oct 15;153(8):455-8
- *Fu et al: Investigation of antibacterial activity of rosemary essential oil against Propioni bacterium acnes with atomic force microscopy. Planta Med 2007 Oct;73(12):1275-80
- *Sharquie et al: Treatment of acne vulgaris with 2% topical tea lotion. Saudi Med J 2006 Jan;27(1):83-5
- *Viyoch et al: Evaluation of in vitro antimicrobial activity of Thai basil oils and their micro-emulsion formulas against Propionibacterium acnes. Br J Nutr 2005 Jan;93(1):81-91

Green tea lotion is an inexpensive but an effective topical treatment for acne.

- *Elsaie et al: The efficacy of topical 2% green tea lotion in mild-to-moderate acne vulgaris. J Drugs Dermatol 2009 Apr;8(4):358-64

Guggul is an Ayurvedic herb often used to control Cholesterol levels but it is proving useful in treating difficult cystic acne better than tetracycline.

- *Thappa and Dogra: Nodulocystic acne: oral guggulipid versus tetracycline. J Derma 1994 Oct;21(10):729-31

Homeopathic Medicines can successfully treat acne.

- *Itamura et al: Effect of homeopathic treatment of 60 Japanese patients with chronic skin disease. Compl Therap Med 2007 June;15(2):115-120

Hops is an herb used in the brewing industry and often used as a calming agent but it also prevents acne-causing bacteria.

*Yamaguchi et al: In vitro evaluation of antibacterial, anticollagenase, and antioxidant activities of hop components (*Humulus lupulus*) addressing acne vulgaris. *Phytomed* 2009 Apr;16(4):369-76

Licorice root has better effects in reducing bacterial-induced acne than erythromycin.

*Nam et al: Anti-acne effects of Oriental herb extracts: a novel screening method to select anti-acne agents. *Mol Nutr Food Res* 2008 Jul 24

Mangosteen is a fruit that has free radical-scavenging properties and anti-acne effects.

*Pothitirat et al: Anti-acne-inducing bacterial activity of mangosteen fruit rind extracts. *Med Princ Pract* 2010;19(4):281-6

Melatonin is often thought of as being just for inducing sleep but it has so many other functions including the improvement of skin conditions.

*Eşrefoğlu et al: Potent therapeutic effect of melatonin on aging skin in pinealectomized rats. *J Pineal Res* 2005 Oct;39(3):231-7

Minerals, especially **Zinc** [internal and topical], **Selenium**, **Chromium**, **Potassium**, and **Copper** along with **B vitamins** improve acne and other skin conditions as well as relieving some of the depression that often accompanies the condition.

*Benton: Selenium intake, mood and other aspects of psychological functioning. *Nutr Neurosci* 2002;5:363-74

*Davidson et al: Effectiveness of chromium in atypical depression: a placebo-controlled trial. *Bio Psych* 2003;53:261-4

*Dreno et al: Effect of zinc gluconate on propionibacterium acnes resistance to erythromycin in patients with inflammatory acne: in vitro and in vivo study. *Eur J Dermatol* 2005;15:152-5

*Dreno et al: Low doses of zinc gluconate for inflammatory acne. *Acta Derm Venereol* 1989;69(6):541-3

*Katzman & Logan: Acne vulgaris: nutritional factors may be influencing psychological sequelae. *Med Hypoth* 2007;69:1080-4

*Levenson: Zinc: the new antidepressant? *Nutr Rev* 2006;64:39-42

*Loney et al: Not just 'skin deep': psychosocial effects of dermatological-related social anxiety in a sample of acne patients. *J Health Psychol* 2008;13:47-54

*McCarty: High-chromium yeast for acne? *Med Hypoth* 1984;14:307-10

*Micaelsson: Decreased concentration of selenium in whole blood and plasma in acne vulgaris. *Acta Derm Venereol* 1990;70:92

*Niren & Torok: The nicomide improvement in clinical outcomes study (NICOS): results of an 8-week trial. *Cutis* 2006 Jan;77(1 Suppl):17-28

*Ronald & Cochran: Topical zinc therapy for acne vulgaris. *Inter J Derma* 1985 Apr;24(3):188-190

*Thomas: Psychosocial effects of acne. *J Cutan Med Surg* 2004;8(Suppl 4):3-5

*Verma et al: Oral zinc sulphate therapy in acne vulgaris: a double-blind trial. *Acta Derm Venereol* 1980;60(4):337-40

Niacinamide (a form of niacin, B3) and **Glucosamine** improve acne, rosacea, and skin discolorations (hyperpigmentation).

*Bissett et al: Reduction in the appearance of facial hyperpigmentation by topical N-acetyl glucosamine. *J Cosmet Dermatol* 2007 Mar;6(1):20-6

*Niren & Torok: The nicomide improvement in clinical outcomes study (NICOS): results of an 8-week trial. *Cutis* 2006 Jan;77(1 Suppl):17-28

Omega-3 fatty acids (flax or fish oils, sacha inchi seeds) reduce acne inflammation sometimes caused by a diet that is too high in omega-6. Omega-3 also improves the depression often associated with the condition.

- *Conklin et al: High omega-6 and low omega-3 fatty acids are associated with depressive symptoms and neuroticism. *Psychosom Med* 2007;69:932-4
- *Fontani et al: Cognitive and physiological effects of Omega-3 polyunsaturated fatty acid supplementation in healthy subjects. *Eur J Clin Invest* 2005;35:691-9
- *Freeman et al: Omega-3 fatty acids: evidence basis for treatment and future research in psychiatry. *J Clin Psych* 2006;67:1954-67
- *Logan: Linoleic and linolenic acids and acne vulgaris. *Br J Dermatol* 2008;158:201-2
- *Logan et al: Omega-3 fatty acids and acne. *Arch Dermatol* 2003 Jul;139(7):941-2
- *Rubin et al: Acne vulgaris, mental health and omega-3 fatty acids: a report of cases. *Lipids in Health and Disease* 2008;7:36

Prebiotic makeup is far healthier for the skin than chemically-laden popular antibiotic brands.

- *No authors listed: Prebiotic cosmetics: an alternative to antibacterial products. *Int J Cosmet Sci.* 2007;29(1):63-4

Probiotics and **Fiber** promote healthy immune and digestive systems which in turn, reduce the risk of developing acne and other skin problems.

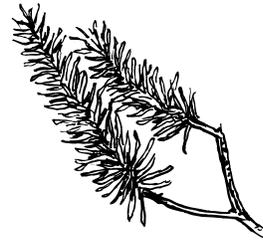
- *Al-Ghazzewi & Tester: Effect of konjac glucomannan hydrolysates and probiotics on the growth of the skin bacterium *Propionibacterium acnes* in vitro. *Internl J Cosmet Sci* 2010 Apr;32(2):139-42
- *Bowe and Logan: Acne vulgaris, probiotics and the gut-brain-skin axis - back to the future? *Gut Pathog* 2011;3(1):1
- *Kim et al: Dietary effect of lactoferrin-enriched fermented milk on skin surface lipid and clinical improvement of acne vulgaris. *Nutr* 2010 Sept;26(9):902-9
- *Krutmann et al: Pre- and probiotics for human skin. *J Dermatol Sci* 2009 Apr;54(1):1-5
- *Ouwehand et al: Probiotics: an overview of beneficial effects. *Antonie van Leeuwenhoek* 2002 Aug;82(1-4):279-89

Resveratrol is a potent antioxidant found mainly in the skins of red grapes and can be used topically or internally to treat acne. All antioxidants help a variety of health issues by preventing the damaging effects of free radicals.

- *Coenye et al: Eradication of *Propionibacterium acnes* biofilms by plant extracts and putative identification of icariin, resveratrol and salidroside as active compounds. *Phytomed* Available online 1 February 2012
- *Docherty et al: Resveratrol inhibition of *Propionibacterium acnes*. *J Antimicrob Chemother* 2007;59(6):1182-84
- *Fabbrocini et al: Resveratrol-containing gel for the treatment of acne vulgaris: a single-blind, vehicle-controlled, pilot study. *Am J Clin Dermatol* 2011 Apr 1;12(2):133-41

Vitamin D3 is actually a pre-hormone which might explain its success in improving several hormonal issues including acne. D3 can be obtained from the sun or supplements and significantly improves the immune system. Avoid using D2 as it has different action in the body and one the body cannot utilize as efficiently as D3.

- *Berg: Epidemiological studies of the influence of sunlight on the skin. *Photodermatol* 1989 Apr;6(2):80-4
- *Haussler et al: Molecular biology of the vitamin D hormone. *Recent Prog Horm Res* 1988;44:263-305
- *Silverberg & Weinberg: Rosacea and adult acne: a worldwide epidemic. *Cutis* 2001;68:85
- *Wootton: Improving the Measurement of 25-hydroxyvitamin D. *Clin Biochem Rev* 2005 Feb;26(1):33-36



ADHD/NARCOLEPSY

(USED TO TREAT ATTENTION DEFICIT HYPERACTIVITY DISORDER [AN AUTISM SPECTRUM DISORDER] AND NARCOLEPSY [A SLEEP DISORDER])

COMMON EXAMPLES:

amphetamines – Adderall, and others

dextroamphetamines – Dexedrine, DextroStat, and others

lisdexamfetamine – Vyvanse

methamphetamines – (illegal but in the same class of drugs used for ADHD)

methylphenidate – Concerta, Daytrana, Metadate, Methylin, **Ritalin**, others

modafinil – Alertec, Provigil, Sparlon, Vigicer, and others

pemoline – Cylert

DEplete:

B6, B7, C, D, E, magnesium, zinc, tyrosine

☞ **For over forty years**, I have witnessed transformations in dozens of children, including my own, simply with diet changes. Despite knowing that this would make a difference in their child, far too many parents are unwilling to make the necessary changes.

*Chaves-Carballo: Diet therapy in the treatment of neuropsychiatric disorders. Rev Neurol 2003 Aug 1-15;37(3):267-74

☞ **ADHD drugs** often hurt more than help.

*Death by Ritalin: The Truth Behind ADHD. National Alliance Against Mandated Mental Health Screening and Psychiatric Drugging of Children - www.ritalindeath.com/

*Gualtieri and Johnson: Medications do not necessarily normalize cognition in ADHD patients. J Atten Disord 2008 Jan;11(4):459-69

*Marks: Cardiomyopathy due to ingestion of Adderall. Am J Ther 2008 May-Jun;15(3):287-9

*Moore et al: Prescription drugs associated with reports of violence towards others. "RESULTS: We identified 1527 cases of violence disproportionately reported for 31 drugs." PLoS One 2010;5(12):e15337

*Pliszka et al: Comparative effects of methylphenidate and mixed salts amphetamine on height and weight in children with attention-deficit/hyperactivity disorder. J Am Acad Child Adolesc Psychiatry 2006 May;45(5):520-6

*Smith et al: Cardiomyopathy associated with amphetamine administration. Am Heart J 1976;91(6):792-7

☞ **Anesthesia drugs** for surgical procedures are linked to a significant increased risk for post-ADHD and brain damage.

*Sprung et al: Attention-Deficit/Hyperactivity Disorder after early exposure to procedures requiring general anesthesia. *Mayo Clinic Proceedings* 2012 Feb;87(2):120-129

☞ **Drugs have little effect but alternatives do and without the side effects.**

*Arnold: Alternative treatments for adults with attention-deficit hyperactivity disorder (ADHD). *Ann N Y Acad Sci* 2001 Jun;931:310-41

*Cala et al: A survey of herbal use in children with ADHD or depression. *Pharmacotherapy* 2003 Feb;23(2):222-30

*Chan et al: Complementary and alternative therapies in childhood attention and hyperactivity problems. *J Dev Behav Pediatr* 2003 Feb;24(1):4-8

*Harding et al: Outcome-based comparison of Ritalin versus food-supplement treated children with AD/HD. *Altern Med Rev* 2003, Aug;8(3):319-30

*Kidd: Attention deficit/hyperactivity disorder (ADHD) in children: rationale for its integrative management. *Altern Med Rev* 2000;5(5):402-28

*Schoenthaler and Bier: The effect of vitamin-mineral supplementation on juvenile delinquency among American schoolchildren: a randomized, double-blind placebo-controlled trial. *J Altern Complement Med* 2000 Feb;6(1):7-17

*Sinha and Efron: Complementary and alternative medicine use in children with ADHD. *J Paediatr Child Health* 2005 Jan/Feb;41(1-2):23-6

☞ **Ritalin acts like cocaine.**

*Vastag: Pay attention: ritalin acts much like cocaine. *JAMA* 2001 Aug 22-29;286(8):905-6

☞ **Sugar and sugar substitutes also act like drugs. Aspartame, in particular, is linked to certain mental disorders and compromised learning and emotional functioning.**

*Avena et al: Sugar-dependant rats show enhanced responding for sugar after abstinence: Evidence of a sugar deprivation effect. *Physio Behav* 2005;84:359-362

*Humphries et al: Direct and indirect cellular effects of aspartame on the brain. *Eur J Clin Nutr* 2008 Apr;62(4):451-62

*Rada et al: Daily bingeing on sugar repeatedly releases dopamine in the accumbens shell. *Neurosc* 2005;134:737-744

*Weil & Rosen: *Chocolate to morphine: Understanding mind-active drugs.* 1983

*Wender and Solanto: Effects of sugar on aggressive and inattentive behavior in children with attention deficit disorder with hyperactivity and normal children. *Pediatrics* 1991 Nov;88(5):960-6

*Wolraich et al: Effects of diets high in sucrose or aspartame on the behavior and cognitive performance of children. *N Engl J Med* 1994 Feb 3;330(5):301-7

☞ **Food colouring and preservatives affect behavior, liver toxicity, and the digestive tract in ADHD children.**

*Ashida et al: Synergistic effects of food colors on the toxicity of 3-amino-1,4-dimethyl-5H-pyrido[4,3-b]indole (Trp-P-1) in primary cultured rat hepatocytes. *J Nutr Sci Vitaminol (Tokyo)* 2000 Jun;46(3):130-6

*Bateman et al: The effects of a double blind, placebo controlled, artificial food colourings and benzoate preservative challenge on hyperactivity in a general population sample of preschool children. *Arch Dis Child* 2004 Jun;89(6):506-11

*Berdonces: Attention deficit and infantile hyperactivity. *Rev Enferm* 2001 Jan;24(1):11-4

*Boris and Mandel: Foods and additives are common causes of the attention deficit hyperactive disorder in children. *Ann Allergy* 1994 May;72(5):462-8

*Connors et al: Food additives and hyperkinesis: a controlled double-blind experiment. *Pediatr* 1976 Aug;58(2):154-66

*Howard et al: ADHD is associated with a "Western" dietary pattern in adolescents. *J Attn Dis* 2010 Jul 14

*McCann et al: Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children

in the community: a randomised, double-blinded, placebo-controlled trial. *Lancet* 2007 Nov 3;370(9598):1560-7

- *Mizutani: Toxicity of xanthene food dyes by inhibition of human drug-metabolizing enzymes in a noncompetitive manner. *J Environ Public Health* 2009;2009:953952
- *Moutinho et al: Prolonged use of the food dye tartrazine (FD&C yellow no 5) and its effects on the gastric mucosa of Wistar rats. *Braz J Biol* 2007 Feb;67(1):141-5
- *No authors listed: Artificial food colouring and hyperactivity symptoms in children. *Prescrire Int* 2009 Oct;18(103):215
- *Park et al: Risk assessment for the combinational effects of food color additives: neural progenitor cells and hippocampal neurogenesis. *J Toxicol Environ Health A* 2009;72(21-22):1412-23
- *Rowe and Rowe: Synthetic food coloring and behavior, a dose response effect in a double-blind, placebo controlled, repeated-measures study. *J Pediatr* 1994 Nov;125(5 Pt1):691-8
- *Schab and Trinh: Do artificial food colors promote hyperactivity in children with hyperactive syndromes? A meta-analysis of double-blind placebo-controlled trials. *J Dev Behav Pediatr* 2004 Dec;25(6):423-34
- *Tanaka et al: Effects of tartrazine on exploratory behavior in a three-generation toxicity study in mice. *Reprod Toxicol* 2008 Oct;26(2):156-63
- *Tanaka: Reproductive and neurobehavioural toxicity study of tartrazine administered to mice in the diet. *Food Chem Toxicol* 2006 Feb;44(2):179-87
- *Tsuda et al: DNA damage induced by red food dyes orally administered to pregnant and male mice. *Toxicol Sci* 2001 May;61(1):92-9

⌘ **Environmental triggers** can aggravate ADHD including chemicals and pollutants, molds, heavy metals, vaccines, and nutritional deficiencies.

- *Blaylock: A possible central mechanism in autism spectrum disorders, part 1. *Altern Ther Health Med* 2008 Nov-Dec;14(6):46-53
- *Rice: Parallels between ADHD and behavioral deficits produced by neurotoxic exposure in monkeys. *Environ Health Perspect* 2000 Jun;108 Suppl 3:405-8
- *Richmand: Hypothesis: Conjugate vaccines may predispose children to autism spectrum disorders. *Med Hypotheses* 2011 Oct 10
- *Singh: Phenotypic expression of autoimmune autistic disorder (AAD): a major subset of autism. *Ann Clin Psych* 2009 Jul-Sep;21(3):148-61

SUGGESTED ALTERNATIVES:

Amino Acids are protein building blocks. Several are essential for autism spectrum children and include Glutamine, Arginine, and Taurine. Such deficiencies are often seen as salt cravings. According to this study, “Several interventions offer promise: (a) taurine to suppress vasopressin and replenish astrocytes; (b) glutamine as fuel for intestines and brain; (c) arginine to spare glutamine, detoxify ammonia, and increase brain blood flow; and (d) oral rehydration salts to compensate dilutional hyponatremia.” NOTE: Rehydration salts can be made simply by mixing **coloured** sea salt (not white) with pure water. Coloured sea salt contains all trace minerals and not just sodium chloride found in the processed white version.

- *Good: Do salt cravings in children with autistic disorders reveal low blood sodium depleting brain taurine and glutamine? *Med Hypoth* 2011 Sep 16

Antioxidants, such as Carnosine and Vitamin C, significantly reduce oxidative stress common in the autism spectrum children. Carnosine is produced in the body from two amino acids - alanine and histidine.

- *McGinnis: Oxidative stress in autism. *Altern Ther Health Med* 2004 Nov-Dec;10(6):22-36; quiz 37, 92

Carnitine is a non-essential amino acid that boosts brain energy while reducing impulse behaviour.

*Adriani et al: Acetyl-L-carnitine reduces impulsive behaviour in adolescent rats. *Psychopharma* 2004 Nov;176(3-4):296-304

*Torrioli et al: A double-blind, parallel, multicenter comparison of L-acetylcarnitine with placebo on the attention deficit hyperactivity disorder in fragile X syndrome boys. *Am J Med Genet A* 2008 Apr 1;146(7):803-12

*Van Oudheusden & Scholte: Efficacy of carnitine in the treatment of children with attention-deficit hyperactivity disorder. *Prostaglandins Leukot Essent Fatty Acids* 2002 Jul;67(1):33-8

Chamomile is an herb well-known for its calming effect.

*Niederhofer: Observational study: *Matricaria chamomilla* may improve some symptoms of attention-deficit hyperactivity disorder. *Phytomed* 2009 Apr;16(4):284-6

Digestive enzymes at every meal. While digestive enzymes high in proteases do help, the Enzymedica brand does make a significant difference in autistic children, including ADHD which is a part of the spectrum. As a result of their effectiveness, the company has joined forces with the autism community in the USA.

*www.enzymedicablog.com/category/autism-and-digestive-enzymes/from-the-front-lines-of-autism/

*see Reference section for books by Bock, Bohager, Buckley, McCarthy and Matthews

Flax oil (omega-3) and **Vitamin C** significantly improve behavioral symptoms of ADHD.

*Joshi et al: Supplementation with flax oil and vitamin C improves the outcome of Attention Deficit Hyperactivity Disorder (ADHD). *Prostaglandins Leukot Essent Fatty Acids* 2006 Jan;74(1):17-21

Ginseng and **Ginkgo biloba** are herbs that improve ADHD symptoms.

*Lyon et al: Effect of the herbal extract combination *Panax quinquefolium* and *Ginkgo biloba* on attention-deficit hyperactivity disorder: a pilot study. *J Psychiatry Neurosci* 2001 May;26(3):221-8

Glutathione deficiency is often found in autism spectrum kids. Glutathione, the “master antioxidant”, is vital for the liver’s ability to detoxify heavy-metals and metabolize nutrients. Glutathione can be stimulated in the body by such substances as Whey protein, Alpha-lipoic acid, Arginine, and Selenium. It has poor absorption as a stand-alone supplement.

*McCarthy (an excellent description on glutathione function by Dr. Jerry Kartzinel on pp 206-15)

*see Reference section for books by Bock, Buckley and Matthews

Gluten- and **Dairy-free diet** improve ADHD symptoms as well as accompanying digestive issues.

*Whiteley et al: The ScanBrit randomised, controlled, single-blind study of a gluten- and casein-free dietary intervention for children with autism spectrum disorders. *Nutr Neurosci* 2010 Apr;13(2):87-100

*see Reference section for books by Bock, Buckley, McCarthy and Matthews

Goji berries/Wolfberry have significant prenatal effects on the later cognitive abilities of the offspring. They also have a neuroprotective effects and improve eyesight.

*Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Alt Compl Med* 2008 May;14(4):403-12

*Feng et al: A milk-based wolfberry preparation prevents prenatal stress-induced cognitive impairment of offspring rats, and inhibits oxidative damage and mitochondrial dysfunction in vitro. *Neurochem Res* 2010 Feb 5

- *Yu et al: Neuroprotective effects of anti-aging oriental medicine Lycium barbarum against beta-amyloid peptide neurotoxicity. *Exp Gerontol* 2005 Aug-Sep;40(8-9):716-27

Healthy Lifestyle Changes are being effectively used by many parents as a first-line treatment for ADHD symptoms.

- *Attention deficit hyperactivity disorder - Other Treatments. U Maryland Med Center online
- *Bosmier: Health lifestyle changes are being used by many parents as first-line ADHD treatment. *NaturalNews*, January 31, 2012
- *Children With ADHD Benefit from Healthy Lifestyle Options as First-Line Treatment. *ScienceDaily*, January 24, 2012

Iron deficiency occurs in over 80% of ADHD kids. Iron is a vital mineral responsible for producing proper dopamine neurotransmission in the brain which is responsible for healthy central nervous system function.

- *Konofal et al: Iron deficiency in children with ADHD. *Arch Pediatr Adolesc Med* 2004 Dec;158(12):1113-5
- *Konofal et al: Effects of iron supplementation on attention deficit hyperactivity disorder in children. *Pediatr Neurol* 2008 Jan;38(1):20-6

Magnesium and B6 boost low serotonin levels and improves autistic/ADHD symptoms.

- *Mousain-Bosc et al: Magnesium Vit B6 intake reduces central nervous system hyperexcitability in children. *J Am Coll Nutr* 2004 Oct;23(5):545S-8S
- *Mousain-Bosc et al: Improvement of neurobehavioral disorders in children supplemented with magnesium-vitamin B6. II. Pervasive developmental disorder-autism. *Magnes Res* 2006 Mar;19(1):53-62
- *Strambi et al: Magnesium profile in autism. *Int J Neurosci* 2008 Jan;118(1):59-77
- *Starobrat-Hermelin et al: The effects of magnesium physiological supplementation on hyperactivity in children with ADHD. Positive response to magnesium oral loading test. *Magnes Res* 1997 Jun;10(2):149-56

Melatonin is a safe treatment for sleep disturbances in autistic/ADHD children.

- *Paavonen et al: Effectiveness of melatonin in the treatment of sleep disturbances in children with Asperger disorder. *Pharmacoepidemiol Drug Saf* 2009 Dec;18(12):1143-9
- *Wasdell et al: A randomized, placebo-controlled trial of controlled release melatonin treatment of delayed sleep phase syndrome and impaired sleep maintenance in children with neurodevelopmental disabilities. *J Pineal Res* 2008 Jan;44(1):57-64

Omega-3 fatty acids (flax or fish oils, sacha inchi seeds) significantly improves behaviour, attention, and focus.

- *Bélanger et al: Omega-3 fatty acid treatment of children with attention-deficit hyperactivity disorder: A randomized, double-blind, placebo-controlled study. *Paediatr Child Health* 2009 Feb;14(2):89-98
- *Haag: Essential fatty acids and the brain. *Can J Psychiatry* 2003 Apr;48(3):195-203
- *Hirayama et al: Effect of docosahexaenoic acid-containing food administration on symptoms of ADHD - a placebo-controlled double-blind study. *Eur J Clin Nutr* 2004 Mar;58(3):467-73
- *Johnson et al: Omega-3/omega-6 fatty acids for attention deficit hyperactivity disorder: a randomized placebo-controlled trial in children and adolescents. *J Atten Disord* 2009 Mar;12(5):394-401
- *Joshi et al: Supplementation with flax oil and vitamin C improves the outcome of Attention Deficit Hyperactivity Disorder (ADHD). *Prostaglandins Leukot Essent Fatty Acids* 2006 Jan;74(1):17-21
- *Richardson & Puri: The potential role of fatty acids in attention-deficit/hyperactivity disorder. *Prostaglandins Leukot Essent Fatty Acids* 2000 Jul-Aug;63(1-2):79-87
- *Sinn: Physical fatty acid deficiency signs in children with ADHD symptoms. *Prostaglandins Leukot Essent Fatty Acids* 2007 Aug;77(2):109-15

- *Sorgi et al: Effects of an open-label pilot study with high-dose EPA/DHA concentrates on plasma phospholipids and behavior in children with attention deficit hyperactivity disorder. *Chem Biol Interact* 2008 Nov 25;176(2-3):121-8
- *Stevens et al: EFA supplementation in children with inattention, hyperactivity, and other disruptive behaviors. *Lipids* 2003 Oct;38(10):1007-21
- *Vaisman et al: Correlation between changes in blood fatty acid composition and visual sustained attention performance in children with inattention: effect of dietary n-3 fatty acids containing phospholipids. *Am J Clin Nutr* 2008 May;87(5):1170-80
- *Voigt et al: A randomized, double-blind, placebo-controlled trial of docosahexanoic acid supplementation in children with ADHD. *J Pediatr* 2001 Aug;139(2):189-96

Phospholipids (lecithin, phosphatidylcholine, phosphatidylserine) are fatty molecules that are required by all cells for proper functioning and often deficient in autism-spectrum children. Natural food sources include fatty nuts, seeds, and plants but avoid the trans fats found in processed foods.

- *Wiest et al: Plasma fatty acid profiles in autism: a case-control study. *Prostaglandin Leukot Ess Fat Acid* 2009 Apr;80(4):221-7
- *see References for books by Bock and Matthews
- *Hirayama et al: Effect of phosphatidylserine administration on symptoms of attention-deficit/hyperactivity disorder in children. *Agro Food Indust* 2006, Sept/Oct:17(5):32-36
- *Jin et al: Striatal neuronal loss or dysfunction and choline rise in children with ADHD: a 1H-magnetic resonance spectroscopy study. *Neurosci Lett* 2001 Nov 23;315(1-2):45-8
- *Jorissen et al: The influence of soy-derived phosphatidylserine on cognition in age-associated memory impairment. *Nutr Neurosci* 2001;4(2):121-34
- *Manor et al: Efficacy and safety of N-3 phosphatidylserine in children with attention deficit and hyperactivity disorder (ADHD). *Eur Psych* 2009;24(1):S12
- *Manora et al: The effect of phosphatidylserine containing Omega3 fatty-acids on attention-deficit hyperactivity disorder symptoms in children: A double-blind placebo-controlled trial, followed by an open-label extension. *Eur Psych* online July 31, 2011

Probiotics in high doses and multiple strains improve digestion, the immune system and brain function.

- *see References for books by Bock, Bohager, Buckley, McCarthy, and Matthews

Protein (good quality and easy to digest forms) enhances mental function while minimizing ADHD symptoms. Adding probiotics and digestive enzymes also improve digestion and absorption of all foods but especially proteins.

- *Zavala et al: Imbalance of plasma amino acids in patients with autism and subjects with ADHD. *Rev Neurol* 2001 Sep 1-15;33(5):401-8

Pycnogenol is an antioxidant derived from pine bark that has numerous health benefits including modifying ADHD behaviour.

- *Dvoráková et al: The effect of polyphenolic extract from pine bark, Pycnogenol on the level of glutathione in children suffering from attention deficit hyperactivity disorder (ADHD). *J Interferon Cytokine Res* 2010 Oct 15
- *Dvoráková et al: Urinary catecholamines in children with attention deficit hyperactivity disorder (ADHD): modulation by a polyphenolic extract from pine bark (pycnogenol). *Nutr Neurosci* 2007 Jun-Aug;10(3-4):151-7
- *Rohdewald: A review of the French maritime pine bark extract (Pycnogenol), a herbal medication with a diverse clinical pharmacology. *Int J Clin Pharmacol Ther* 2002 Apr;40(4):158-68
- *Třebatická et al: Treatment of ADHD with French maritime pine bark extract, Pycnogenol. *Eur Child Adolesc Psychiatry* 2006 Sep;15(6):329-35

Vitamins and Minerals are especially important for ADHD kids (Bock; Buckley; McCarthy; Matthews). They act as co-factors for enzymes. In other words, without either, the other does not work. DO NOT use gummies or Centrum-type vitamins as these contain sugars and colours with little nutrient value, and worse yet, often cause a deterioration in a child's behaviour. Some recommended companies that formulate vitamins and minerals especially for kids within the autism spectrum include:

- *BrainChild Nutritionals - brainchildnutritionals.com/
- *Kirkman Labs - www.kirkmanlabs.com/
- *Metagenics - www.metagenics.com/
- *New Beginnings Nutritionals - www.nbnus.com/
- *Nordic Naturals - www.nordicnaturals.com/

Zinc is an important mineral for producing neurotransmitters and metabolising dopamine and fatty acids.

- *Arnold et al: Does zinc moderate essential fatty acid and amphetamine treatment of ADHD? *J Child Adolesc Psychopharmacol* 2000;10(2):111-7
- *Bekaroglu et al: Relationships between serum-free fatty acids and zinc, and ADHD: a research note. *J Child Psychol Psych* 1996 Feb;37(2):225-7
- *Bhagavan et al: The effect of pyridoxine hydrochloride on blood serotonin and pyridoxal phosphate contents in hyperactive children. *Pediatrics* 1975 Mar;55(3):437-41
- *Bilici et al: Double-blind, placebo-controlled study of zinc sulfate in the treatment of attention deficit hyperactivity disorder. *Prog Neuropsychopharmacol Biol Psych* 2004 Jan;28(1):181-90
- *Yorbik et al: Potential effects of zinc on information processing in boys with attention deficit hyperactivity disorder. *Prog Neuropsychopharmacol Biol Psych* 2008 Apr 1;32(3):662-7

FOR NARCOLEPSY

L-Tyrosine is an amino acid that appears to help with this sleep disorder. Like B-vitamins, single amino acids should be taken in combination with others. Therefore, if adequate protein is being consumed, then adding taurine along with digestive enzymes high in proteases can increase absorption and related effectiveness.

- *Roufs: L-tyrosine in the treatment of narcolepsy. *Med Hypotheses* 1990 Dec;33(4):269-73
- *Mouret et al: Treatment of narcolepsy with L-tyrosine. *J Ethnopharmacol* 2009 Nov 12;126(2):308-13

Low-carbohydrate diet is sometimes effective but use wisdom. Good carbohydrates include whole grains and fresh fruit and vegetables. Carbohydrates are necessary for energy so choose whole foods as opposed to processed ones. In other words, do not count calories but look at the quality of the food rather than the quantity.

- *Husain et al: Diet therapy for narcolepsy. *Neurology* 2004 Jun 22;62(12):2300-2

ALCOHOL



DEPLETES:

A, B1, B2, B3, B5, B6, B7, B9, B12, C, D, E, EFAs, choline, calcium, chromium, glutathione/NAC, iron, magnesium, phosphorus, potassium, selenium, zinc, melatonin, good intestinal bacteria

☞ Known as the sixth food group to many people, Alcohol impairs the mind and the body but, here, I am only addressing nutrient losses. Alcohol, even in small amounts and at the very least, affects the liver's ability to produce digestive enzymes thus **preventing the absorption of all nutrients**. Those who consume alcohol on a regular basis, rapidly become nutrient deficient with the predictable consequence of developing diseases and disorders as well as causing Fetal Alcohol Syndrome in a developing fetus.

*Bode: Effect of alcohol consumption on the gut. Best Pract Res Clin Gastroenter 2003 Aug;17(4):575-92

*Dreosti: Nutritional factors underlying the expression of the fetal alcohol syndrome. Ann NY Acad Sci 1993 Mar;678:193-204

*Eckardt et al: Health hazards associated with alcohol consumption. JAMA 1981;246(6):648-66

*Lieber: Relationships between Nutrition, Alcohol Use and Liver Disease. Alcoh Res Health 2003;27

*Lieber: Alcohol: its metabolism and interaction with nutrients. Ann Rev Nutr 2000 July;20:395-430

*Manzo et al: Nutrition and alcohol neurotoxicity. Neurotoxicol 1994;15(3):555-65

☞ **Alcohol, Caffeine and Smoking** often go together with the trio decreasing fertility; increasing miscarriages and stillbirths; and significantly increasing the risk of pancreatic disease and ultimately, diabetes.

*Braganza: Pancreatic disease: a casualty of hepatic "detoxification"? Lancet 1983 Oct 29;2(8357):1000-3

*Florack et al: Cigarette smoking, alcohol consumption, and caffeine intake and fecundability. Prevent Med 1994;23(2):175-80

*Kerr et al: Effect of caffeine on the recognition of and responses to hypoglycemia in humans. Ann Intern Med 1993 Oct 15;119(8):799-804

*Tuomilehto et al: Coffee consumption as trigger for insulin dependent diabetes mellitus in childhood. Br Med J 1990;300(6725):642-3

☞ **Alcohol consumption** is one of the 9 measured risk factors for heart attacks, cardiac arrhythmias and pneumonia.

*Lochen & Rasmussen: Palpitations and lifestyle: impact of depression and self-rated health. The Nordland Health Study. Scand J Soc Med 1996;24(2):140-4

*Gyárfás et al: Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries in a case-control study based on the INTERHEART study. Orv Hetil 2006 Apr 16;147(15):675-86

*Shellito et al: Effect of alcohol consumption on host release of interleukin-17 during pulmonary

infection with *Klebsiella pneumoniae*. *Alcohol Clin Exp Res* 2001 Jun;25(6):872-81

☞ **Fructose**, a sugar alternative, can have similar effects as alcohol consumption.

*Lustig: Fructose: metabolic, hedonic, and societal parallels with ethanol. *J Am Diet Assoc* 2010 Sep;110(9):1307-21

SUGGESTED ALTERNATIVES TO OFFSET ALCOHOL-INDUCED DAMAGE

Alpha lipoic acid is a potent antioxidant that can reduce injury to the digestive tract.

*Sehirli et al: Antioxidant effect of alpha-lipoic acid against ethanol-induced gastric mucosal erosion in rats. *Pharmacol* 2008;81(2):173-80

Amino acids have anti-oxidant and anti-inflammatory effects on the digestive tract as well as the liver.

*Chen et al: Taurine supplementation prevents ethanol-induced decrease in serum adiponectin and reduces hepatic steatosis in rats. *J Exp Biol* 2009 Jan;212(Pt 2):163-8

*Kerai et al: Taurine: protective properties against ethanol-induced hepatic steatosis and lipid peroxidation during chronic ethanol consumption in rats. *Amino Acids* 1998;15(1-2):53-76

*Liu et al: Beneficial effects of histidine and carnosine on ethanol-induced chronic liver injury. *Food Chem Toxicol* 2008 May;46(5):1503-9

*Nanji et al: Arginine reverses ethanol-induced inflammatory and fibrotic changes in liver despite continued ethanol administration. *J Pharmacol Exp Ther* 2001 Dec;299(3):832-9

*Senthilkumar & Nalini: Glycine prevents hepatic fibrosis by preventing the accumulation of collagen in rats with alcoholic liver injury. *Pol J Pharmacol* 2004 Jan-Feb;56(1):121-8

*Westrick et al: Dietary tryptophan reverses alcohol-induced impairment of facial recognition but not verbal recall. *Alcohol Clin Exp Res* 1988 Aug;12(4):531-3

Amla is an Ayurvedic herb which helps reduce alcohol-induced brain damage and overall toxicity.

*Reddy et al: *Emblica officinalis* ameliorates alcohol-induced brain mitochondrial dysfunction in rats. *J Med Food* 2011 Jan-Feb;14(1-2):62-8

*Reddy et al: Amelioration of alcohol-induced oxidative stress by *Emblica officinalis* (amla) in rats. *Indian J Biochem Biophys* 2010 Feb;47(1):20-5

Apricots and the **kernels** reduce alcohol-induced testicular damage and liver fibrosis.

*Abdel-Rahman: Can apricot kernels fatty acids delay the atrophied hepatocytes from progression to fibrosis in dimethylnitrosamine (DMN)-induced liver injury in rats? *Lipids Health Dis* 2011 Jul 7;10(1):114

*Kurus et al: Apricot ameliorates alcohol induced testicular damage in rat model. *Food Chem Toxicol* 2009 Oct;47(10):2666-72

Ashwaganda is an Ayurvedic herb known to reduce anxiety. One multi-herb formula that included Ashwagandha, Holy Basil, Green tea, Triphala and Shilajit proved to be a good alternative to benzodiazepines for anxiety caused by alcohol or withdrawal.

*Gupta & Rana: Effect of *Withania somnifera* Dunal in ethanol-induced anxiolysis and withdrawal anxiety in rats. *Indian J Exp Biol* 2008 Jun;46(6):470-5

*Mohan et al: Evaluation of the anxiolytic activity of NR-ANX-C (a Polyherbal Formulation) in ethanol withdrawal-induced anxiety behavior in rats. *Evid Based Complement Alternat Med* 2011;2011

B12 and **B9 (folate)** reduce alcohol-induced fetal developmental damage. (see Appendix for a list of the B vitamins by number and name)

*Xu et al: The maternal combined supplementation of folic acid and Vitamin B(12) suppresses ethanol-induced developmental toxicity in mouse fetuses. *Reprod Toxicol* 2006 Jul;22(1):56-61

Bay leaves can provide some protection to the liver and stomach.

*Affi et al: Evaluation of the gastroprotective effect of *Laurus nobilis* seeds on ethanol induced gastric ulcer in rats. *J Ethnopharmacol* 1997 Sep;58(1):9-14

*Matsuda et al: Preventive effect of sesquiterpenes from bay leaf on blood ethanol elevation in ethanol-loaded rat: structure requirement and suppression of gastric emptying. *Bioorg Med Chem Lett* 1999 Sep 20;9(18):2647-52

*Matsuda et al: Inhibitory mechanism of costunolide, a sesquiterpene lactone isolated from *Laurus nobilis*, on blood-ethanol elevation in rats: involvement of inhibition of gastric emptying and increase in gastric juice secretion. *Alcohol* 2002 Mar-Apr;37(2):121-7

*Yoshikawa et al: Alcohol absorption inhibitors from bay leaf (*Laurus nobilis*): structure-requirements of sesquiterpenes for the activity. *Bioorg Med Chem* 2000 Aug;8(8):2071-7

Chrysin, a bioflavonoid found in certain passion flowers, helps protect the liver from alcohol-induced damage.

*Sathiavelu et al: Hepatoprotective effect of chrysin on prooxidant-antioxidant status during ethanol-induced toxicity in female albino rats. *J Pharm Pharmacol* 2009 Jun;61(6):809-17

Cinnamon helps protect the liver from alcohol-induced damage.

*Kanuri et al: Cinnamon extract protects against acute alcohol-induced liver steatosis in mice. *Anat Cell Biol* 2010 Mar;43(1):36-43

Coconut contains necessary saturated fatty acids that have numerous health benefits including protecting the liver from alcohol-induced damage.

*Mini & Rajamohan: Influence of coconut kernel protein on lipid metabolism in alcohol fed rats. *Indian J Exp Biol* 2004 Jan;42(1):53-7

*Nanji et al: Medium chain triglycerides and vitamin E reduce the severity of established experimental alcoholic liver disease. *J Pharmacol Exp Ther* 1996 Jun;277(3):1694-700

*Nanji et al: Dietary saturated fatty acids down-regulate cyclooxygenase-2 and tumor necrosis factor alpha and reverse fibrosis in alcohol-induced liver disease in the rat. *Hepatology* 1997 Dec;26(6):1538-45

*Nanji et al: Dietary saturated fatty acids reverse inflammatory and fibrotic changes in rat liver despite continued ethanol administration. *J Pharmacol Exp Ther* 2001 Nov;299(2):638-44

*Ronis et al: Dietary saturated fat reduces alcoholic hepatotoxicity in rats by altering fatty acid metabolism and membrane composition. *J Nutr* 2004 Apr;134(4):904-12

Cordyceps mushrooms improve liver function while decreasing and preventing symptoms of liver cirrhosis.

*Wang et al: Acting mechanism of *Cordyceps mycelia* extract for antagonizing hepatic sinusoidal capillarization in rats with dimethylnitrosamine induced liver cirrhosis. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2009 Sep;29(9):810-5

*Wang et al: Intervening and therapeutic effect of *cordyceps mycelia* extract on liver cirrhosis induced by dimethylnitrosamine in rats. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2008 Jul;28(7):617-22

*Wang et al: *Cordyceps mycelia* extract decreases portal hypertension in rats with dimethylnitrosamine-induced liver cirrhosis: a study on its histological basis. *Zhong Xi Yi Jie He Xue Bao* 2008 Nov;6(11):1136-44

Curcumin, a major component of Turmeric eases withdrawal symptoms and protects the memory part of the brain, the liver, and testicles.

*Bao et al: Curcumin alleviates ethanol-induced hepatocytes oxidative damage involving heme oxygenase-1 induction. *J Ethnopharmacol* 2010 Jan 18

- *El-Deen & Eid: Efficacy of curcumin to reduce hepatic damage induced by alcohol and thermally treated oil in rats. *Vet Ital* 2010 Jan-Mar;46(1):83-92
- *Ghoneim: Effects of curcumin on ethanol-induced hepatocyte necrosis and apoptosis: implication of lipid peroxidation and cytochrome c. *Naunyn Schmiedeberg's Arch Pharmacol* 2009 Jan;379(1):47-60
- *Giannessi et al: Curcumin protects Leydig cells of mice from damage induced by chronic alcohol administration. *Med Sci Monit* 2008 Nov;14(11):BR237-42
- *Gukovsky et al: Curcumin ameliorates ethanol and nonethanol experimental pancreatitis. *Am J Physiol Gastrointest Liver Physiol* 2003 Jan;284(1):G85-95
- *Jagota & Reddy: The effect of curcumin on ethanol induced changes in suprachiasmatic nucleus (SCN) and pineal. *Cell Mol Neurobiol* 2007 Dec;27(8):997-1006
- *Naik et al: Protection of liver cells from ethanol cytotoxicity by curcumin in liver slice culture in vitro. *J Ethnopharmacol* 2004 Nov;95(1):31-7
- *Nanji et al: Curcumin prevents alcohol-induced liver disease in rats by inhibiting the expression of NF-kappa B-dependent genes. *Am J Physiol Gastrointest Liver Physiol* 2003 Feb;284(2):G321-7
- *Nishiyama et al: Curcuminoids and sesquiterpenoids in turmeric (*Curcuma longa* L.) suppress an increase in blood glucose level in type 2 diabetic KK-Ay mice. *J Agric Food Chem* 2005 Feb 23;53(4):959-63
- *Pae et al: Curcumin attenuates ethanol-induced toxicity in HT22 hippocampal cells by activating mitogen-activated protein kinase phosphatase-1. *Neurosci Lett* 2009 Apr 10;453(3):186-9
- *Quiles et al: An ethanolic-aqueous extract of *Curcuma longa* decreases the susceptibility of liver microsomes and mitochondria to lipid peroxidation in atherosclerotic rabbits. *Biofactors* 1998;8(1-2):51-7
- *Rajakrishnan et al: Effect of curcumin on ethanol-induced stress on mononuclear cells. *Phytother Res* 2002 Mar;16(2):171-3
- *Rajakrishnan et al: Neuroprotective role of curcumin from *curcuma longa* on ethanol-induced brain damage. *Phytother Res.* 1999 Nov;13(7):571-4
- *Rivera-Espinoza & Muriel: Pharmacological actions of curcumin in liver diseases or damage. *Liver Int* 2009 Nov;29(10):1457-66
- *Rukkumani et al: Comparative effects of curcumin and its analog on alcohol- and polyunsaturated fatty acid-induced alterations in circulatory lipid profiles. *J Med Food* 2005;8(2):256-60
- *Rukkumani et al: Curcumin influences hepatic expression patterns of matrix metalloproteinases in liver toxicity. *Ital J Biochem* 2004 Jul;53(2):61-6
- *Rukkumani et al: Comparative effects of curcumin and an analog of curcumin on alcohol and PUFA induced oxidative stress. *J Pharm Pharm Sci* 2004 Aug 20;7(2):274-83
- *Rukkumani et al: Protective effects of curcumin and photo-irradiated curcumin on circulatory lipids and lipid peroxidation products in alcohol and polyunsaturated fatty acid-induced toxicity. *Phytother Res* 2003 Sep;17(8):925-9
- *Vanisree & Sudha: Curcumin combats against cigarette smoke and ethanol-induced lipid alterations in rat lung and liver. *J Appl Microbiol* 2009 Jun;106(6):2086-95
- *Wang et al: Preliminary effects of alcohol and *Curcuma longa* upon CYP2E1 and hematotoxicity in benzene-induced mice]. *Zhonghua Yi Xue Za Zhi* 2009 Sep 15;89(34):2429-31

Curcumin and NAC (N-acetylcysteine) decreases the effects of alcohol-induced toxicity.

- *Akrishnan & Menon: Potential role of antioxidants during ethanol-induced changes in the fatty acid composition and arachidonic acid metabolites in male Wistar rats. *Pain* 2005 Mar;114(1-2):266-77
- *Pan et al: Comparative studies on the suppression of nitric oxide synthase by curcumin and its hydrogenated metabolites through down-regulation of IkappaB kinase and NFkappaB activation in macrophages. *Biochem Pharmacol* 2000 Dec 1;60(11):1665-76
- *Rajakrishnan et al: Changes in the prostaglandin levels in alcohol toxicity: effect of curcumin and N-acetylcysteine. *J Nutr Biochem* 2000 Oct;11(10):509-14

Dandelion protects the liver from chemically-induced damage.

- *Domitrović et al: Antifibrotic activity of *Taraxacum officinale* root in carbon tetrachloride-induced liver damage in mice. *J Ethnopharmacol* 2010 Aug 9;130(3):569-77

- *Mahesh et al: Hepatocurative potential of sesquiterpene lactones of *Taraxacum officinale* on carbon tetrachloride induced liver toxicity in mice. *Acta Biol Hung* 2010 Jun;61(2):175-90
- *Park et al: Amelioration of oxidative stress by dandelion extract through CYP2E1 suppression against acute liver injury induced by carbon tetrachloride in Sprague-Dawley rats. *Phytother Res* 2010 Sep;24(9):1347-53
- *You et al: In vitro and in vivo hepatoprotective effects of the aqueous extract from *Taraxacum officinale* (dandelion) root against alcohol-induced oxidative stress. *Food Chem Toxicol* 2010 Jun;48(6):1632-7

D-Ribose is a monosaccharide made within the body that is necessary for energy and DNA and RNA production of all cells. It is particularly effective in reducing symptoms of heart failure, even that brought on by alcoholism.

- *Clay et al: Chronic alcoholic cardiomyopathy. Protection of the isolated ischaemic working heart by ribose. *Biochem Int* 1988 Nov;17(5):791-800

EGCG (epigallocatechin-3-gallate) is a polyphenol found in Green tea that has liver-protecting effects.

- *Kaviarasan et al: Epigallocatechin gallate, a green tea phytochemical, attenuates alcohol-induced hepatic protein and lipid damage. *Toxicol Mech Methods* 2008 Jan;18(8):645-52
- *Kaviarasan et al: Epigallocatechin-3-gallate(-)protects Chang liver cells against ethanol-induced cytotoxicity and apoptosis. *Basic Clin Pharmacol Toxicol* 2007 Mar;100(3):151-6

Fenugreek is an herb often used as a digestive aid but it also provides some protective benefits to the liver.

- *Kaviarasan et al: Protective action of fenugreek (*Trigonella foenum graecum*) seed polyphenols against alcohol-induced protein and lipid damage in rat liver. *Cell Biol Toxicol* 2008 Oct;24(5):391-400
- *Kaviarasan & Anuradha: Fenugreek (*Trigonella foenum graecum*) seed polyphenols protect liver from alcohol toxicity: a role on hepatic detoxification system and apoptosis. *Pharmazie* 2007 Apr;62(4):299-304
- *Kaviarasan et al: Fenugreek seed (*Trigonella foenum graecum*) polyphenols inhibit ethanol-induced collagen and lipid accumulation in rat liver. *Cell Biol Toxicol* 2007 Nov;23(6):373-83
- *Kaviarasan et al: Fenugreek (*Trigonella foenum graecum*) seed extract prevents ethanol-induced toxicity and apoptosis in Chang liver cells. *Alcohol* 2006 May-Jun;41(3):267-73
- *Thirunavukkarasu et al: Protective effect of fenugreek (*Trigonella foenum graecum*) seeds in experimental ethanol toxicity. *Curr Eye Res* 2006 Feb;31(2):147-53

Gamma-oryzanol is a mixture of substances derived from rice bran oil that has liver-protecting effects.

- *Chotimarkorn & Ushio: The effect of trans-ferulic acid and gamma-oryzanol on ethanol-induced liver injury in C57BL mouse. *Phytomed* 2008 Apr 17

Ginger is a well-known herb used as a digestive aid but it also protects the liver from fibrosis.

- *Motawi et al: *Zingiber officinale* acts as a nutraceutical agent against liver fibrosis. *Nutr Metab (Lond)* 2011;8:40

Grape juice has liver-protecting properties.

- *Dani et al: Intake of purple grape juice as a hepatoprotective agent in Wistar rats. *Med J Aust* 2009 Apr 20;190(8):451-3
- *Dani et al: Intake of purple grape juice as a hepatoprotective agent in Wistar rats. *J Med Food* 2008 Mar;11(1):127-32

Green Tea may help prevent a fatty liver.

- *Zhang et al: Effect of tea polyphenol on cytokine gene expression in rats with alcoholic liver disease. *Hepatobiliary Pancreat Dis Int* 2006 May;5(2):268-72

Herbal combination of Red sage, Ginseng, and Camphor help prevent an alcohol-induced fatty liver.

- *Horie et al: Effect of a herbal medicine on fatty liver in rats fed ethanol chronically. *Nihon Arukoru Yakubutsu Igakkai Zasshi* 2009 Dec;44(6):636-48

Kudzu is a noxious weed in many places but it is proving to have several health benefits including the reduction of alcohol cravings and withdrawal symptoms as well as offering some protection for the digestive tract.

- *Benlhabib et al: Kudzu root extract suppresses voluntary alcohol intake and alcohol withdrawal symptoms in P rats receiving free access to water and alcohol. *J Med Food* 2004 Summer;7(2):168-79
- *Lin et al: Puerariae radix isoflavones and their metabolites inhibit growth and induce apoptosis in breast cancer cells. *Biochem Biophys Res Commun* 2009 Jan 23;378(4):683-8
- *Lukas et al: An extract of the Chinese herbal root kudzu reduces alcohol drinking by heavy drinkers in a naturalistic setting. *Alcohol Clin Exp Res* 2005 May;29(5):756-62
- *Tam et al: The efficacy and tolerability of adjunctive alternative herbal medicine (*Salvia miltiorrhiza* and *Pueraria lobata*) on vascular function and structure in coronary patients. *J Altern Complement Med* 2009 Apr;15(4):415-21
- *Zhang et al: Effects of Puerariae radix extract on the increasing intestinal permeability in rat with alcohol-induced liver injury. *J Ethnopharmacol* 2009 Nov 12;126(2):207-14

Milk Thistle is an herb long-used to improve liver function especially in those with a fatty liver or alcohol-induced cirrhosis.

- *Lucena et al: Effects of silymarin MZ-80 on oxidative stress in patients with alcoholic cirrhosis. Results of a randomized, double-blind, placebo-controlled clinical study. *Biol Pharm Bull* 2005 Dec;28(12):2211-5

Noni fruit is a potent antioxidant that has liver-protecting effects.

- *Wang et al: Hepatic protection by noni fruit juice against CCl₄-induced chronic liver damage in female SD rats. *Plant Foods Human Nutr* 63(3):141-145
- *Wang et al: Liver protective effects of *Morinda citrifolia* (Noni). *Plant Foods Human Nutr* 2008 Jun;63(2):59-63
- *West et al: A safety review of noni fruit juice. *J Food Sc* 2006 Oct;71(8):R100-106

Papaya protects against chemically-induced liver damage.

- *Raj Kapoor et al: Effect of dried fruits of *Carica papaya* Linn on hepatotoxicity. *Biol Pharm Bull* 2002 Dec;25(12):1645-6

Phospholids (lecithin, phosphatidylcholine) protect the pancreas and liver.

- *Aleynik et al: Alcohol-induced pancreatic oxidative stress: protection by phospholipid repletion. *Free Radic Biol Med* 1999 Mar;26(5-6):609-19
- *Lieber et al: Phosphatidylcholine protects against fibrosis and cirrhosis in the baboon. *Gastroenter* 1994 Jan;106(1):152-9
- *Lieber et al: Attenuation of alcohol-induced hepatic fibrosis by polyunsaturated lecithin. *Hepatology* 1990 Dec;12(6):1390-8
- *Mitzscherling et al: Phosphatidylcholine reverses ethanol-induced increase in transepithelial endotoxin permeability and abolishes transepithelial leukocyte activation. *Alcohol Clin Exp Res* 2008 Dec 19

Pomegranates protect the digestive tract from alcohol and aspirin-induced damage and the liver from fibrosis.

- *Ajaikumar et al: The inhibition of gastric mucosal injury by Punicagranatum L. (pomegranate) methanolic extract. *J Ethnopharmacol* 2005 Jan 4;96(1-2):171-6
- *Toklu et al: Pomegranate peel extract prevents liver fibrosis in biliary-obstructed rats. *J Pharm Pharmacol* 2007 Sep;59(9):1287-95

Liv 52 is an Ayurvedic herbal combination that has proven protection for the liver while increasing the rate of alcohol elimination.

- *Chauhan & Kulkarni: Alcohol hangover and Liv.52. *Eur J Clin Pharmacol* 1991;40(2):187-8
- *Dhawan & Goel: Hepatoprotective effects of Liv-52 and its indirect influence on the regulation of thyroid hormones in rat liver toxicity induced by carbon tetrachloride. *Arch Pediatr Adolesc Med* 2000 Oct;154(10):979-83
- *Girish et al: Hepatoprotective activity of six polyherbal formulations in paracetamol induced liver toxicity in mice. *Indian J Med Res* 2009 May;129(5):569-78
- *Gopumadhavan et al: Protective effect of Liv.52 on alcohol-induced fetotoxicity. *Alcohol Clin Exp Res* 1993 Oct;17(5):1089-92
- *Huseini et al: The efficacy of Liv-52 on liver cirrhotic patients: a randomized, double-blind, placebo-controlled first approach. *Phytomed* 2005 Sep;12(9):619-24
- *Kaláb & Krechler: The effect of the hepatoprotective agent LIV 52 on liver damage. *Radiat Oncol*. 2010 Nov 22;5(1):111
- *Mitra et al: Liv.52 regulates ethanol induced PPARgamma and TNF alpha expression in HepG2 cells. *Mol Cell Biochem* 2008 Aug;315(1-2):9-15
- *Roy et al: Down regulation of tumour necrosis factor activity in experimental hepatitis by a herbal formulation, Liv 52. *Indian J Exp Biol* 1994 Oct;32(10):694-7

Magnesium improves constricted blood vessels and decreases liver damage.

- *Brown et al: Dietary Mg(2+) supplementation restores impaired vasoactive responses in isolated rat aorta induced by chronic ethanol consumption. *Eur J Pharmacol* 2002 May 10;442(3):241-50
- *Poikolainen & Alho: Magnesium treatment in alcoholics: a randomized clinical trial. *Subst Abuse Treat Prev Policy* 2008 Jan 25;3:1

Marjoram oil and **Grapeseed extract** protects against toxicity.

- *El-Ashmawy et al: Effects of marjoram volatile oil and grape seed extract on ethanol toxicity in male rats. *Basic Clin Pharmacol Toxicol* 2007 Nov;101(5):320-7

Milk Thistle is a well-known and long-used liver protector.

- *Lieber et al: Silymarin retards the progression of alcohol-induced hepatic fibrosis in baboons. *J Clin Gastroenterol* 2003 Oct;37(4):336-9
- *Song et al: Silymarin protects against acute ethanol-induced hepatotoxicity in mice. *Alcohol Clin Exp Res* 2006 Mar;30(3):407-13

Naringenin is a citrus bioflavonoid that has liver-protecting effects.

- *Jayaraman et al: Potential beneficial effect of naringenin on lipid peroxidation and antioxidant status in rats with ethanol-induced hepatotoxicity. *J Pharm Pharmacol* 2009 Oct;61(10):1383-90

Oats prevent leaky gut caused by liver damage.

- *Keshavarzian et al: Preventing gut leakiness by oats supplementation ameliorates alcohol-induced liver damage in rats. *J Ethnopharmacol* 2011 Jan 27;133(2):724-8
- *Tang et al: Oats supplementation prevents alcohol-induced gut leakiness in rats by preventing alcohol-induced oxidative tissue damage. *J Pharmacol Exp Ther* 2009 Jun;329(3):952-8

Omega fatty acids help prevent a fatty liver. Omega-3 fatty acids are rapidly depleted from the brain by alcoholism and a deficiency leads to what is called, a fatty liver.

- *Milne et al: Elevated oxidation of docosahexaenoic acid, 22:6 (n-3), in brain regions of rats undergoing ethanol withdrawal. *Neurosci Lett* 2006 Sep 25;405(3):172-4

*Pawlosky & Salem: Development of alcoholic fatty liver and fibrosis in rhesus monkeys fed a low n-3 fatty acid diet. *Alcohol Clin Exp Res* 2004 Oct;28(10):1569-76

*Song et al: Prevention of alcoholic fatty liver and mitochondrial dysfunction in the rat by long-chain polyunsaturated fatty acids. *J Hepatol* 2008 Aug;49(2):262-73

Papaya leaf protects the digestive tract and the blood from free-radical damage.

*Indran et al: Protective effect of *Carica papaya* L leaf extract against alcohol induced acute gastric damage and blood oxidative stress in rats. *West Indian Med J* 2008 Sep;57(4):323-6

Persimmon vinegar helps prevent metabolic disorders caused by over-consumption of alcohol.

*Moon & Cha: Effects of persimmon-vinegar on lipid metabolism and alcohol clearance in chronic alcohol-fed rats. *J Med Food* 2008 Mar;11(1):38-45

Pomegranates protect the digestive tract from alcohol and aspirin-induced injury.

*Ajaikumar et al: The inhibition of gastric mucosal injury by *Punicagranatum* L. (pomegranate) methanolic extract. *J Ethnopharmacol* 2005 Jan 4;96(1-2):171-6

Probiotics improve liver enzymes and protects the digestive tract.

*Forsyth et al: Lactobacillus GG treatment ameliorates alcohol-induced intestinal oxidative stress, gut leakiness, and liver injury in a rat model of alcoholic steatohepatitis. *Alcohol* 2009 Mar;43(2):163-72

*Kirpich et al: Probiotics restore bowel flora and improve liver enzymes in human alcohol-induced liver injury: a pilot study. *Alcohol* 2008 Dec;42(8):675-82

*Morencos et al: Small bowel bacterial overgrowth in patients with alcoholic cirrhosis. *Dig Dis Sci* 1996 Mar;41(3):552-6

*Mutlu et al: Intestinal dysbiosis: a possible mechanism of alcohol-induced endotoxemia and alcoholic steatohepatitis in rats. *Alcohol Clin Exp Res* 2009 Oct;33(10):1836-46

*Segawa et al: Oral administration of heat-killed *Lactobacillus brevis* SBC8803 ameliorates alcoholic liver disease in ethanol-containing diet-fed C57BL/6N mice. *Prep Biochem Biotechnol* 2005;35(1):29-36

Quercetin protects the brain; reduces anxiety; and decreases the effects of withdrawal.

*Joshi et al: Protective effect of quercetin on alcohol abstinence-induced anxiety and convulsions. *Cell Mol Biol (Noisy-le-grand)* 2002 Sep;48(6):685-92

*Singh et al: Reversal of aging and chronic ethanol-induced cognitive dysfunction by quercetin a bioflavonoid. *Free Radic Res* 2003 Nov;37(11):1245-52

Reishi mushrooms protect the liver from chemically-induced damage.

*Wu et al: Post-treatment of *Ganoderma lucidum* reduced liver fibrosis induced by thioacetamide in mice. *Phytother Res* 2009 Jul 20

Resveratrol (alone or with vitamin E) prevents free-radical DNA damage that results from alcohol and sugar consumption.

*Ajmo et al: Resveratrol alleviates alcoholic fatty liver in mice. *Am J Physiol Gastrointest Liver Physiol* 2008 Oct;295(4):G833-42

*Bishayee et al: Resveratrol and liver disease: from bench to bedside and community. *Liver Int* 2010 Sep;30(8):1103-14

*Das et al: Protective effect of resveratrol and vitamin E against ethanol-induced oxidative damage in mice: biochemical and immunological basis. *Indian J Biochem Biophys* 2010 Feb;47(1):32-7

*Rocha et al: Weekend ethanol consumption and high-sucrose diet: resveratrol effects on energy expenditure, substrate oxidation, lipid profile, oxidative stress and hepatic energy metabolism. *Alcohol* 2011 Jan-Feb;46(1):10-6

*Sun et al: Ethanol-induced cell death by lipid peroxidation in PC12 cells. *Neurochem Res* 1997 Oct;22(10):1187-92

*Yan et al: Protection of resveratrol and its analogues against ethanol-induced oxidative DNA damage in human peripheral lymphocytes. *HIV Med* 2010 Jan 5

St. John's Wort reduces withdrawal symptoms BUT, it should never be taken with alcohol or other medication.

*Coskun et al: Attenuation of ethanol withdrawal syndrome by extract of *Hypericum perforatum* in Wistar rats. *Fundam Clin Pharmacol* 2006 Oct;20(5):481-8

SAMe (S-adenosylmethionine) is a substance produced in the body that is often sold as a supplement to improve mood and depression but it also has other benefits including protecting the liver from cancer.

*Lieber: Alcoholic liver disease: new insights in pathogenesis lead to new treatments. *J Hepatol* 2000;32:113-28

*Lu & Mato: Role of methionine adenosyltransferase and S-adenosylmethionine in alcohol-associated liver cancer. *Alcohol* 2005 Apr;35(3):227-34

Vitamin C increases the rate of alcohol removal from the blood.

*Chen et al: Effect of ascorbic acid on plasma alcohol clearance. *J Am Coll Nutr* 1990 Jun;9(3):185-9

Vitamin E prevents alcoholic liver disease and vitamin E from palm oil protects the digestive tract from damage.

*Herbay et al: Low vitamin E content in plasma of patients with alcoholic liver disease, hemochromatosis and Wilson's disease. *J Hepatol* 1994 Jan;20(1):41-6

*Jaarin et al: Effect of palm vitamin E on the healing of ethanol-induced gastric injury in rats. *Int J Food Sci Nutr* 2000;51 Suppl:S31-41

*Nanji et al: Eicosanoid production in experimental alcoholic liver disease is related to vitamin E levels and lipid peroxidation. *Mol Cell Biochem* 1994 Nov 9;140(1):85-9

Whey protein isolates and **Collagen** protect the stomach from forming ulcers.

*Castro et al: Anti-ulcerogenic effect of a whey protein isolate and collagen hydrolysates against ethanol ulcerative lesions on oral administration to rats. *J Med Food* 2010 Feb;13(1):83-90

*Rosaneli et al: Efficacy of a whey protein concentrate on the inhibition of stomach ulcerative lesions caused by ethanol ingestion. *J Med Food* 2002;5(4):221-8

Zinc decreases toxic effects caused by alcohol.

*Kang & Zhou: Zinc prevention and treatment of alcoholic liver disease. *Mol Asp Med* 2005 Aug-Oct;26(4-5):391-04

*Lambert et al: Prevention of alterations in intestinal permeability is involved in zinc inhibition of acute ethanol-induced liver damage in mice. *J Pharmacol Exp Ther* 2003 Jun;305(3):880-6

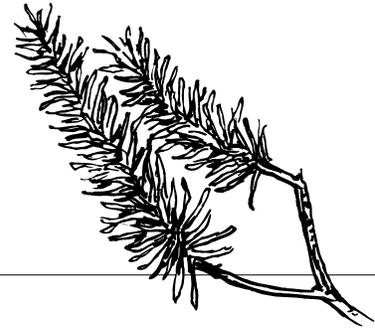
*Pathak et al: Effect of zinc supplementation on the status of thyroid hormones and Na, K, And Ca levels in blood following ethanol feeding. *Biol Trace Elem Res* 2011 May;140(2):208-14

*Szuster-Ciesielska et al: Zinc supplementation attenuates ethanol- and acetaldehyde-induced liver stellate cell activation by inhibiting reactive oxygen species (ROS) production and by influencing intracellular signaling. *Biochem Pharmacol* 2009 Aug 1;78(3):301-14

*Zhou et al: Zinc supplementation inhibits hepatic apoptosis in mice subjected to a long-term ethanol exposure. *Exp Biol Med* (Maywood) 2008 May;233(5):540-8

*Zhou et al: Zinc supplementation prevents alcoholic liver injury in mice through attenuation of oxidative stress. *Am J Pathol* 2005 Jun;166(6):1681-90

ALZHEIMER'S DISEASE



COMMON EXAMPLES:

- donepezil** – Aricept
- galantamine** – Reminyl
- memantine** – Namenda
- rivastigmine** – Exelon
- tacrine** – Cognex

DEplete: C

☞ It is strongly suspected that many more nutrients are depleted but testing has not officially confirmed this. Studies have found that patients diagnosed as having Alzheimer's disease or dementia are instead **severely deficient** in many nutrients. Once these nutrients were replaced, symptoms disappeared or were dramatically reduced. A number of nutraceuticals were specifically identified as being important in preventing or slowing the disease: **Policosanol; Beta-carotene; Hops; DHA; B12; folate (B9), Cacao; Chromium picolinate and Cinnamon for blood sugar control; Vitamin D; Genistein; Sesame.**

- *Bowman et al: Nutrient biomarker patterns, cognitive function, and MRI measures of brain aging. *Neurol* 2011 Dec 28 Pub online ahead of print
- *Chandra: Effect of vitamin and trace-element supplementation on cognitive function in elderly subjects. *Nutr* 2001;17:709-12
- *Ciconetti et al: Nutritional deficiency and Alzheimer's disease: how to identify and prevent. [Article in Italian] *Recenti Prog Med* 2000 Mar;91(3):135-40
- *Del Parigi et al: Nutritional factors, cognitive decline, and dementia. *Brain Res Bull* 2006 Mar 15;69(1):1-19
- *Foster, Harold MD: What Really Causes Alzheimer's Disease. 2004 online pdf
- *Gonzalez-Gross et al: Nutrition and cognitive impairment in the elderly. *Br J Nutr* 2001;86:313-21
- *McCaddon et al: Functional vitamin B12 deficiency and Alzheimer disease. *Neurol* 2002 May;58(9):1395-99
- *McCarty: Toward prevention of Alzheimer's disease--potential nutraceutical strategies for suppressing the production of amyloid beta peptides. *Med Hypoth* 2006;67(4):682-97
- *No authors listed: High doses of vitamins fight Alzheimer's disease: Why don't doctors recommend them now? *Orthomol Med News Serv* 2008 Dec 9
- *Otsuka et al: Similarities and differences between Alzheimer's disease and vascular dementia from the viewpoint of nutrition. *Ann NY Acad Sci* 2002 Nov;977:155-61
- *Sato et al: High prevalence of vitamin D deficiency and reduced bone mass in elderly women with Alzheimer's disease. *Bone* 1998 Dec;23(6):555-7
- *Staehelin: Micronutrients and Alzheimer's disease. *Proceed Nutr Soc* 2005;64:565-70
- *Trivieri & Anderson: *Alternative Medicine: The Definitive Guide* 2002:523

☞ **Aspartame** is linked to certain mental disorders, compromised learning and emotional functioning.

*Humphries et al: Direct and indirect cellular effects of aspartame on the brain. *Eur J Clin Nutr* 2008 Apr;62(4):451-62

☞ **Donepezil** and **memantine** are known to cause a lowered heart rate while increasing the risk of seizures.

*Babai et al: Comparison of adverse drug reactions with donepezil versus memantine: analysis of the French Pharmacovigilance Database. *Therapie* 2010 May-Jun;65(3):255-9

☞ **Drugs** taken for Alzheimer's disease increase tremors and symptoms of Parkinson's disease.

*No authors listed: Cholinesterase inhibitors: tremor and exacerbation of Parkinson's disease. *Prescribe Int* 2007 Oct;16(91):197-8

☞ **Fluoride** has shown to significantly affect the brain in both children and adults (see Fluoride) and raises the risk of developing Alzheimer's.

*National Research Council (2003-2006): Fluoride in Drinking Water: A Scientific Review of EPA's Standards

SUGGESTED ALTERNATIVES:

(valuable brain protectors)

Açaí fruit is a potent antioxidant that prevents damage to the brain and elsewhere in the body.

*Kang et al: Anti-oxidant capacities of flavonoid compounds isolated from acai pulp (*Euterpe oleracea* Mart). *Food Chem* 2010 Oct;122(3):610-617

*Mertens-Talcott et al: Pharmacokinetics of anthocyanins and antioxidant effects after the consumption of anthocyanin-rich acai juice and pulp (*Euterpe oleracea* Mart) in human healthy volunteers. *J Agric Food Chem* 2008;56(17):7796-7802

*Oliveira de Souza et al: Diet supplementation with acai (*Euterpe oleracea* Mart.) pulp improves biomarkers of oxidative stress and the serum lipid profile in rats. *Nutr* 2010 July-Aug;26(7-8):804-810

*Schauss et al: Antioxidant capacity and other bioactivities of the freeze-dried Amazonian palm berry, *Euterpe oleracea* Mart (Acai). *J Agric Food Chem* 2006;54(22):8604-8610

*Spada et al: Frozen fruit pulp of *Euterpe oleracea* Mart (Acai) prevents hydrogen peroxide-induced damage in the cerebral cortex, cerebellum, and hippocampus of rats. *J Med Food* 2009 Oct;12(5):1084-1088

Alpha-lipoic acid is a potent antioxidant that has neuroprotective properties making it an ideal treatment for such diseases as Alzheimer's and Parkinson's.

*Hager et al: Alpha-lipoic acid as a new treatment option for Alzheimer's disease – a 48 months follow-up analysis. *J Neural Transm Suppl* 2007;(72):189-93

Alpha-lipoic acid, Carnitine, and Vitamin E reduce memory loss. Carnitine is formed in the body from two amino acids, lysine and methionine. **Tocotrienols** are important members of the vitamin E family. A good vitamin E supplement should consist of 4 tocopherols and 4 tocotrienols in order to obtain optimal neuroprotective benefits.

*Ahmed: Modulatory effects of vitamin E, acetyl-L-carnitine and α -lipoic acid on new potential biomarkers for Alzheimer's disease in rat model. *Exp Toxicol Pathol* 2010 Dec 23

- *Khanna et al: Characterization of the potent neuroprotective properties of the natural vitamin E alpha-tocotrienol. *Public Health* 2010 Jun;124(6):332-8
- *Lu et al: Memory loss in old rats is associated with brain mitochondrial decay and RNA/DNA oxidation: partial reversal by feeding acetyl-L-carnitine and/or R-alpha -lipoic acid. *Proc Natl Acad Sci USA* 2002 Feb 19;99(4):2356-61
- *Maczurek et al: Lipoic acid as an anti-inflammatory and neuroprotective treatment for Alzheimer's disease. *Adv Drug Deliv Rev* 2008 Oct-Nov;60(13-14):1463-70

Anthocyanins are flavonoids found in red, blue, or purple foods. They are potent antioxidants that are able to cross the blood-brain barrier to promote healthy learning and memory.

- *Andres-Lacueva et al: Anthocyanins in aged blueberry-fed rats are found centrally and may enhance memory. *BMB Rep* 2010 Jan;43(1):46-51

Antioxidants such as **Vitamins A, E, C** and **Resveratrol** as well as many others, provide protection against neural cell death from oxidation (free radical damage).

- *Draczynska-Lusiak et al: Oxidized lipoproteins may play a role in neuronal cell death in Alzheimer disease. *Mol Chem Neuropathol* 1998 Feb;33(2):139-48

Apples prevent the decline in cognitive performance. But do yourself a favour, eat only **organic fruit** as apples are the number one food that contain pesticides which are toxic enough to severely affect an already overwhelmed brain.

- *Apples worst for pesticides on produce list. *CBC News*, Jun 14, 2011
- *Chan and Shea: Dietary supplementation with apple juice decreases endogenous amyloid-beta levels in murine brain. *Int J Mol Med* 2010 Oct;26(4):447-55
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. *WebMD Health News* June 13, 2011
- *No authors listed: Apple juice concentrate maintains acetylcholine levels following dietary compromise. *J Alz Dis.* 2006 Aug;9(3):287-91
- *Shabecoff: 100 Chemicals for Apples Add Up to Enigma on Safety. *NY Times* Feb 5, 1989
- *Tchantchou et al: Apple juice concentrate prevents oxidative damage and impaired maze performance in aged mice. *Ann Clin Psychiatry* 2009 Jul-Sep;21(3):148-61
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Aromatherapy (inhalation or massage) using **Essential oils** (Lavender, Roman Chamomile, Ylang-Ylang) calm and relieve sleep problems even in the severely demented. Be aware that whatever is put on the skin or inhaled is the same as eating it therefore, it is imperative that chemically-laden products be avoided.

- *Moss et al: Modulation of cognitive performance and mood by aromas of peppermint and ylang-ylang. *Nutr Cancer* 2006;55(1):53-62
- *Wolfe & Joeherzber: Can aromatherapy oils promote sleep in severely demented patients? *Intnl J Geriat Psych Letters* 1996;11:926-7

Ashwaganda is an herb of the nightshade family that possesses adaptogenic and neuroprotective properties (regulates the body). It is often used to support the adrenal glands which are affected by stress.

- *Tohda et al: Dendrite extension by methanol extract of Ashwagandha (roots of *Withania somnifera*) in SK-N-SH cells. *Neuroreport* 2000 Jun 26;11(9):1981-5
- *Tohda: Overcoming several neurodegenerative diseases by traditional medicines: the development of therapeutic medicines and unraveling pathophysiological mechanisms. *Yakugaku Zasshi* 2008 Aug;128(8):1159-67

- *Yadav et al: Propoxur-induced acetylcholine esterase inhibition and impairment of cognitive function: attenuation by *Withania somnifera*. *Int Immunopharmacol* 2003 Sep;3(9):1313-24

Astaxanthin is an antioxidant carotenoid extracted from marine algae and found to have significant neuroprotective effects.

- *Chang et al: Astaxanthin secured apoptotic death of PC12 cells induced by beta-amyloid peptide 25-35: its molecular action targets. *J Med Food* 2010 Jun;13(3):548-56
- *Hussein et al: Antihypertensive and neuroprotective effects of astaxanthin in experimental animals. *Biol Pharm Bull* 2005 Jan;28(1):47-52
- *Ikeda et al: Protective effects of astaxanthin on 6-hydroxydopamine-induced apoptosis in human neuroblastoma SH-SY5Y cells. *J Neurochem* 2008 Dec;107(6):1730-40
- *Lee et al: Astaxanthin protects against MPTP/MPP⁺-induced mitochondrial dysfunction and ROS production in vivo and in vitro. *Food Chem Toxicol* 2011 Jan;49(1):271-80
- *Liu & Osawa: Astaxanthin protects neuronal cells against oxidative damage and is a potent candidate for brain food. *Forum Nutr* 2009;61:129-35
- *Lu et al: Astaxanthin inhibits reactive oxygen species-mediated cellular toxicity in dopaminergic SH-SY5Y cells via mitochondria-targeted protective mechanism. *Brain Res* 2009 Feb 13;1254:18-27
- *Lu et al: Neuroprotective effect of astaxanthin on H₂O₂-induced neurotoxicity in vitro and on focal cerebral ischemia in vivo. *Brain Res* 2010 Nov 11;1360:40-8
- *Wang et al: Astaxanthin upregulates heme oxygenase-1 expression through ERK1/2 pathway and its protective effect against beta-amyloid-induced cytotoxicity in SH-SY5Y cells. *Brain Res* 2010 Nov 11;1360:159-67

B vitamins help improve cognitive and nerve function. Since there are about 14 in the family which all work together, it is important to take them as a complex to prevent causing a deficiency in others if one is taken separately. It is also important to take an additional **B12** sublingually (under the tongue) to reduce the chances of developing a type of anemia (pernicious) and to make use of its brain-enhancing properties. **Nicotinamide** (a form of niacin, B3) restores cognition in Alzheimer's disease. (see Appendix for the list of B vitamins by name and number)

- *Green et al: Nicotinamide restores cognition in Alzheimer's disease transgenic mice via a mechanism involving sirtuin inhibition and selective reduction of Thr231-phosphotau. *J Neurosci* 2008 Nov 5;28(45):11500-10
- *Low Vitamin B12 levels may lead to brain shrinkage, cognitive problems. *Ame Acad Neurol* 2011 Sept 26
- *Jager et al: Cognitive and clinical outcomes of homocysteine-lowering B-vitamin treatment in mild cognitive impairment: a randomized controlled trial. *Int J Geriatr Psych* 2011 Jul 21
- *Selhub et al: B vitamins and the aging brain. *Nutr Rev* 2010 Dec;68 Suppl 2:S112-8
- *Singh et al: Beneficial effects of folic acid on enhancement of memory and antioxidant status in aged rat brain. *Cell Mol Neurobio* 2011 Jan;31(1):83-91
- *Tangney et al: Vitamin B12, cognition, and brain MRI measures: A cross-sectional examination. *Neuro* 2011;77(13):1276
- *Wang et al: Vitamin B12 and folate in relation to the development of Alzheimer's disease. *Neurol* 2001 May 8;56(9):1188-94

B6, 9, and 12 deficiency contributes to increased levels of **homocysteine** which is associated with neurological disorders as well as cardiovascular disease and bone fractures. Supplementation of these three B-vitamins (in addition to a complex) help prevent or reverse such disorders.

- *Ientile et al: Homocysteine, vitamin determinants and neurological diseases. *Front Biosci (Schol Ed)* 2010;2:359-72
- *Miller: Homocysteine and Alzheimer's disease. *Nutr Rev* 1999 Apr;57(4):126-9
- *Moris: Homocysteine and Alzheimer's disease. *Lancet Neurol* 2003 Jul;2(7):425-8

- *Smach et al: Folate and homocysteine in the cerebrospinal fluid of patients with Alzheimer's disease or dementia: a case control study. *Eur Neurol* 2011;65(5):270-8
- *Smith et al: Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: A randomized controlled trial. *PLoS ONE* 2010;5(9):e12244
- *Spence et al: Understanding the complexity of homocysteine lowering with vitamins. *JAMA* 2011;306(23):2610-11
- *Wolters et al: Cobalamin: a critical vitamin in the elderly. *Prev Med* 2004 Dec;39(6):1256-66

Bacopa is an herb often used in Ayurvedic medicine because of its neuroprotective, antioxidant and brain-enhancing effects.

- *Calabrese et al: Effects of a standardized Bacopa monnieri extract on cognitive performance, anxiety, and depression in the elderly: a randomized, double-blind, placebo-controlled trial. *J Alter Com-plem Med* 2008 Jul;14(6):707-13
- *Holcomb et al: Bacopa monniera extract reduces amyloid levels in PSAPP mice. *J Alzh Dis* 2006 Aug;9(3):243-51
- *Jyoti et al: Bacopa monniera prevents from aluminium neurotoxicity in the cerebral cortex of rat brain. *J Ethnopharma* 2007 Apr 20;111(1):56-62
- *Limpeanchob et al: Neuroprotective effect of Bacopa monnieri on beta-amyloid-induced cell death in primary cortical culture. *J Ethnopharma* 2008 Aug 5 [ahead of print]

Bamboo extract is useful in restoring brain cell function.

- *Hong et al: Protective effects of the pyrolyzates derived from bamboo against neuronal damage and hematoaggregation. *J Ethnopharma* 2010 Apr 21;128(3):594-9
- *Jeong et al: Inhibitory effects of *Bombusae concretio Salicea* on neuronal secretion of Alzheimer's beta-amyloid peptides, a neurodegenerative peptide. *Neurochem Res* 2003 Dec;28(12):1785-92
- *Jeong et al: Effects of *Bambusae concretio Salicea* (Chunchukhwang) on amyloid beta-induced cell toxicity and antioxidative enzymes in cultured rat neuronal astrocytes. *Indian J Exp Biol* 2006 Sep;44(9):705-18

Berries, Grape juice, Spinach and Walnuts are foods of choice for enriching brain function and reducing the effects of neuro-degenerative diseases such as Alzheimer's.

- *Joseph et al: Grape juice, berries, and walnuts affect brain aging and behavior. *J Ethnopharmacol* 2008 Aug 13;118(3):396-404
- *Joseph et al: Reversals of age-related declines in neuronal signal transduction, cognitive, and motor behavioral deficits with blueberry, spinach, or strawberry dietary supplementation. *J Gastroenter* 2002 Nov;37 Suppl 14:67-72
- *Joseph et al: Grape juice, berries, and walnuts affect brain aging and behavior. *J Ethnopharmacol* 2008 Aug 13;118(3):396-404
- *Shukitt-Hale et al: Blueberry polyphenols attenuate kainic acid-induced decrements in cognition and alter inflammatory gene expression in rat hippocampus. *Nutr Neurosci* 2008 Aug;11(4):172-82
- *Shukitt-Hale et al: Effects of blackberries on motor and cognitive function in aged rats. *Nutr Neurosci* 2009 Jun;12(3):135-40
- *Willis et al: Blueberry supplementation attenuates microglial activation in hippocampal intraocular grafts to aged hosts. *Glia* 2009 Dec 14

Black Pepper contains an alkaloid that improves brain function and cognitive abilities.

- *No authors listed: Piperine, the main alkaloid of Thai black pepper, protects against neurodegeneration and cognitive impairment in animal model of cognitive deficit like condition of Alzheimer's disease. *Food Chem Toxicol* 2009 Dec 23

Buckwheat is a gluten-free non-cereal grain that is related to rhubarb and not to wheat. It has several health benefits including the reduction of memory-impairment.

- *Pu et al: Protective effect of buckwheat polyphenols against long-lasting impairment of spatial memory associated with hippocampal neuronal damage in rats subjected to repeated cerebral ischemia. *J Pharmacol Sci* 2004 Apr;94(4):393-402

Carotenoids are found in red, yellow, and orange fruit as well as many dark green vegetables. Carotenoids significantly reduce the oxidative stress (free radicals) that lead to cognitive decline.

- *Unno et al: Beta-cryptoxanthin, plentiful in Japanese mandarin orange, prevents age-related cognitive dysfunction and oxidative damage in senescence-accelerated mouse brain. *Biol Pharm Bull* 2011;34(3):311-7
- *Vasudevan & Parle: Pharmacological evidence for the potential of *Daucus carota* in the management of cognitive dysfunctions. *Biol Pharm Bull* 2006 Jun;29(6):1154-61

Cherries protect the brain from neuron destruction.

- *Kim et al: Sweet and sour cherry phenolics and their protective effects on neuronal cells. *J Agric Food Chem* 2005 Dec 28;53(26):9921-7

Chinese club moss (*Huperzia serrata*) contains a component called Huperzine A which improves memory and focus and is more effective in raising blood levels of acetylcholine and dopamine than drugs.

- *Liang & Tang: Comparative studies of huperzine A, donepezil, and rivastigmine on brain acetylcholine, dopamine, norepinephrine, and 5-hydroxytryptamine levels in freely-moving rats. *Acta Pharmacol Sin* 2006 Sep;27(9):1127-36
- *Shang et al: Improving effects of huperzine A on abnormal lipid peroxidation and superoxide dismutase in aged rats. *Zhongguo Yao Li Xue Bao* 1999 Sep;20(9):824-8
- *Tang et al: Effects of huperzine A on secretion of nerve growth factor in cultured rat cortical astrocytes and neurite outgrowth in rat PC12 cells. *Acta Pharmacol Sin* 2005 Jun;26(6):673-8
- *Wang et al: Huperzine A attenuates cognitive dysfunction and neuronal degeneration caused by beta-amyloid protein-(1-40) in rat. *Eur J Pharmacol* 2001 Jun 15;421(3):149-56
- *Ye et al: Improving effects of huperzine A on spatial working memory in aged monkeys and young adult monkeys with experimental cognitive impairment. *J Pharmacol Exp Ther* 1999 Feb;288(2):814-9
- *Zhang et al: Potential therapeutic targets of huperzine A for Alzheimer's disease and vascular dementia. *Biol Pharm Bull* 2004 Nov;27(11):1844-9
- *Zhang et al: Non-cholinergic effects of huperzine A: beyond inhibition of acetylcholinesterase. *Cell Mol Neurobiol* 2008 Feb;28(2):173-83
- *Zhang & Tang: Huperzine A attenuates the neurotoxic effect of staurosporine in primary rat cortical neurons. *Neurosci Lett* 2003 Apr 10;340(2):91-4
- *Liang and Tang: Comparative studies of huperzine A, donepezil, and rivastigmine on brain acetylcholine, dopamine, norepinephrine, and 5-hydroxytryptamine levels in freely-moving rats. *Acta Pharmacol Sin* 2006 Sep;27(9):1127-36

Chinese skullcap (*Scutellaria baicalensis*) contains a flavonoid called wogonin which reduces the production of nitric oxide and inflammatory cells that lead to brain cell destruction.

- *Piao et al: Neuroprotective effect of wogonin: potential roles of inflammatory cytokines. *Arch Pharm Res* 2004 Sep;27(9):930-6

Coconut Water and Oil contain MCTs (Medium Chain Triglycerides) which are fatty acids vital for the brain and found in virgin **coconut and palm oils**. One medical doctor used coconut oil to reverse her husband's Alzheimer's disease (Newport).

- *Fife: *Stop Alzheimer's Now!: How to Prevent & Reverse Dementia, Parkinson's, ALS, Multiple Sclerosis & Other Neurodegenerative Disorders*. Piccadilly Books, 2011

- *Gursche: Medical Doctor Treats Alzheimer's with Coconut Oil. Alpha Health Burnaby, BC handout and online at www.alphahealth.ca/coconutoilandhealth/?p=4
- *Kale University video interview with MD who treated her husband - www.kaleuniversity.org/4655-coconut-oil-turns-alzheimers-disease
- *Newport: Alzheimer's Disease: What If There Was a Cure? Basic Health Publications, 2011
- *Park et al: Poria cocos water extract (PCW) protects PC12 neuronal cells from beta-amyloid-induced cell death through antioxidant and antiapoptotic functions. *Pharmazie* 2009 Nov;64(11):760-4
- *Reger et al: Effects of beta-hydroxybutyrate on cognition in memory-impaired adults. *J Agric Food Chem* 2006 Mar 22;54(6):2123-8

Colostrum is the first “milk” produced by mammals who have just given birth. It is high in nutrients and antibodies needed by the new infant. Colostrum is proving to have neuro-protective effects which may prevent Alzheimer's.

- *Douraghi-Zadeh et al: The protective effects of the nutraceutical, colostrinin, against Alzheimer's disease, is mediated via prevention of apoptosis in human neurones induced by aggregated beta-amyloid. *J Nutr Health Aging* 2009 Jun;13(6):522-7

CoQ10 is required by every cell in the body for energy and has a special affinity for the heart but it also reduces plaque, protects neurons and improves behaviour in the Alzheimer's patient.

- *Dumont et al: Coenzyme Q10 decreases amyloid pathology and improves behavior in a transgenic mouse model of Alzheimer's Disease. *J Alzheimers Dis* 2011 Jul 28
- *Won et al: Coenzyme Q10 protects neurons against neurotoxicity in hippocampal slice culture. *Neuroreport* 2011 Oct 5;22(14):721-6
- *Yang et al: Coenzyme Q10 reduces beta-amyloid plaque in an APP/PS1 transgenic mouse model of Alzheimer's disease. *J Mol Neurosci* 2010 May;41(1):110-3

CoQ10 and **Creatine** is a combination proving to be useful in treating neurodegenerative diseases. Creatine alone improves muscle quality in the aged, the athlete and those with muscular diseases. It also reduces muscle cramps and is safe to take for diabetics and those on dialysis.

- *Adhihetty & Beal: Creatine and its potential therapeutic value for targeting cellular energy impairment in neurodegenerative diseases. *Neuromolecular Med* 2008;10(4):275-90
- *Chung et al: Creatine supplements in patients with idiopathic inflammatory myopathies who are clinically weak after conventional pharmacologic treatment: Six-month, double-blind, randomized, placebo-controlled trial. *Arthritis Rheum* 2007 May 15;57(4):694-702
- *Cooke et al: Creatine supplementation enhances muscle force recovery after eccentrically-induced muscle damage in healthy individuals. *J Int Soc Sports Nutr* 2009;6:13
- *Gualano et al: Creatine supplementation does not impair kidney function in type 2 diabetic patients: a randomized, double-blind, placebo-controlled, clinical trial. *Eur J Appl Physiol* 2010 Oct 26
- *Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40
- *Hersch et al: Creatine in Huntington disease is safe, tolerable, bioavailable in brain and reduces serum 8OH2'dG. *Neurol* 2006 Jan 24;66(2):250-2
- *Walter et al: Creatine monohydrate in muscular dystrophies: A double-blind, placebo-controlled clinical study. *Neurol* 2000 May 9;54(9):1848-50
- *Yang et al: Combination therapy with coenzyme Q10 and creatine produces additive neuroprotective effects in models of Parkinson's and Huntington's diseases. *J Neurochem* 2009 Jun;109(5):1427-39

Cruciferous Vegetables (cabbage family) contains an antioxidant substance called sulforaphane which has numerous health benefits including protecting the cells from damage. Sulforaphane is particularly high in broccoli sprouts.

- *Park et al: Protection against amyloid beta cytotoxicity by sulforaphane: role of the proteasome. *Obesity* (Silver Spring) 2009 Aug 13

Curcumin is an active compound found in Turmeric. It has numerous healing benefits including neuro-protective effects and reducing the depletion of glutathione, valuable in treating such diseases as Parkinson's and Alzheimer's.

- *Ahmed et al: Curcuminoids enhance memory in an amyloid-infused rat model of Alzheimer's disease. *Neurosci* 2010 Sep 1;169(3):1296-306
- *Bala et al: Neuroprotective and anti-ageing effects of curcumin in aged rat brain regions. *Biogerontol* 2006 Apr;7(2):81-9
- *Begum et al: Curcumin structure-function, bioavailability, and efficacy in models of neuroinflammation and Alzheimer's disease. *J Pharmacol Exp Ther* 2008 Jul;326(1):196-208
- *Frautschy et al: Phenolic anti-inflammatory antioxidant reversal of Abeta-induced cognitive deficits and neuropathology. *Cancer Lett* 2009 Nov 24
- *Ishrat et al: Amelioration of cognitive deficits and neurodegeneration by curcumin in rat model of sporadic dementia of Alzheimer's type (SDAT). *Eur Neuropsychopharma* 2009 Sep;19(9):636-47
- *Jagatha et al: Curcumin treatment alleviates the effects of glutathione depletion in vitro and in vivo: therapeutic implications for Parkinson's disease explained via in silico studies. *Free Radic Biol Med* 2008 Mar 1;44(5):907-17
- *Lee et al: Neuroprotective effect of curcumin is mainly mediated by blockade of microglial cell activation. *Pharmazie* 2007 Dec;62(12):937-42
- *Lin et al: Exposure to metal ions regulates mRNA levels of APP and BACE1 in PC12 cells: blockage by curcumin. *Neurosci Lett* 2008 Aug 8;440(3):344-7
- *Liu et al: The inhibitory effects of different curcuminoids on β -amyloid protein, β -amyloid precursor protein and β -site amyloid precursor protein cleaving enzyme 1 in swAPP HEK293 cells. *Int Dent J* 1996 Feb;46(1):22-34
- *Mishra & Palanivelu: The effect of curcumin (turmeric) on Alzheimer's disease: An overview. *Mutat Res* 2009 Oct 13
- *Mishra et al: Tetrahydrocurcumin confers protection against amyloid β -induced toxicity. *Neuroreport* 2010 Nov 24
- *Ng et al: Curry consumption and cognitive function in the elderly. *Am J Epidemiol* 2006 Nov 1;164(9):898-906
- *Ono et al: Curcumin has potent anti-amyloidogenic effects for Alzheimer's beta-amyloid fibrils in vitro. *J Neurosci Res* 2004 Mar 15;75(6):742-50
- *Pan et al: Curcumin improves learning and memory ability and its neuroprotective mechanism in mice. *Chin Med J (Engl)* 2008 May 5;121(9):832-9
- *Riemer et al: Evaluation of drugs for treatment of prion infections of the central nervous system. *J Gen Virol* 2008 Feb;89(Pt 2):594-7
- *Rinwa et al: Involvement of PPAR-gamma in curcumin-mediated beneficial effects in experimental dementia. *Naunyn Schmiedebergs Arch Pharmacol* 2010 Jun;381(6):529-39
- *Sharma et al: Curcumin counteracts the aluminium-induced ageing-related alterations in oxidative stress, Na⁺, K⁺ ATPase and protein kinase C in adult and old rat brain regions. *Biogerontology* 2009 Aug;10(4):489-502
- *Thomas et al: Grape seed polyphenols and curcumin reduce genomic instability events in a transgenic mouse model for Alzheimer's disease. *Mutat Res* 2009 Feb 10;661(1-2):25-34

EGCG (epigallocatechin-3-gallate) from Green Tea is a potent antioxidant polyphenol that has profound health benefits including improving the memory and other cognitive functions.

- *Kishido et al: Decline in glutathione peroxidase activity is a reason for brain senescence: consumption of green tea catechin prevents the decline in its activity and protein oxidative damage in ageing mouse brain. *Biogerontol* 2007 Aug;8(4):423-30

- *Lee et al: Inhibitory effect of green tea extract on beta-amyloid-induced PC12 cell death by inhibition of the activation of NF-kappaB and ERK/p38 MAP kinase pathway through antioxidant mechanisms. *Brain Res Mol Brain Res* 2005 Oct 31;140(1-2):45-54
- *Shimmyo et al: Epigallocatechin-3-gallate and curcumin suppress amyloid beta-induced beta-site APP cleaving enzyme-1 upregulation. *Am J Physiol Heart Circ Physiol* 2005 Aug;289(2):H715-21
- *Unno et al: Daily consumption of green tea catechin delays memory regression in aged mice. *Biogerontol* 2007 Apr;8(2):89-95
- *Unno et al: Daily ingestion of green tea catechins from adulthood suppressed brain dysfunction in aged mice. *Biofact* 2008;34(4):263-71
- *Unno et al: Suppressive effect of green tea catechins on morphologic and functional regression of the brain in aged mice with accelerated senescence (SAMP10). *Exp Gerontol* 2004 Jul;39(7):1027-34
- *Zhang et al: Green tea polyphenol (-)-epigallocatechin-3-gallate enhances the inhibitory effect of huperzine A on acetylcholinesterase by increasing the affinity with serum albumin. *Nutr Neurosci* 2009 Aug;12(4):142-8

Exercise protects the brain from degeneration.

- *McGregor et al: Physical activity and neural correlates of aging: a combined TMS/fMRI study. *Behav Brain Res* 2011 Mar 24

Fruit and Vegetables reduce AGEs (advanced glycation end products) which lead to various so-called age-related diseases including cardiovascular, cataracts, diabetes, and Alzheimer's and protect against the formation of cancer cells.

- *Pashikanti et al: Rutin metabolites: novel inhibitors of nonoxidative advanced glycation end products. *Free Radic Biol Med* 2009 Dec 4
- *Platt et al: Fruits and vegetables protect against the genotoxicity of heterocyclic aromatic amines activated by human xenobiotic-metabolizing enzymes expressed in immortal mammalian cells. *Mutat Res* 2010 Aug 14
- *Ramful et al: Citrus fruit extracts reduce advanced glycation end products (AGEs)- and H(2)O(2)-induced oxidative stress in human adipocytes. *J Agric Food Chem* 2010 Sep 30

Genistein is an isoflavone found in a few plants (kudzu, fava beans, soy beans) that can have such benefits as improving brain function but these foods can also be hormone-disrupters. Therefore eating them should be limited to the occasional use. However, fermentation of such foods does rid them of such harmful effects.

- *Bagheri et al: Genistein ameliorates learning and memory deficits in amyloid β (1-40) rat model of Alzheimer's disease. *Neurobiol Learn Mem* 2011 Mar;95(3):270-6
- *Ding et al: Genistein and folic acid prevent oxidative injury induced by β -amyloid peptide. *Basic Clin Pharmacol Toxicol* 2010 Nov 29
- *Ma et al: Genistein as a neuroprotective antioxidant attenuates redox imbalance induced by beta-amyloid peptides 25-35 in PC12 cells. *Int J Dev Neurosci* 2010 Jun;28(4):289-95

Ginkgo biloba is an herb long-known for its memory-enhancing properties mainly because it increases blood flow to the brain and protects brain cells from chemical-induced damage.

- *Gong et al: Protective effects of Ginkgo biloba leaf extract on aluminum-induced brain dysfunction in rats. *Life Sci* 2005 May 27;77(2):140-8
- *Shi et al: Ginkgo biloba extract EGb761 protects against aging-associated mitochondrial dysfunction in platelets and hippocampi of SAMP8 mice. *Platelets* 2010;21(5):373-9
- *Yancheva et al: Ginkgo biloba extract EGb 761(R), donepezil or both combined in the treatment of Alzheimer's disease with neuropsychiatric features: a randomised, double-blind, exploratory trial. *Aging Ment Health* 2009 Mar;13(2):183-90

Ginseng improves short term memory and prevents degeneration of the nervous system.

- *Arushanian et al: Effect of eleutherococcus on short-term memory and visual perception in healthy humans. *Eksp Klin Farmakol* 2003 Sep-Oct;66(5):10-3
- *Lian et al: Protective effects of ginseng components in a rodent model of neurodegeneration. *Ann Neurol* 2005 May;57(5):642-8
- *Wang et al: Anti-neuroinflammation effect of ginsenoside Rb1 in a rat model of Alzheimer disease. *Neurosci Lett* 2011 Jan 3;487(1):70-2

Glucosamine is one of eight known “essential” sugars needed by certain cells in the body for proper functioning including repair of neurons and joints.

- *Hwang et al: Glucosamine exerts a neuroprotective effect via suppression of inflammation in rat brain ischemia/reperfusion injury. *Glia* 2010 Nov 15;58(15):1881-92
- *www.innvista.com/health/nutrition/sugars/glucosamine.htm

Goji berries/Wolfberry are high in antioxidants which protects the nervous system from degeneration.

- *Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12
- *Chang & So: Use of anti-aging herbal medicine, *Lycium barbarum*, against aging-associated diseases. What do we know so far? *Cell Mol Neurobiol* 2008 Aug;28(5):643-52
- *Feng et al: A milk-based wolfberry preparation prevents prenatal stress-induced cognitive impairment of offspring rats, and inhibits oxidative damage and mitochondrial dysfunction in vitro. *Neurochem Res* 2010 Feb 5
- *Ho et al: Neuroprotective effects of polysaccharides from wolfberry, the fruits of *Lycium barbarum*, against homocysteine-induced toxicity in rat cortical neurons. *J Alzheimers Dis* 2010;19(3):813-27
- *Ho et al: Polysaccharides from wolfberry antagonizes glutamate excitotoxicity in rat cortical neurons. *CNS Spectr* 1999 Dec;4(12):34-47
- *Potterat: Goji (*Lycium barbarum* and *L. chinense*): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19
- *Wu et al: Antioxidant activities of some common ingredients of traditional chinese medicine, *Angelica sinensis*, *Lycium barbarum* and *Poria cocos*. *Phytother Res* 2004 Dec;18(12):1008-12
- *Yu et al: Neuroprotective effects of anti-aging oriental medicine *Lycium barbarum* against beta-amyloid peptide neurotoxicity. *Exp Gerontol* 2005 Aug-Sep;40(8-9):716-27

Gotu kola is native to Asian countries and used for thousands of years for a variety of disorders. In modern times, gotu kola is used to improve blood flow and to decrease anxiety.

- *Gotu kola: University of Maryland Medical Center website
- *Singh et al: Neuronutrient impact of Ayurvedic Rasayana therapy in brain aging. *Biogerontol* 2008 Dec;9(6):369-74
- *Subathra et al: Emerging role of *Centella asiatica* in improving age-related neurological antioxidant status. *Exp Gerontol* 2005;40(8-9):707-15
- *Xu et al: Gotu Kola (*Centella Asiatica*) extract enhances phosphorylation of cyclic AMP response element binding protein in neuroblastoma cells expressing amyloid beta peptide. *BMC Microbiol* 2008 Mar 11;8:45

Grape juice and **Grape Seed extract** contain potent antioxidants which significantly improve brain function.

- *Balu et al: Rejuvenation of antioxidant system in central nervous system of aged rats by grape seed extract. *Neurosci Lett* 2005 Aug 5;383(3):295-300

- *Joseph et al: Grape juice, berries, and walnuts affect brain aging and behavior. *J Ethnopharmacol* 2008 Aug 13;118(3):396-404
- *Krikorian et al: Concord grape juice supplementation improves memory function in older adults with mild cognitive impairment. *Br J Nutr* 2009 Dec 23:1-5
- *Liu et al: Grape seed polyphenolic extract specifically decreases A β *56 in the brains of Tg2576 Mice. *J Alzheimers Dis* 2011 Jul 8
- *Shukitt-Hale et al: Effects of concord grape juice on cognitive and motor deficits in aging. *Nutr* 2006 Mar;22(3):295-302
- *Thomas et al: Grape seed polyphenols and curcumin reduce genomic instability events in a transgenic mouse model for Alzheimer's disease. *Mutat Res* 2009 Feb 10;661(1-2):25-34

Horny Goat Weed is an herb known to increase blood flow and often used by body-builders but it also protects against memory loss.

- *He et al: Neuroprotective effects of icariin on memory impairment and neurochemical deficits in senescence-accelerated mouse prone 8 (SAMP8) mice. *Brain Res* 2010 Jun 2;1334:73-83
- *Zeng et al: Icariin attenuates β -amyloid-induced neurotoxicity by inhibition of tau protein hyperphosphorylation in PC12 cells. *Neuropharmacol* 2010 Nov;59(6):542-50

Kava is a valuable herb with neuroprotective properties but despite its health benefits, it is not allowed in Canada.

- *Wruck et al: Kavalactones protect neural cells against amyloid beta peptide-induced neurotoxicity via extracellular signal-regulated kinase 1/2-dependent nuclear factor erythroid 2-related factor 2 activation. *Mol Pharmacol* 2008 Jun;73(6):1785-95

Lion's Mane mushroom stimulates nerve regeneration.

- *Kenmoku et al: Erinacine Q, a new erinacine from *Hericium erinaceum*, and its biosynthetic route to erinacine C in the basidiomycete. *Biosci Biotechnol Biochem* 2002 Mar;66(3):571-5
- *Kolotushkina et al: The influence of *Hericium erinaceus* extract on myelination process in vitro. *Fiziol Zh* 2003;49(1):38-45
- *Mori et al: Nerve growth factor-inducing activity of *Hericium erinaceus* in 1321N1 human astrocytoma cells. *Colorectal Dis* 2007 Jul;9(6):549-52

Maca, a Peruvian root, enhances memory and gives a general sense of well-being. Maca is often used to balance hormones in both men and women.

- *León: The "Maca" (*Lepidium meyenii*), a little known food plant of Peru. *Econ Bot* 18(2):122-7
- *Rubioa et al: Aqueous and hydroalcoholic extracts of Black Maca (*Lepidium meyenii*) improve scopolamine-induced memory impairment in mice. *Food Chem Toxicol* 2007 Oct;45(10):1882-90

Magnesium is an important mineral with numerous health benefits including reversing several age-related conditions.

- *Held et al: Oral Mg(2+) supplementation reverses age-related neuroendocrine and sleep EEG changes in humans. *Pharmacopsych* 2002 Jul;35(4):135-43
- *Killilea & Maier: A connection between magnesium deficiency and aging: new insights from cellular studies. *Magnes Res* 2008 Jun;21(2):77-82
- *McKeown et al: Dietary magnesium intake is related to metabolic syndrome in older Americans. *Eur J Nutr* 2008 Jun;47(4):210-6

Mandarin oranges contain a potent antioxidant that has anti-aging effects that also prevent cognitive decline.

- *Unno et al: Beta-cryptoxanthin, plentiful in Japanese mandarin orange, prevents age-related cognitive dysfunction and oxidative damage in senescence-accelerated mouse brain. *Biol Pharm Bull* 2011;34(3):311-7

Mango fruit improves memory.

- *Kumar et al: Effects of Mangifera indica fruit extract on cognitive deficits in mice. J Envir Biol 2009 Jul;30(4):563-6

Mangosteen fruit contains potent antioxidants that prevent cellular damage from free radicals.

- *Moongkarndi et al: Protective effect of mangosteen extract against beta-amyloid-induced cytotoxicity, oxidative stress and altered proteome in SK-N-SH cells. J Proteome Res. 2010 May 7;9(5):2076-86

Melatonin reduces oxidative damage to the aging brain; increases the effects of another antioxidant called Resveratrol; has general neuro-protective effects; and improves liver function in the aged.

- *Caballero et al: Melatonin alters cell death processes in response to age-related oxidative stress in the brain of senescence-accelerated mice. J Pineal Res 2009 Jan;46(1):106-14
- *Caballero et al: Favorable effects of a prolonged treatment with melatonin on the level of oxidative damage and neurodegeneration in senescence-accelerated mice. J Pineal Res 2008 Oct;45(3):302-11
- *Cuesta et al: Melatonin improves inflammation processes in liver of senescence-accelerated prone male mice (SAMP8). Exp Gerontol 2010 Dec;45(12):950-6
- *Gül et al: Dose-dependent neuroprotective effects of melatonin on experimental spinal cord injury in rats. Surg Neurol 2005 Oct;64(4):355-61
- *Gutierrez-Cuesta et al: Effects of melatonin in the brain of the senescence-accelerated mice-prone 8 (SAMP8) model. Rev Neurol 2011 May 16;52(10):618-622
- *Gutierrez-Cuesta et al: Evaluation of potential pro-survival pathways regulated by melatonin in a murine senescence model. J Pineal Res 2008 Nov;45(4):497-505
- *Kwon et al: Melatonin synergistically increases resveratrol-induced heme oxygenase-1 expression through the inhibition of ubiquitin-dependent proteasome pathway: a possible role in neuroprotection. J Pineal Res 2011 Mar;50(2):110-23
- *Kwon et al: Melatonin potentiates the neuroprotective properties of resveratrol against beta-amyloid-induced neuro-degeneration by modulating AMP-activated protein kinase pathways. J Clin Neurol 2010 Sep;6(3):127-37
- *Okatani et al: Acutely administered melatonin restores hepatic mitochondrial physiology in old mice. Int J Biochem Cell Biol 2003 Mar;35(3):367-75
- *Okatani et al: Melatonin reduces oxidative damage of neural lipids and proteins in senescence-accelerated mouse. Neurobiol Aging 2002 Jul-Aug;23(4):639-44
- *Perreau et al: Melatonin treatment in old mice enables a more youthful response to LPS in the brain. J Neuroimmunol 2007 Jan;182(1-2):22-31

Melissa (Lemonbalm) is an herb that contains a flavonoid called Luteolin which reduces anxiety; improves coordination and cognitive function; and reduces agitation in those with mild Alzheimer's disease.

- *Akhondzadeh et al: Melissa officinalis extract in the treatment of patients with mild to moderate Alzheimer's disease: a double blind, randomised, placebo controlled trial. J Neurol Neurosurg Psych 2003 Jul;74(7):863-6
- *Orhan & Aslan: Appraisal of scopolamine-induced anti-amnesic effect in mice and in vitro antiacetylcholinesterase and antioxidant activities of some traditionally used Lamiaceae plants. Food Chem Toxicol 2010 May 10
- *Raines et al: Investigation of the anxiolytic effects of luteolin, a lemon balm flavonoid in the male Sprague-Dawley rat. AANA J 2009 Feb;77(1):33-6

Nettle (Stinging Nettle) is an herb that reduces toxic effects that lead to brain lesions and memory loss.

- *Toldy et al: The beneficial effects of nettle supplementation and exercise on brain lesion and memory in rat. J Nutr Biochem 2008 Dec 12

Neutraceuticals refer to food substances that provide health benefits. A variety of them hold promise in preventing Alzheimer's disease.

- *MCCarty: Toward prevention of Alzheimers disease--potential nutraceutical strategies for suppressing the production of amyloid beta peptides. *Med Hypoth* 2006;67(4):682-97
- *Parachikova et al: Formulation of a medical food cocktail for Alzheimer's disease: beneficial effects on cognition and neuropathology in a mouse model of the disease. *PLoS One* 2010;5(11):e14015

Noni fruit improves blood flow thereby increasing cognitive function, endurance, flexibility and balance.

- *Gilani et al: Antispasmodic and vasodilator activities of Morinda citrifolia root extract are mediated through blockade of voltage dependent calcium channels. *BMC Complement Altern Med* 2010 Jan 13;10(1):2
- *Ma et al: Evaluation of the ergogenic potential of noni juice. *Phytother Res* 2007 Nov;21(11):1100-1
- *Muto et al: Morinda citrifolia fruit reduces stress-induced impairment of cognitive function accompanied by vasculature improvement in mice. *Physiol Behav* 2010 Sep 1;101(2):211-7
- *Pachauri et al: Protective effect of fruits of Morinda citrifolia L. on scopolamine induced memory impairment in mice: A behavioral, biochemical and cerebral blood flow study. *J Ethnopharmacol* 2011 Nov 15
- *West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Omega-3 fatty acids (fish, flaxseed oil, sacha inchi seeds) have numerous health benefits including brain-protecting qualities.

- *van Gelder et al: Fish consumption, n-3 fatty acids, and subsequent 5-y cognitive decline in elderly men: the Zutphen Elderly Study. *Am J Clin Nutr* 2007 Apr;85(4):1142-7

Organic plant foods, especially those containing: **Apigenin** (a flavonoid found in parsley, artichoke, basil, celery and other plants) and **Luteolin** (a flavonoid found in celery, thyme, green peppers, and chamomile tea) are potent brain protectors.

- *Liu et al: Neuroprotective effects of apigenin on acute transient focal cerebral ischemia-reperfusion injury in rats. *Zhong Yao Cai* 2008 Jun;31(6):870-3
- *Liu et al: The anti-amnesic effects of luteolin against amyloid beta(25-35) peptide-induced toxicity in mice involve the protection of neurovascular unit. *Neurosci* 2009 Sep 15;162(4):1232-43
- *Rezai-Zadeh et al: Apigenin and luteolin have anti-inflammatory effects and may have neuroprotective/disease-modifying properties in various neurodegenerative disorders, including Alzheimer's disease. *J Neuroinfl* 2008;5:41
- *Rezai-Zadeh et al: Apigenin and luteolin modulate microglial activation via inhibition of STAT1-induced CD40 expression. *J Neuroinflammation* 2008;5:41
- *Xu et al: Luteolin promotes long-term potentiation and improves cognitive functions in chronic cerebral hypoperfused rats. *Eur J Pharmacol* 2010 Feb 10;627(1-3):99-105

Plum Juice helps improve cognitive function.

- *Shukitt-Hale et al: Plum juice, but not dried plum powder, is effective in mitigating cognitive deficits in aged rats. *Nutri* 2009 May;25(5):567-73

Pycnogenol is a potent antioxidant extract from pine bark that has numerous health benefits including protecting cognitive function.

- *Lee et al: Oligomeric proanthocyanidins improve memory and enhance phosphorylation of vascular endothelial growth factor receptor-2 in senescence-accelerated mouse prone/8. *Br J Nutr* 2010 Feb;103(4):479-89
- *Peng et al: Pycnogenol protects neurons from amyloid-beta peptide-induced apoptosis. *Brain Res Mol* 2002 Jul 15;104(1):55-65

Quercetin is a citrus bioflavonoid used most often for its natural anti-histamine properties but it also improves alcohol-induced deteriorating brain function.

*Singh et al: Reversal of aging and chronic ethanol-induced cognitive dysfunction by quercetin a bioflavonoid. *Free Radic Res* 2003 Nov;37(11):1245-52

Red Yeast Rice is not only good for lowering cholesterol but also for improving brain function.

*Lee et al: Red mold rice promoted antioxidase activity against oxidative injury and improved the memory ability of zinc-deficient rats. *J Agric Food Chem* 2009 Nov 25;57(22):10600-7

*Lee et al: Red mold rice ameliorates impairment of memory and learning ability in intracerebroventricular amyloid beta-infused rat by repressing amyloid beta accumulation. *J Neurosci Res* 2007 Nov 1;85(14):3171-82

Reishi mushroom has anti-aging effects and protects neurons from degeneration.

*No authors listed: Ganoderma lucidum protects dopaminergic neuron degeneration through inhibition of microglial activation. *Evid Based Comple Alternat Med* 2009 Jul 16

*Weng et al: Ganodermasides C and D, two new anti-aging ergosterols from spores of the medicinal mushroom *Ganoderma lucidum*. *Biosci Biotechnol Biochem* 2011 Apr 22

*Weng et al: Ganodermasides A and B, two novel anti-aging ergosterols from spores of a medicinal mushroom *Ganoderma lucidum* on yeast via UTH1 gene. *Bioorg Med Chem* 2010 Feb 1;18(3):999-1002

Resveratrol is a potent antioxidant found in blueberries and grapes (but not much in wine) that helps prevent Alzheimer's as well as other diseases.

*Albani et al: Neuroprotective properties of resveratrol in different neurodegenerative disorders. *Biofact* 2010 Sep;36(5):370-6

*Chang et al: Low-dose pterostilbene, but not resveratrol, is a potent neuromodulator in aging and Alzheimer's disease. *Neurobiol Aging* 2011;08:15

*Chiavaroli et al: Resveratrol inhibits isoprostane production in young and aged rat brain. *Mol Cells* 2008 Nov 30;26(5):486-9

*Doré: Unique properties of polyphenol stilbenes in the brain: more than direct antioxidant actions; gene/protein regulatory activity. *Neuropharma* 2008 Jun;54(7):1112-9

*Harada et al: Resveratrol improves cognitive function in mice by increasing production of insulin-like growth factor-I in the hippocampus. *J Nutr Biochem* 2011 Dec;22(12):1150-59

*Kim et al: Resveratrol inhibits inducible nitric oxide synthase and cyclooxygenase-2 expression in beta-amyloid-treated C6 glioma cells. *Int J Mol Med* 2006 Jun;17(6):1069-75

*Oomen et al: Resveratrol preserves cerebrovascular density and cognitive function in aging mice. *Front Aging Neurosci* 2009;1:4

*Rahvar et al: Effect of oral resveratrol on the BDNF gene expression in the hippocampus of the rat brain. *Neurochem Res* 2011 Jan 9

*Richard et al: Neuroprotective properties of resveratrol and derivatives. *Ann N Y Acad Sci* 2011 Jan;1215:103-8

Rooibos Tea is native to South Africa and long used as a rejuvenation tonic for adults and babies. It possesses antioxidant properties that protect brain function from damaging effects of free radicals.

*Inanami et al: The suppression of age-related accumulation of lipid peroxides in rat brain by administration of Rooibos tea (*Aspalathus linearis*). *Neurosci Lett* 1995 Aug 18;196(1-2):85-8

Saffron is a spice whose actions are comparable with donepezil but without the side effects.

*Akhondzadeh et al: A 22-week, multicenter, randomized, double-blind controlled trial of *Crocus sativus* in the treatment of mild-to-moderate Alzheimer's disease. *Psychopharmacol (Berl)* 2010 Jan;207(4):637-43

Sage is a common spice that is effective in treating mild to moderate Alzheimer's.

- *Akhondzadeh et al: Salvia officinalis extract in the treatment of patients with mild to moderate Alzheimer's disease: a double blind, randomized and placebo-controlled trial. J Clin Pharm Ther 2003 Feb;28(1):53-9
- *Iuvone et al: The spice sage and its active ingredient rosmarinic acid protect PC12 cells from amyloid-beta peptide-induced neurotoxicity. J Pharmacol Exp Ther 2006 Jun;317(3):1143-9

Skullcap (*Scutellaria biacalensis*) is an herb that is proving to reverse cognitive decline.

- *Song et al: Scutellaria flavonoid supplementation reverses ageing-related cognitive impairment and neuronal changes in aged rats. Brain Inj 2009 Feb;23(2):146-53

Spirulina is a blue-green algae derived from aquatic cyanobacteria: *Arthrospira platensis* (Africa, Asia, South America), *Arthrospira pacifica* (Hawaiian Islands) or *Arthrospira maxima* (Central America). It has long been used for its many health benefits including improving memory and reducing oxidative stress caused by free radicals.

- *Hwang et al: Spirulina prevents memory dysfunction, reduces oxidative stress damage and augments antioxidant activity in senescence-accelerated mice. J Nutr Sci Vitaminol (Tokyo) 2011;57(2):186-91

St. John's Wort is a well-known herb often used for depression but it appears to improve spatial memory as well.

- *Trofimiuk et al: Activation of CREB by St. John's wort may diminish deleterious effects of aging on spatial memory. AAPS PharmSciTech 2005 Sep 20;6(1):E74-82

Trans-fats contribute to diminished cognitive function. Trans fats are formed in the food processing industry especially those containing fats or oily foods.

- *Corsinovil et al: Dietary lipids and their oxidized products in Alzheimer's disease. Mol Nut Food Res 2011 Sept;55(2):S161-SS172

Vinpocetine is an extract from the periwinkle plant that is proving to be even more effective than the standard ginkgo biloba for improving cognitive function.

- *Balestreri et al: A double-blind placebo controlled evaluation of the safety and efficacy of vinpocetine in the treatment of patients with chronic vascular senile cerebral dysfunction. J Am Geri Soc 1987;May;35(5):425-30
- *Kiss and Karpati: Mechanism of action of vinpocetine. Acta Pharmaceut Hungar 1996;66(5):213-24
- *No author listed: Vinpocetine. Monograph. Alt Med Rev 2002;(3):240-3
- *Valikovics: Investigation of the effect of vinpocetine on cerebral blood flow and cognitive functions. Ideggyogy Sz 2007;60(7-8):301-10

Vitamins and Minerals increase cognitive abilities and lifespan while decreasing the risk and duration of infections.

- *Chan et al: Efficacy of a vitamin/nutraceutical formulation for early-stage Alzheimer's disease: a 1-year, open-label pilot study with an 16-month caregiver extension. Am J Alzh Dis Other Demen 2008 Dec-2009 Jan;23(6):571-85
- *Chandra: Effect of vitamin and trace-element supplementation on immune responses and infection in elderly subjects. Lancet 1992;340:1124-27
- *Kesse-Guyot et al: Adherence to nutritional recommendations and subsequent cognitive performance: findings from the prospective Supplementation with antioxidant vitamins and minerals 2 (SU.VI.MAX 2) study. Am J Clin Nutr 2011 Jan;93(1):200-10
- *Lee et al: Association between 25-hydroxyvitamin D levels and cognitive performance in middle-aged and older European men. J Neurol Neurosurg Psychiatry. 2009 Jul;80(7):722-9

- *Sato et al: Amelioration of osteoporosis and hypovitaminosis D by sunlight exposure in hospitalized, elderly women with Alzheimer's disease: a randomized controlled trial. J Bone Miner Res 2005 Aug;20(8):1327-33
- *Takasaki et al: Vitamin A has anti-oligomerization effects on amyloid- β in vitro. J Alzheimers Dis 2011 Aug 2

ANALGESICS/ANTI-INFLAMMATORIES/ NSAIDs/OPIOIDS



(USED TO CONTROL VARIOUS LEVELS OF PAIN, INFLAMMATION, AND FEVERS)

COMMON EXAMPLES:

NSAIDs [non-steroidal anti-inflammatory drugs]

- acemetacin** – Emflex
- acetaminophen** – Tylenol and others
- aspirin** (salicylates) – Bayer, Alka-Seltzer, Anacin, Darvon, Fiorinal, Percodan, and others
- celecoxib** – Celebrex
- diclofenac** – Voltaren
- etodolac** – Lodine
- flurbiprofen** – Ansaid
- ibuprofen** – Advil, Motrin, and others
- indomethacin** – Indocin
- ketoprofen** – Orudis
- mefenamic acid** – Ponstan
- meloxicam** – Mobic, Mobicox
- mesalamine (mesalazine, 5-ASA)** – Asacol, Canasa, Mesasal, Pentasa, Rowasa, Salofalk
- naproxen** – Aleve, Anaprox, Naprosyn
- penicillamine** – Cuprimine
- piroxicam** – Apo-Piroxicam, Feldene, Nu-Pirox, Pirocam
- sulindac** – Clinoril
- ... and many more**

Opioids (used to treat moderate to severe pain)

- buprenorphine** – Buprenex
- butorphanol** – Stadol
- codeine**
- fentanyl** – Duragesic, Innovar and others
- hydrocodone** – Dyazide, Maxzide, Lortab, Alor, Lorcet, Vicodin, and others
- hydromorphone** – Dilaudid
- meperidine** – Demerol

methadone – Dolophine
morphine – Astramorph
oxycodone – OxyContin, Percodan
propoxyphene – Darvon
... and many more

DEplete:

B1, B2, B3, B5, B7, B9, B12, C, D, E, K, calcium, copper, iron, magnesium, potassium, sodium, zinc and almost all other minerals, melatonin, glutathione/NAC, protein

☞ **Acetaminophen** is a petroleum by-product derived from coal tar.

*Josephy & Mannervik: Acetaminophen: The discovery of the coal tar analgesics. *Mol Toxicol* 19:562

☞ **Fever-reducing drugs** (usually analgesics) increase the risk of influenza-associated deaths.

*Eyers et al: The effect on mortality of antipyretics in the treatment of influenza infection: systematic review and meta-analysis. *J R Soc Med* 2010 Oct;103(10):403-11

☞ **Food Additives** consist of thousands and many are linked to such painful conditions as migraines and fibromyalgia which improve when these are eliminated from the diet. Of special concern are Aspartame, MSG, Sucralose (Splenda) which are notorious for causing many health problems.

*Jacob & Stechschulte: Formaldehyde, aspartame, and migraines: a possible connection. *Dermatitis* 2008 May-Jun;19(3):E10-1

*Patel et al: Popular sweetener sucralose as a migraine trigger. *Headache* 2006 Sep;46(8):1303-4

*Smith et al: Relief of fibromyalgia symptoms following discontinuation of dietary excitotoxins. *Ann Pharmacother* 2001 Jun;35(6):702-6

☞ **NSAIDs** and their chronic use, have been linked to a two-fold increased risk of blood cancer; restless leg syndrome, especially in those also taking antidepressants; blood clots; congestive heart failure; and death.

*Farkouh et al: Cardiovascular outcomes in high risk patients with osteoarthritis treated with. *Ann Rheum Dis* 2007 Jun;66(6):764-70

*Gislason et al: Increased mortality and cardiovascular morbidity associated with use of nonsteroidal anti-inflammatory drugs in chronic heart failure. *Arch Intern Med* 2009 Jan 26;169(2):141-9

*Leutgeb & Martus: Regular intake of non-opioid analgesics is associated with an increased risk of restless legs syndrome in patients maintained on antidepressants. *Eur J Med Res* 2002 Aug 30;7(8):368-78

*Walter et al: Long-term use of acetaminophen, aspirin, and other nonsteroidal anti-inflammatory drugs and risk of hematologic malignancies: results from the prospective vitamins and lifestyle (VITAL) study. *J Clin Oncol* 2011 May 9

☞ **Sorbitol** is a sugar alcohol alternative that can cause abdominal pain and bloating.

*Jain et al: Sorbitol intolerance in adults. *Am J Gastroenterol* 1985 Sep;80(9):678-81

SUGGESTED ALTERNATIVES:

- * There are dozens of other **evidence-based alternatives** that relieve pain. Some of these include chiropractic treatments, yoga, acupuncture, massage, biofeedback, light therapy and many more but I am only addressing oral supplemental relief.

Alpha-lipoic acid (a potent antioxidant), **GLA** (the good part of omega-6) and **Carnitine** (made in the body from two amino acids, lysine and methionine) taken alone or in combination with each other, help relieve pain from various causes.

- *Chiechio et al: Acetyl-L-carnitine in neuropathic pain: experimental data. *CNS Drugs* 2007;21 Suppl 1:31-8; discussion 45-6
- *Chiechio et al: L-Acetylcarnitine induces analgesia by selectively up-regulating mGlu2 metabotropic glutamate receptors. *Mol Pharmacol* 2002 May;61(5):989-96
- *Ghelardini et al: Acetyl-L-carnitine induces muscarinic antinociception in mice and rats. *Neuropharma* 2002 Dec;43(7):1180-7
- *Magis et al: A randomized double-blind placebo-controlled trial of thioctic acid in migraine prophylaxis. *Headache* 2007 Jan;47(1):52-7
- *Memeo & Loiero: Thioctic acid and acetyl-L-carnitine in the treatment of sciatic pain caused by a herniated disc: a randomized, double-blind, comparative study. *Clin Drug Investig* 2008;28(8):495-500
- *Ranieri et al: The use of alpha-lipoic acid (ALA), gamma linolenic acid (GLA) and rehabilitation in the treatment of back pain: effect on health-related quality of life. *Int J Immunopathol Pharmacol* 2009 Jul-Sep;22(3 Suppl):45-50
- *Vincent et al: Effects of alpha-lipoic acid supplementation in peripheral arterial disease: a pilot study. *Zhongguo Zhen Jiu* 2010 Aug;30(8):617-22

Andrographis is an herb often used to improve the immune system but it also has anti-inflammatory activity.

- *Chandrasekaran et al: Effect of an extract of *Andrographis paniculata* leaves on inflammatory and allergic mediators in vitro. *J Ethnopharmacol* 2010 May 27;129(2):203-7

Anthocyanins are found in such fruits as cherries and raspberries and have a similar effect as ibuprofen and naproxen but without the side effects.

- *Seeram et al: Cyclooxygenase inhibitory and antioxidant cyanidin glycosides in cherries and berries. *Phytomed* 2001 Sep;8(5):362-9

Arginine is an amino acid used, in this case, for treating interstitial cystitis, a painful urinary bladder condition.

- *Korting et al: A randomized double-blind trial of oral L-arginine for treatment of interstitial cystitis. *J Urol* 1999 Feb;161(2):558-65

Arnica is the number one homeopathic pain-relieving choice. It is superior to NSAIDs or steroids in relieving pain and inflammation and does not affect blood clotting as do the medications. It can safely be taken by adults or children. 68 comparisons from 49 clinical trials show that Arnica has a significant effect in traumatic injuries.

- *Alfredo et al: Effects of phonophoresis with *Arnica montana* onto acute inflammatory process in rat skeletal muscles: an experimental study. *Ultrasonics* 2009 May;49(4-5):466-71
- *Baillargeon et al: The effects of *Arnica Montana* on blood coagulation. Randomized controlled trial. *Can Fam Physician* 1993 Nov;39:2362-7
- *Brinkhaus et al: Homeopathic arnica therapy in patients receiving knee surgery: results of three randomised double-blind trials. *Complement Ther Med* 2006 Dec;14(4):237-46
- *Ekenäs et al: Screening for anti-inflammatory activity of 12 *Arnica* (Asteraceae) species assessed by inhibition of NF-kappaB and release of human neutrophil elastase. *Hum Exp Toxicol* 2002 Apr;21(4):223-30

- *Jäger et al: Phytomedicines prepared from Arnica flowers inhibit the transcription factors AP-1 and NF-kappaB and modulate the activity of MMP1 and MMP13 in human and bovine chondrocytes. *Planta Med* 2009 Oct;75(12):1319-25
- *Jeffrey and Belcher: Use of Arnica to relieve pain after carpal-tunnel release surgery. *Altern Ther Health Med*. 2002 Mar-Apr;8(2):66-8
- *Karow et al: Efficacy of Arnica montana D4 for healing of wounds after Hallux valgus surgery compared to diclofenac. *Curr Med Res Opin* 1998;14(3):127-39
- *Kawakami et al: Inflammatory process modulation by homeopathic arnica montana 6CH: The role of individual variation. *Evid Based Complement Alternat Med* 2011;2011:917541
- *Knuesel et al: Arnica montana gel in osteoarthritis of the knee: an open, multicenter clinical trial. *Adv Ther* 2002 Sep-Oct;19(5):209-18
- *Lüdtke and Hacke: On the effectiveness of the homeopathic remedy Arnica montana. *Wien Med Wochenschr* 2005 Nov;155(21-22):482-90
- *Lyss et al: Helenalin, an anti-inflammatory sesquiterpene lactone from Arnica, selectively inhibits transcription factor NF-kappaB. *Biol Chem* 1997 Sep;378(9):951-61
- *Lyss et al: The anti-inflammatory sesquiterpene lactone helenalin inhibits the transcription factor NF-kappaB by directly targeting p65. *J Biol Chem* 1998 Dec 11;273(50):33508-16
- *Macêdo et al: Anti-inflammatory activity of Arnica montana 6cH: preclinical study in animals. *Homeopathy* 2004 Apr;93(2):84-7
- *Merfort: Arnica: new insights on the molecular mode of action of a traditional medicinal plant. *Teratology* 1999 Apr;59(4):252-60
- *Robertson et al: Homeopathic Arnica montana for post-tonsillectomy analgesia: a randomised placebo control trial. *Homeopathy* 2007 Jan;96(1):17-21
- *Seeley et al: Effect of homeopathic Arnica montana on bruising in face-lifts: results of a randomized, double-blind, placebo-controlled clinical trial. *Arch Facial Plast Surg* 2006 Jan-Feb;8(1):54-9
- *Tveiten & Bruslet: Effect of Arnica D30 in marathon runners. Pooled results from two double-blind placebo controlled studies. *Adv Exp Med Biol* 2007;595:379-405
- *Widrig et al: Choosing between NSAID and arnica for topical treatment of hand osteoarthritis in a randomised, double-blind study. *Rheumatol Int* 2007 Apr;27(6):585-91
- *Wolf et al: Efficacy of Arnica in varicose vein surgery: results of a randomized, double-blind, placebo-controlled pilot study. *Forsch Komplementarmed Klass Naturheilkd* 2003 Oct;10(5):242-7

Aromatherapy Essential oils prove more effective than standard analgesics for pain and reduced the amount of opioids needed (ginger, orange, peppermint, rosemary). The oils of clary sage, marjoram, cinnamon, ginger, and geranium in a base of almond oil proved an effective belly massage treatment for menstrual pain in high school girls.

- *Higley 2010:438-40
- *Ess Sci Pub 2009:456-57
- *Hur et al: Aromatherapy massage on the abdomen for alleviating menstrual pain in high school girls: a preliminary controlled clinical study. *Evid Based Comple Alt Med* 2012;2012:187163
- *Kim et al: Treatment with lavender aromatherapy in the post-anesthesia care unit reduces opioid requirements of morbidly obese patients undergoing laparoscopic adjustable gastric banding. *Obes Surg* 2007 Jul;17(7):920-5
- *Martinez et al: Antinociceptive effect and GC/MS analysis of Rosmarinus officinalis L. essential oil from its aerial parts. *Planta Med* 2009 Apr;75(5):508-11
- *Melli et al: Effect of peppermint water on prevention of nipple cracks in lactating primiparous women: a randomized controlled trial. *Int Breastfeed J* 2007;2:7
- *Melli et al: A randomized trial of peppermint gel, lanolin ointment, and placebo gel to prevent nipple crack in primiparous breastfeeding women. *Med Sci Monit* 2007 Sep;13(9):CR406-411
- *Yip & Tam: An experimental study on the effectiveness of massage with aromatic ginger and orange essential oil for moderate-to-severe knee pain among the elderly in Hong Kong. *Microbes Infect* 2006 May;8(6):1450-4

Avocado and **Soybean oils** protect against structural changes of osteoarthritis. I hesitate to recommend soybean oils because, unless a label states that they are organically grown, most soy oils are derived from GMO (genetically modified organisms) soybeans.

- *Boileau et al: Protective effects of total fraction of avocado/soybean unsaponifiables on the structural changes in experimental dog osteoarthritis: inhibition of nitric oxide synthase and matrix metalloproteinase-13. *Arthritis Res Ther* 2009;11(2):R41
- *Lippeillo et al: Metabolic effects of avocado/soy unsaponifiables on articular chondrocytes. *Evid Based Compl Alt Med* 2008 Jun;5(2):191-7
- *Mauviel et al: Effect of unsaponifiable extracts of avocado and soybean (Piasclédine) on the collagenolytic action of cultures of human rheumatoid synoviocytes and rabbit articular chondrocytes treated with interleukin-1]. *Rev Rhum Mal Osteoartic* 1991 Apr;58(4):241-5

B-complex vitamins are important for healthy nerves and can help alleviate the pain of neuropathy. (see Appendix for a list of B vitamins according to name and number)

- *Jolivalt et al: B vitamins alleviate indices of neuropathic pain in diabetic rats. *Eur J Pharmacol* 2009 Jun 10;612(1-3):41-7

Bach Flower remedies can be used internally to relieve an assortment of conditions including pain.

- *Howard: Do Bach flower remedies have a role to play in pain control? A critical analysis investigating therapeutic value beyond the placebo effect, and the potential of Bach flower remedies as a psychological method of pain relief. *Complement Ther Clin Pract* 2007 Aug;13(3):174-83

Bees Wax compounds help protect against NSAID-induced gastric ulcers if taken internally. A warm beeswax massage can be soothing to painful joints.

- *Illnait et al: Effects of D-002, a product isolated from beeswax, on gastric symptoms of patients with osteoarthritis treated with piroxicam: a pilot study. *J Med Food* 2005;8(1):63-8

Boswellia (Frankincense) is a plant that has been used for thousands of years for healing all manner of conditions. It has potent anti-inflammatory properties that reduce pain including that of Crohn's disease.

- *Blain et al: Boswellia frereana (frankincense) suppresses cytokine-induced matrix metalloproteinase expression and production of pro-inflammatory molecules in articular cartilage. *Curr Eye Res* 2006 Feb;31(2):147-53
- *Gerhardt et al: Therapy of active Crohn disease with Boswellia serrata extract H 15. *Gastroenterol* 2001 Jan;39(1):11-7
- *Gupta et al: Effects of gum resin of Boswellia serrata in patients with chronic colitis. *Plant Med* 2001 Jul;67(5):391-5
- *Sengupta et al: A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin for treatment of osteoarthritis of the knee. *Arthritis Res Ther* 2008;10(4):R85

Bromelain is a pineapple enzyme that has anti-inflammatory effects that equals or betters any pharmaceutical analgesic for most pain, including migraines.

- *Contreras et al: Effect of bromelain on milk yield, milk composition and mammary health in dairy goats. *Trop Anim Health Prod* 2009 Apr;41(4):493-8
- *Fitzhugh et al: Bromelain treatment decreases neutrophil migration to sites of inflammation. *Clin Immunol* 2008 Jul;128(1):66-74
- *Hale et al: Dietary supplementation with fresh pineapple juice decreases inflammation and colonic neoplasia in IL-10-deficient mice with colitis. *Inflamm Bowel Dis* 2010 Dec;16(12):2012-21
- *Hale et al: Treatment with oral bromelain decreases colonic inflammation in the IL-10-deficient murine model of inflammatory bowel disease. *Clin Immunol* 2005 Aug;116(2):135-42

- *Hou et al: Cross-linked bromelain inhibits lipopolysaccharide-induced cytokine production involving cellular signaling suppression in rats. *J Agric Food Chem* 2006 Mar 22;54(6):2193-8
- *Huang et al: Bromelain inhibits lipopolysaccharide-induced cytokine production in human THP-1 monocytes via the removal of CD14. *J Huazhong Univ Sci Technolog Med Sci* 2003;23(2):151-3
- *Secor et al: Bromelain treatment reduces CD25 expression on activated CD4+ T cells in vitro. *Int Immunopharmacol* 2009 Mar;9(3):340-6
- *Walker et al: Bromelain reduces mild acute knee pain and improves well-being in a dose-dependent fashion in an open study of otherwise healthy adults. *Phytomed* 2002 Dec;9(8):681-6

Butterbur is an herb that is effective in preventing migraines in children, adolescents, and adults.

- *Fiebich et al: Petasites hybridus extracts in vitro inhibit COX-2 and PGE2 release by direct interaction with the enzyme and by preventing p42/44 MAP kinase activation in rat primary microglial cells. *Planta Med* 2005 Jan;71(1):12-9
- *Lipton et al: Petasites hybridus root (butterbur) is an effective preventive treatment for migraine. *Ann N Y Acad Sci* 2009 Feb;1155:278-83
- *Lipton et al: Petasites hybridus root (butterbur) is an effective preventive treatment for migraine. *Neurology* 2004 Dec 28;63(12):2240-4
- *Pothmann & Danesch: Migraine prevention in children and adolescents: results of an open study with a special butterbur root extract. *Headache* 2005 Mar;45(3):196-203

Canteloupe has antioxidant and anti-inflammatory properties.

- *Vouldoukis et al: Antioxidant and anti-inflammatory properties of a Cucumis melo LC. extract rich in superoxide dismutase activity. *J Ethnopharmacol* 2004 p;94(1):67-75

Capsaicin is a substance in hot peppers that is, ironically, a natural pain reliever.

- *Bernstein et al: Topical capsaicin treatment of chronic postherpetic neuralgia. *J Am Acad Dermatol* 1989 Aug;21(2 Pt 1):265-70
- *Watson et al: A randomized vehicle-controlled trial of topical capsaicin in the treatment of postherpetic neuralgia. *Clin Ther* 1993 May-Jun;15(3):510-26

Cat's Claw is an herb with known pain and inflammation relieving substances. With **Maca**, Cat's Claw also protects chondroitin, an important part of joint and cartilage health.

- *Allen-Hall et al: Uncaria tomentosa acts as a potent TNF-alpha inhibitor through NF-kappaB. *J Ethnopharmacol* 2009 Dec 6
- *Cisneros et al: An Uncaria tomentosa (cat's claw) extract protects mice against ozone-induced lung inflammation. *J Ethnopharmacol* 2005 Jan 15;96(3):355-64
- *Miller et al: The chondroprotective actions of a natural product are associated with the activation of IGF-1 production by human chondrocytes despite the presence of IL-1beta. *BMC Complement Altern Med* 2006 Apr 7;6:13
- *Mur et al: Randomized double blind trial of an extract from the pentacyclic alkaloid-chemotype of uncaria tomentosa for the treatment of rheumatoid arthritis. *J Rheumatol* 2002 Apr;29(4):678-81
- *Piscoya et al: Efficacy and safety of freeze-dried cat's claw in osteoarthritis of the knee: mechanisms of action of the species *Uncaria guianensis*. *Inflamm Res* 2001 Sep;50(9):442-8
- *Rinner et al: Antiproliferative and pro-apoptotic effects of *Uncaria tomentosa* in human medullary thyroid carcinoma cells. *Anticancer Res* 2009 Nov;29(11):4519-28
- *Sandoval et al: Cat's claw inhibits TNFalpha production and scavenges free radicals: role in cytoprotection. *Plant Foods Hum Nutr* 2010 Sep;65(3):225-32
- *Sandoval-Chacón et al: Antiinflammatory actions of cat's claw: the role of NF-kappaB. *Aliment Pharmacol Ther* 1998 Dec;12(12):1279-89

Celedrin cream is a formula containing Cetyl myristoleate that helps relieve pain.

- *Hesslink et al: Cetylated fatty acids improve knee function in patients with osteoarthritis. *J Rheumatol* 2002 Aug;29(8):1708-12

Cherries (tart and sweet) are natural anti-inflammatories that relieve gouty and post-exercise muscle pain.

- *Jacob et al: Consumption of cherries lowers plasma urate in healthy women. *J Nutr* 2003 Jun;133(6):1826-9
- *Kelley et al: Consumption of Bing sweet cherries lowers circulating concentrations of inflammation markers in healthy men and women. *J Nutr* 2006 Apr;136(4):981-6
- *Kuehl et al: Efficacy of tart cherry juice in reducing muscle pain during running: a randomized controlled trial. *J Int Soc Sports Nutr* 2010;7:17
- *Tall et al: Tart cherry anthocyanins suppress inflammation-induced pain behavior in rat. *Behav Brain Res* 2004 Aug 12;153(1):181-8

Chinese Skullcap contains compounds that prove to be just as effective as naproxin for relieving pain. Flavocoxid is a combination of baicalin, found in Chinese skullcap, and catechin, a polyphenol.

- *Levy et al: Flavocoxid is as effective as naproxen for managing the signs and symptoms of osteoarthritis of the knee in humans: a short-term randomized, double-blind pilot study. *J Pediatr Gastroenterol Nutr* 1985 Dec;4(6):923-30

Clove spice is as effective as benzocaine as a topical anesthetic.

- *Alqareer et al: The effect of clove and benzocaine versus placebo as topical anesthetics. *J Dent* 2006 Nov;34(10):747-50

Coconut reduces pain, fever, and inflammation.

- *Alviano et al: Antinociceptive and free radical scavenging activities of *Cocos nucifera* L. (Palmae) husk fiber aqueous extract. *J Ethnopharmacol* 2004 Jun;92(2-3):269-73
- *Intahphuak et al: Anti-inflammatory, analgesic, and antipyretic activities of virgin coconut oil. *Pharm Biol* 2010 Feb;48(2):151-7
- *Rinaldi et al: Characterization of the antinociceptive and anti-inflammatory activities from *Cocos nucifera* L. (Palmae). *J Ethnopharma* 2009 Apr 21;122(3):541-6

CoQ10 is a coenzyme with anti-inflammatory effects that can help prevent migraines while a deficiency can cause them. The Ubiquinol form has better absorption than the cheaper ubiquinone.

- *Hershey et al: Coenzyme Q10 deficiency and response to supplementation in pediatric and adolescent migraine. *Headache* 2007 Jan;47(1):73-80
- *Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9
- *Rozen et al: Open label trial of coenzyme Q10 as a migraine preventive. *Cephalalgia* 2002 Mar;22(2):137-41
- *Sándor et al: Efficacy of coenzyme Q10 in migraine prophylaxis: a randomized controlled trial. *Neurol* 2005 Feb 22;64(4):713-5
- *Schmelzer et al: Functions of coenzyme Q10 in inflammation and gene expression. *Biofactors* 2008;32(1-4):179-83
- *Schmelzer et al: Effects of ubiquinol-10 on microRNA-146a expression in vitro and in vivo. *Mediators Inflamm* 2009;2009:415437
- *Schmelzer et al: In vitro effects of the reduced form of coenzyme Q(10) on secretion levels of TNF-alpha and chemokines in response to LPS in the human monocytic cell line THP-1. *J Clin Biochem Nutr* 2009 Jan;44(1):62-6

*Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17

Curcumin, Quercetin, Resveratrol, and Phosphatidylcholine are potent antioxidants that often help relieve pain but a combination of the above is generally more effective than Curcumin alone.

*Began et al: Inhibition of lipoxygenase 1 by phosphatidylcholine micelles-bound curcumin. *Lipids* 1998 Dec;33(12):1223-8

*Belcaro et al: Efficacy and safety of Meriva®, a curcumin-phosphatidylcholine complex, during extended administration in osteoarthritis patients. *Altern Med Rev* 2010 Dec;15(4):337-44

*Csaki et al: Synergistic chondroprotective effects of curcumin and resveratrol in human articular chondrocytes: inhibition of IL-1beta-induced NF-kappaB-mediated inflammation and apoptosis. *Arthritis Res Ther* 2009 Nov 4;11(6):R165

*Gupta et al: Bioavailability enhancement of curcumin by complexation with phosphatidyl choline. *J Pharm Sci* 2011 May;100(5):1987-95

*Henrotin et al: Biological actions of curcumin on articular chondrocytes. *Osteoarth Cartil* 2010 Feb;18(2):141-9

*Jackson et al: The antioxidants curcumin and quercetin inhibit inflammatory processes associated with arthritis. *Inflamm Res* 2006 Apr;55(4):168-75

*Jancinová et al: Decreased activity of neutrophils in the presence of diferuloylmethane (curcumin) involves protein kinase C inhibition. *Eur J Pharmacol* 2009 Jun 10;612(1-3):161-6

*Liu et al: Validated LC/MS/MS assay for curcumin and tetrahydrocurcumin in rat plasma and application to pharmacokinetic study of phospholipid complex of curcumin. *J Pharm Biomed Anal* 2006 Feb 24;40(3):720-7

*Marczylo et al: Comparison of systemic availability of curcumin with that of curcumin formulated with phosphatidylcholine. *Canc Chemother Pharmacol* 2007 Jul;60(2):171-7

*Shakibaei et al: Suppression of NF-kappaB activation by curcumin leads to inhibition of expression of cyclo-oxygenase-2 and matrix metalloproteinase-9 in human articular chondrocytes: Implications for the treatment of osteoarthritis. *Biochem Pharmacol* 2007 May 1;73(9):1434-45

*Sharma et al: Effect of insulin and its combination with resveratrol or curcumin in attenuation of diabetic neuropathic pain: participation of nitric oxide and TNF-alpha. *Phytother Res* 2007 Mar;21(3):278-83

*Tajik et al: Interaction between curcumin and opioid system in the formalin test of rats. *Pak J Biol Sci* 2007 Aug 1;10(15):2583-6

*Takada et al: Nonsteroidal anti-inflammatory agents differ in their ability to suppress NF-kappaB activation, inhibition of expression of cyclooxygenase-2 and cyclin D1, and abrogation of tumor cell proliferation. *Oncogene* 2004 Dec 9;23(57):9247-58

Dandelion is a potent antioxidant with many beneficial properties including anti-inflammatory and analgesic. Dandelion contains two substances that inhibit the inflammation process, Luteolin and Chicoric acid.

*Hu & Kitts: Dandelion (*Taraxacum officinale*) flower extract suppresses both reactive oxygen species and nitric oxide and prevents lipid oxidation in vitro. *Phytomed* 2005 Aug;12(8):588-97

*Hu & Kitts: Luteolin and luteolin-7-O-glucoside from dandelion flower suppress iNOS and COX-2 in RAW264.7 cells. *Mol Cell Biochem* 2004 Oct;265(1-2):107-13

*Jeon et al: Anti-inflammatory activity of *Taraxacum officinale*. *Int J Oncol* 2008 May;32(5):1085-90

*Kim et al: *Taraxacum officinale* inhibits tumor necrosis factor-alpha production from rat astrocytes. *Immunopharmacol Immunotoxicol* 2000 Aug;22(3):519-30

*Koh et al: Anti-inflammatory effect of *Taraxacum officinale* leaves on lipopolysaccharide-induced inflammatory responses in RAW 264.7 cells. *J Med Food* 2010 Aug;13(4):870-8

*Park et al: *Taraxacum officinale* Weber extracts inhibit LPS-induced oxidative stress and nitric oxide production via the NF-κB modulation in RAW 264.7 cells. *J Ethnopharmacol* 2011 Jan 27;133(2):834-42

*Park et al: Luteolin and chicoric acid synergistically inhibited inflammatory responses via inactivation of PI3K-Akt pathway and impairment of NF- κ B translocation in LPS stimulated RAW 264.7 cells. Eur J Pharmacol 2011 Apr 15

*Schütz et al: Taraxacum - a review on its phytochemical and pharmacological profile. J Ethnopharmacol 2006 Oct 11;107(3):313-23

Devil's Claw, White Willow Bark and Cayenne are potent pain relievers. White willow bark was the basis for making aspirin at one time.

*Gagnier et al: Herbal medicine for low back pain. Cochrane Database Syst Rev 2006 Apr 19;(2):CD004504

*Warnock et al: Effectiveness and safety of Devil's Claw tablets in patients with general rheumatic disorders. Phytother Res 2007 Dec;21(12):1228-33

EGCG (Epigallocatechin gallate) is a substance found in green tea that helps relieve pain, one of its many health benefits.

*Ahmed et al: Down-regulation of myeloid cell leukemia 1 by epigallocatechin-3-gallate sensitizes rheumatoid arthritis synovial fibroblasts to tumor necrosis factor alpha-induced apoptosis. Am J Surg 2010 Jul 7

*Yun et al: Epigallocatechin-3-gallate suppresses TNF-alpha -induced production of MMP-1 and -3 in rheumatoid arthritis synovial fibroblasts. Gastroenter 2007 May;132(5):1925-36

Enzyme therapy can speed pain relief as well as helping the digestion and the immune system. For pain relief, take between meals.

*Chichoke: Enzymes can hasten pain relief. Nutr Sci News 2001 Feb

5-HTP (L-5-hydroxytryptophan) helps overcome chronic headaches.

*Benedittis & Massei: Serotonin precursors in chronic primary headache. A double-blind cross-over study with L-5-hydroxytryptophan vs Placebo. J Neurosurg Sci 1985 Jul-Sep;29(3):239-48

Fermented Whey and Probiotics have anti-inflammatory properties.

*Beaulieu et al: Anti-inflammatory potential of a malleable matrix composed of fermented whey proteins and lactic acid bacteria in an atopic dermatitis model. J Inflamm (Lond) 2007;4:6

Feverfew (with or without White willow bark) helps prevent migraines.

*Diener et al: Efficacy and safety of 6.25 mg t.i.d. feverfew CO₂-extract (MIG-99) in migraine prevention--a randomized, double-blind, multicentre, placebo-controlled study. Cephalalgia 2005 Nov;25(11):1031-41

*Jäger et al: Bioassay-guided isolation of apigenin with GABA-benzodiazepine activity from Tanacetum parthenium. Phytother Res 2009 Nov;23(11):1642-4

*Shrivastava et al: Tanacetum parthenium and Salix alba (Mig-RL) combination in migraine prophylaxis: a prospective, open-label study. Clin Drug Investig 2006;26(5):287-96

Flavonoids (Bioflavonoids) are plant substances that have numerous health benefits including reducing pain and bleeding after surgery.

*Mlakar and Kosorok: Flavonoids to reduce bleeding and pain after stapled hemorrhoidopexy: a randomized controlled trial. Wien Klin Wochenschr 2005 Aug;117(15-16):558-60

*Rovenský et al: Effects of purified micronized flavonoid fraction (Detralex) on prophylactic treatment of adjuvant arthritis with methotrexate in rats. Isr Med Assoc J 2008 May;10(5):377-80

*Simsek et al: Effects of micronized purified flavonoid fraction (Dafon) on pelvic pain in women with laparoscopically diagnosed pelvic congestion syndrome: a randomized crossover trial. Clin Exp Obstet Gynecol 2007;34(2):96-8

*Taskin et al: The effects of dafon on pelvic pain in women with Taylor Syndrome. J Am Assoc Gynecol Laparosc 1996 Aug;3(4, Supplement):S49

Food sensitivities often cause pain (migraines, abdominal, muscle, joint). Common triggers include alcohol, artificial sweeteners, caffeine, chocolate, dairy (especially aged cheese), pickled foods, shellfish, wheat, MSG (monosodium glutamate), nitrates and smoke found in processed meats.

*Sun-Edelstein & Mauskop: Foods and supplements in the management of migraine headaches. *Mol Canc Ther* 2008 Jun;7(6):1708-19

Genistein is an isoflavone found in high concentrations in such foods as soy and fava beans and kudzu (a pea plant considered to be a noxious weed in many places). Genistein has some anti-inflammatory properties that helps relieve pain.

*Valsecchi et al: Genistein, a natural phytoestrogen from soy, relieves neuropathic pain following chronic constriction sciatic nerve injury in mice: anti-inflammatory and antioxidant activity. *J Neurochem* 2008 Oct;107(1):230-40

GLA (gamma-linolenic acid) can help relieve arthritic pain. GLA is the “good” part of omega-6 fatty acid and found in such oils as borage, evening primrose, and black currant seed. It is also found in such foods as blueberries, walnuts, apples, flax seed and watercress.

*Cameron et al: Evidence of effectiveness of herbal medicinal products in the treatment of arthritis. Part 2: Rheumatoid arthritis. *Phytother Res* 2009 Nov 25;23(12):1647-1662

*Gamma-linolenic acid. U Maryland Medical Center online

*Leventha et al: Treatment of rheumatoid arthritis with blackcurrant seed oil. *Br J Rheumatol* 1994 Sep;33(9):847-52

Glucosamine, Chondroitin, and Flavonoids help ease painful conditions.

*Gang & Gao: Therapeutic results of glucosamine hydrochloride for knee degenerative osteoarthritis. *Zhongguo Xiu Fu Chong Jian Wai Ke Za Zhi* 2008 Jan;22(1):29-31

*Theoharides et al: Treatment of refractory interstitial cystitis/painful bladder syndrome with Cysto-Protek--an oral multi-agent natural supplement. *J Agric Food Chem* 2008 Sep 24;56(18):8374-8

*Qui et al: A multi-center, randomized, controlled clinical trial of glucosamine hydrochloride/sulfate in the treatment of knee osteoarthritis. *Zhonghua Yi Xue Za Zhi* 2005 Nov 16;85(43):3067-70

Ginger is not only a good herb for digestion but proves superior to NSAIDs in relieving pain.

*Fouda et al: Evaluation of the effect of hydroalcoholic extract of *Zingiber officinale* rhizomes in rat collagen-induced arthritis. *Basic Clin Pharmacol Toxicol* 2009 Mar;104(3):262-71

*Funk et al: Comparative effects of two gingerol-containing *Zingiber officinale* extracts on experimental rheumatoid arthritis. *J Nat Prod* 2009 Feb 13

*Ozgoli et al: Comparison of effects of ginger, mefenamic acid, and ibuprofen on pain in women with primary dysmenorrhea. *J Altern Complement Med* 2009 Feb 13

Ginkgo biloba is an herb often used to improve memory because it increases blood flow which is likely why it is effective in preventing some migraines.

*D'Andrea et al: Efficacy of Ginkgolide B in the prophylaxis of migraine with aura. *Neurol Sci* 2009 May;30 Suppl 1:S121-4

*Usai et al: An innovative approach for migraine prevention in young age: a preliminary study. *Neurol Sci* 2010 Jun;31 Suppl 1:S181-3

Ginseng has long been used as a general restorative but it is also proving to be a safe alternative for pain.

*Park et al: Effects of AIF on knee osteoarthritis patients: double-blind, randomized placebo-controlled study. *Korean J Physiol Pharmacol* 2009 Feb;13(1):33-7

Green Plantain Banana pulp protects the gastric mucosa from aspirin-induced erosions.

- *Lewis et al: A natural flavonoid present in unripe plantain banana pulp (*Musa sapientum* L. var. *paradisica*) protects the gastric mucosa from aspirin-induced erosions. *J Ethnopharmacol* 1999 Jun;65(3):283-8

Guava leaf extract reduces menstrual pain better than ibuprofen.

- *Dobova et al: Effect of a *Psidium guajavae* folium extract in the treatment of primary dysmenorrhea: a randomized clinical trial. *Graefes Arch Clin Exp Ophthalmol* 2007 Apr;245(4):588-94

Hawthorn is an herb with multi-beneficial effects including anti-inflammatory.

- *Tadić et al: Anti-inflammatory, gastroprotective, free-radical-scavenging, and antimicrobial activities of hawthorn berries ethanol extract. *J Agric Food Chem* 2008 Sep 10;56(17):7700-9

Holy Basil is an herb well known for its mood uplifting properties but it seems to help sciatic nerve pain as well.

- *Muthuraman et al: Ameliorative effects of *Ocimum sanctum* in sciatic nerve transection-induced neuropathy in rats. *J Ethnopharmacol* 2008 Oct 30;120(1):56-62

Homeopathic remedies safely and effectively treat various painful conditions including fibromyalgia and migraines. Although arnica is the number one choice for relieving pain, there are others that are effective as pain-relievers.

- *Bell et al: Improved clinical status in fibromyalgia patients treated with individualized homeopathic remedies versus placebo. *Rheumatology (Oxford)* 2004 May;43(5):577-82
- *Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29
- *Haselen & Fisher: A randomized controlled trial comparing topical piroxicam gel with a homeopathic gel in osteoarthritis of the knee. *Rheumatol (Oxford)* 2000 Jul;39(7):714-9
- *Jacobs et al: Treatment of acute childhood diarrhea with homeopathic medicine: a randomized clinical trial in Nicaragua. *Pediatrics* 1994 May;93(5):719-25
- *Relton et al: Healthcare provided by a homeopath as an adjunct to usual care for fibromyalgia (FMS): results of a pilot Randomised Controlled Trial. *Homeopathy* 2009 Apr;98(2):77-82
- *Witt et al: Homeopathic treatment of patients with migraine: a prospective observational study with a 2-year follow-up period. *J Altern Complement Med* 2010 Apr;16(4):347-55
- *Witt et al: Homeopathic treatment of patients with chronic low back pain: A prospective observational study with 2 years' follow-up. *HNO* 2007 Apr;55(4):258-63

Honey (non-pasteurized, Manuka) has healing and anti-inflammatory effects. The average “grocery store honey” has no healing properties and very few should even be labelled as “honey”.

- *Kassim et al: Ellagic acid, phenolic acids, and flavonoids in Malaysian honey extracts demonstrate in vitro anti-inflammatory activity. *Nutr Res* 2010 Sep;30(9):650-9
- *Owoyele et al: Effects of honey on inflammation and nitric oxide production in Wistar rats. *Zhong Xi Yi Jie He Xue Bao* 2011 Apr ;9(4):447-52
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7

Hops is a calming herb that has anti-inflammatory activity which helps arthritis, liver inflammation and fibrosis.

- *Cleemput et al: Hop bitter acids efficiently block inflammation independent of GRalpha, PPARalpha, or PPARgamma. *Mol Nutr Food Res* 2009 Aug 4
- *Dorn et al: Xanthohumol, a chalcon derived from hops, inhibits hepatic inflammation and fibrosis. *Mol Nutr Food Res* 2010 Jan 19

*Hougee et al: Selective inhibition of COX-2 by a standardized CO₂ extract of *Humulus lupulus* in vitro and its activity in a mouse model of zymosan-induced arthritis. *Biochem Biophys Res Commun* 1996 Jul 16;224(2):358-61

Horehound is an herb long-used as an expectorant for lung congestion but it also has other properties that prove to be more potent than some well-known analgesics.

*de Jesus et al: Analysis of the antinociceptive properties of marrubiin isolated from *Marrubium vulgare*. *Phytomed* 2000 Apr;7(2):111-5

Hyaluronic acid is an important substance in the body. It is needed by every tissue to retain water and for lubrication. The vitreous humour of the eye contains high amounts of it and so do joints and skin. In this study, HA was effective in relieving the pain and urinary frequency of interstitial cystitis.

*Kallestrup et al: Treatment of interstitial cystitis with Cystistat: a hyaluronic acid product. *Scand J Urol Nephrol* 2005;39(2):143-7

Kudzu is considered a noxious weed in many places but it does have health benefits including helping relieve the pain of cluster headaches.

*Sewell: Response of cluster headache to kudzu. *Headache* 2009 Jan;49(1):98-105

Lemon has significant anti-inflammatory effects.

*Galati et al: Anti-inflammatory effect of lemon mucilage: in vivo and in vitro studies. *Immunopharmacol Immunotoxicol* 2005;27(4):661-70

Licorice root has long helped relieve the pain of stomach ulcers so it should come as no surprise that it helps with the pain of canker sores as well.

*Martin et al: A controlled trial of a dissolving oral patch concerning glycyrrhiza (licorice) herbal extract for the treatment of aphthous ulcers. *Gen Dent* 2008 Mar-Apr;56(2):206-10; quiz 211-2, 224

*Moghadamnia et al: The efficacy of the bioadhesive patches containing licorice extract in the management of recurrent aphthous stomatitis. *Phytother Res* 2009 Feb;23(2):246-50

Linden and **Quercetin** are effective in treating arthritic pain. Linden is an herb often used for its sedative properties while Quercetin, a bioflavonoid, is used as a natural antihistamine and anti-inflammatory.

*Quercetin. U Maryland Medical Center online

*Martinez et al: Antinociceptive activity of *Tilia americana* var. *mexicana* inflorescences and quercetin in the formalin test and in an arthritic pain model in rats. *Neuropharma* 2008 Nov 5

Magnesium, Selenium, Malic acid, and Fish oil help prevent migraines and can safely be used even by children. A deficiency in magnesium especially, can constrict blood vessels that often leads to headaches.

*Cohen: High-dose oral magnesium treatment of chronic, intractable erythromelalgia. *Ann Pharmacother* 2002 Feb;36(2):255-60

*Eisinger et al: Selenium and magnesium status in fibromyalgia. *Magnes Res* 1994 Dec;7(3-4):285-8

*Facchinetti et al: Magnesium prophylaxis of menstrual migraine: effects on intracellular magnesium. *Headache* 1991 May;31(5):298-301

*Facchinetti et al: Oral magnesium successfully relieves premenstrual mood changes. *Obstet Gynecol* 1991 Aug;78(2):177-81

*McCarty et al: Magnesium taurate and fish oil for prevention of migraine. *Med Hypotheses* 1996 Dec;47(6):461-6

*Marcus et al: Serum ionized magnesium in post-traumatic headaches. *Maturitas* 2005 June 16;51(2):177-86

- *Russell et al: Treatment of fibromyalgia syndrome with Super Malic: a randomized, double blind, placebo controlled, crossover pilot study. *J Rheumatol* 1995 May;22(5):953-8
- *Shechter et al: Effects of oral magnesium therapy on exercise tolerance, exercise-induced chest pain, and quality of life in patients with coronary artery disease. *Am J Cardiol* 2003 Mar 1;91(5):517-21
- *Teragawa et al: The preventive effect of magnesium on coronary spasm in patients with vasospastic angina. *Clin Cancer Res* 2008 Nov 1;14(21):6855-66
- *Wang et al: Oral magnesium oxide prophylaxis of frequent migrainous headache in children: a randomized, double-blind, placebo-controlled trial. *Eur J Endocrinol* 2009 Apr;160(4):611-7

Maitake mushrooms have anti-inflammatory properties similar to Cox inhibitors.

- *Zhang et al: Cyclooxygenase inhibitory and antioxidant compounds from the mycelia of the edible mushroom *Grifola frondosa*. *Endocr Pract* 2002 Nov-Dec;8(6):417-23

Mango has anti-inflammatory and possibly anti-cancer effects.

- *Garrido-Suárez et al: A *Mangifera indica* L. extract could be used to treat neuropathic pain and implication of mangiferin. *Molecules* 2010;15(12):9035-45
- *Yoshimi et al: The inhibitory effects of mangiferin, a naturally occurring glucosylxanthone, in bowel carcinogenesis of male F344 rats. *Cancer Lett* 2001 Feb 26;163(2):163-70

Mangosteen reduces inflammation by increasing antioxidants.

- *Kondo et al: Bioavailability and antioxidant effects of a xanthone-rich Mangosteen (*Garcinia mangostana*) product in humans. *J Agric Food Chem* 2009 Oct 14;57(19):8788-92
- *Udani et al: Evaluation of Mangosteen juice blend on biomarkers of inflammation in obese subjects: a pilot, dose finding study. *Nutr J* 2009 Oct 20;8:48

Melatonin, often used to induce sleep, has many other health benefits including relieving headaches and reducing kidney damage caused by acetaminophen.

- *Ilbey et al: Melatonin prevents acetaminophen-induced nephrotoxicity in rats. *Int Urol Nephrol* 2009;41(3):695-702
- *Peres et al: Potential therapeutic use of melatonin in migraine and other headache disorders. *Expert Opin Investig Drugs* 2006 Apr;15(4):367-75

Milk Thistle, often used as a liver support, proves superior to drugs in reducing inflammation of osteoarthritis.

- *Hussain et al: Anti-inflammatory activity of silymarin in patients with knee osteoarthritis. A comparative study with piroxicam and meloxicam. *J Proteomics* 2010 Mar 10;73(5):951-64

MSM (methylsulfonylmethane) is a sulfur compound that shows good results for relieving chronic pain.

- *Kim et al: Efficacy of methylsulfonylmethane (MSM) in osteoarthritis pain of the knee: a pilot clinical trial. *Osteoarthritis Cartilage* 2006 Mar;14(3):286-94
- *MSM (methylsulfonylmethane). WebMD online

Mullein is an herb that has been used for hundreds of years for bronchitis and heavy coughs but it is also an anti-inflammatory, helping to relieve pain.

- *Tatli et al: Anti-inflammatory and antinociceptive potential of major phenolics from *Verbascum salvifolium* Boiss. *Z Naturforsch [C]* 2008 Mar-Apr;63(3-4):196-202

Myrtle is an herb that manages the pain and inflammation of oral infections. A few drops of myrtle tincture or essential oil on toothpaste is a viable option.

- *Babae et al: The efficacy of a paste containing *Myrtus communis* (Myrtle) in the management of recurrent aphthous stomatitis: a randomized controlled trial. *Clin Oral Investig* 2010 Feb;14(1):65-70

Natural substances such as **Curcumin, ECGC, Green Tea, Milk Thistle, Pomegranate, Quercetin,** and **Resveratrol** help prevent osteo- and rheumatoid arthritis.

*Khalifé & Zafarullah: Molecular targets of natural health products in arthritis. *Arthritis Res Ther* 2011 Feb 3;13(1):102

Nettle is an herb that contains a substance effective in reducing rheumatic pain.

*Klingelhoef et al: Antirheumatic effect of IDS 23, a stinging nettle leaf extract, on in vitro expression of T helper cytokines. *J Rheumatol* 1999 Dec;26(12):2517-22

Neuropathies may be caused by **Gluten sensitivity** **or** the antibiotic **isoniazid**.

*Bushara: Neurologic presentation of celiac disease. *Gastroenter* 2005 Apr;128(4 Suppl 1):S92-7

*Hadjivassiliou et al: Neuropathy associated with gluten sensitivity. *Free Radic Biol Med* 2010 Mar 15;48(6):831-838

*Hadjivassiliou et al: Sensory ganglionopathy due to gluten sensitivity. *Neurology* 2010 Sep 14;75(11):1003-8

*Steichen et al: Isoniazid induced neuropathy: consider prevention. *Rev Mal Respir* 2006 Apr;23:157-60

Niacin (vitamin B3) helps prevent migraines but if extra is taken of this it must accompany a full B-complex for better effect since the B family all work together.

*Velling et al: Sustained-release niacin for prevention of migraine headache. *Mayo Clin Proc* 2003 Jun;78(6):770-1

Noni fruit is as effective as analgesics and steroids for reducing pain and inflammation.

*Basar et al: Analgesic and antiinflammatory activity of *Morinda citrifolia* L. (Noni) fruit. *Phytother Res* 2010 Jan;24(1):38-42

*Basar et al: Analgesic and antiinflammatory activity of *Morinda citrifolia* L. (Noni) fruit. *Phytother Res* 2009 Jun 22

*Buia et al: Polysaccharide composition of the fruit juice of *Morinda citrifolia* (Noni). *Phytochem* 2006 June;67(12):1271-75

*Chan-Blanco et al: The noni fruit (*Morinda citrifolia* L.): A review of agricultural research, nutritional and therapeutic properties. *J Food Comp Anal* 2006 Sept-Nov;19(6-7):645-654

*Dixon et al: Ferment this: The transformation of Noni, a traditional polynesian medicine (*Morinda Citrifolia*, Rubiaceae). *Econ Bot* 53(1):51-68

*Dussossoy et al: Characterization, anti-oxidative and anti-inflammatory effects of Costa Rican noni juice (*Morinda citrifolia* L.). *J Ethnopharmacol* 2010 Sep 19

*McClatchey: From Polynesian healers to health food stores: Changing perspectives of *Morinda citrifolia* (Rubiaceae). *Integ Canc Ther* 2002 June;1(2):110-120

*McKoy et al: Preliminary investigation of the anti-inflammatory properties of an aqueous extract from *Morinda citrifolia* (Noni). *Proc West Pharmacol Soc* 2002 45:76-78

*Nualsanit et al: Damnacanthol-induced anti-inflammation is associated with inhibition of NF- κ B Activity. *Inflamm Allergy Drug Targets* 2011 Nov 1

*Potterat & Hamburger: *Morinda citrifolia* (Noni) Fruit - Phytochemistry, Pharmacology, Safety. *Planta Med* 2007;73(3):191-199

*West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Olive leaf and **Oil** have anti-inflammatory effects similar to COX-2 inhibitors (NSAIDs).

*Corona et al: Inhibition of p38/CREB phosphorylation and COX-2 expression by olive oil polyphenols underlies their anti-proliferative effects. *Biochem Biophys Res Commun* 2007 Oct 26;362(3):606-11

*Kaeidi et al: Olive (*Olea europaea* L.) leaf extract attenuates early diabetic neuropathic pain through prevention of high glucose-induced apoptosis: In vitro and in vivo studies. *J Ethnopharma* 2011 Apr 22

- *Lucas et al: Molecular mechanisms of inflammation. Anti-inflammatory benefits of virgin olive oil and the phenolic compound oleocanthal. *Curr Pharm Des* 2011 ;17(8):754-68
- *Süntar et al: Assessment of anti-inflammatory and antinociceptive activities of *Olea europaea* L. *Urol Int* 2006;77(3):269-74

Omega-3 fatty acids are known anti-inflammatories and can be found in fish or flaxseed oils and sacha inchi seeds.

- *Adam et al: Anti-inflammatory effects of a low arachidonic acid diet and fish oil in patients with rheumatoid arthritis. *Rheumatol Int* 2003 Jan;23(1):27-36
- *Follegatti-Romero et al: Supercritical CO₂ extraction of omega-3 rich oil from Sacha inchi (*Plukenetia volubilis* L.) seeds. *J Supercrit Fluids* 2009 July;49(3):323-29
- *Fritsch et al: A multicenter study of the effect of dietary supplementation with fish oil omega-3 fatty acids on carprofen dosage in dogs with osteoarthritis. *J Am Vet Med Assoc* 2010 Mar 1;236(5):535-9
- *Galarraga et al: Cod liver oil (n-3 fatty acids) as a non-steroidal anti-inflammatory drug sparing agent in rheumatoid arthritis. *Rheumatol (Oxford)* 2008 May;47(5):665-9
- *Gruenwald et al: Effect of cod liver oil on symptoms of rheumatoid arthritis. *Adv Ther* 2002 Mar-Apr;19(2):101-7
- *Guillén et al: Characterization of sacha inchi (*Plukenetia volubilis* L.) oil by FTIR spectroscopy and ¹H NMR. Comparison with linseed oil. *J Am Oil Chem Soc* 80;8:755-62
- *Guesens et al: Long-term effect of omega-3 fatty acid supplementation in active rheumatoid arthritis. A 12-month, double-blind, controlled study. *Arthritis Rheum* 1994 Jun;37(6):824-9
- *Lewis & Sandford: Rotator cuff tendinopathy: is there a role for polyunsaturated Fatty acids and anti-oxidants? *J Hand Ther* 2009 Jan-Mar;22(1):49-55; quiz 56
- *Lau et al: Effects of fish oil supplementation on non-steroidal anti-inflammatory drug requirement in patients with mild rheumatoid arthritis--a double-blind placebo controlled study. *Br J Rheumatol* 1993 Nov;32(11):982-9
- *Maroon & Bost: Omega-3 fatty acids (fish oil) as an anti-inflammatory: an alternative to nonsteroidal anti-inflammatory drugs for discogenic pain. *Surg Neurol* 2006 Apr;65(4):326-31
- *Tartibian et al: The effects of ingestion of omega-3 fatty acids on perceived pain and external symptoms of delayed onset muscle soreness in untrained men. *Clin J Sport Med* 2009 Mar;19(2):115-9
- *Zainal et al: Relative efficacies of omega-3 polyunsaturated fatty acids in reducing expression of key proteins in a model system for studying osteoarthritis. *Osteoarth Cartil* 2009 Jul;17(7):896-905

Orange peel (which is full of flavonoids) has effects similar to COX-2 inhibitors (NSAIDs).

- *Chen et al: Effect and mechanism of total flavonoids of orange peel on rat adjuvant arthritis. *Zhongguo Zhong Yao Za Zhi* 2010 May;35(10):1298-301
- *Frasca et al: Involvement of inducible nitric oxide synthase and cyclooxygenase-2 in the anti-inflammatory effects of a red orange extract in human chondrocytes. *Nat Prod Res* 2010 Sep;24(15):1469-80

Orchid tree leaf extract has anti-inflammatory effects.

- *Zakaria et al: Antinociceptive, anti-inflammatory and antipyretic properties of the aqueous extract of *Bauhinia purpurea* leaves in experimental animals. *Med Princ Pract* 2007;16(6):443-9

Papaya leaves have anti-inflammatory properties.

- *Owoyale et al: Anti-inflammatory activities of ethanolic extract of *Carica papaya* leaves. *Inflammopharmacol* 2008 Aug;16(4):168-73

Passion flower inhibits inflammation.

- *Vargas et al: *Passiflora alata* and *Passiflora edulis* spray-dried aqueous extracts inhibit inflammation in mouse model of pleurisy. *Fitoterapia* 2007 Feb;78(2):112-9

Pomegranates protect the digestive tract from inflammation caused by alcohol and aspirin and the chondroitin joint content in those with osteoarthritis.

- *Ajaikumar et al: The inhibition of gastric mucosal injury by Punica granatum L. (pomegranate) methanolic extract. *J Ethnopharmacol* 2005 Jan 4;96(1-2):171-6
- *Boussetta et al: Punicic acid a conjugated linolenic acid inhibits TNF α -induced neutrophil hyperactivation and protects from experimental colon inflammation in rats. *PLoS One* 2009 Jul 31;4(7):e6458
- *Hadipour-Jahromy & Mozaffari-Kermani: Chondroprotective effects of pomegranate juice on monoiodoacetate-induced osteoarthritis of the knee joint of mice. *Phytother Res* 2009 Jun 5

Pomegranates and Gotu kola improve symptoms of periodontitis (inflammation and/or infection of jaw ligaments and bones).

- *Sastravaha et al: Adjunctive periodontal treatment with *Centella asiatica* and *Punica granatum* extracts in supportive periodontal therapy. *J Int Acad Periodontol* 2005 Jul;7(3):70-9

Probiotics relieve abdominal pain and bloating in IBS; work better than mesalazine for diverticulitis; reduce complications in SIRS (Systemic inflammatory response syndrome); and relieve symptoms of arthritis.

- *Hun: *Bacillus coagulans* significantly improved abdominal pain and bloating in patients with IBS. *Postgrad Med* 2009 Mar;121(2):119-24
- *Mandel et al: *Bacillus coagulans*: a viable adjunct therapy for relieving symptoms of rheumatoid arthritis according to a randomized, controlled trial. *BMC Complement Altern Med* 2010 Jan 12;10(1):1
- *Shimizu et al: Synbiotics decrease the incidence of septic complications in patients with severe SIRS: a preliminary report. *Dig Dis Sci*. 2009 May;54(5):1071-8
- *Tursi et al: Mesalazine and/or *Lactobacillus casei* in maintaining long-term remission of symptomatic uncomplicated diverticular disease of the colon. *Hepatogastroenterol* 2008 May-Jun;55(84):916-20

Purple Passionfruit peel reduces pain and stiffness in osteoarthritis.

- *Farid et al: Oral intake of purple passion fruit peel extract reduces pain and stiffness and improves physical function in adult patients with knee osteoarthritis. *Nutr Res* 2010 Sep;30(9):601-6

Pycnogenol (alone or with certain vitamins [C, E]) helps prevent various types of pain including migraines. Pycnogenol is a powerful antioxidant extracted from pine bark.

- *Chayasirisobhon: Use of a pine bark extract and antioxidant vitamin combination product as therapy for migraine in patients refractory to pharmacologic medication. *Headache* 2006 May;46(5):788-93
- *Cisár et al: Effect of pine bark extract (Pycnogenol) on symptoms of knee osteoarthritis. *Phytother Res* 2008 Aug;22(8):1087-92
- *Suzuki et al: French maritime pine bark extract significantly lowers the requirement for analgesic medication in dysmenorrhea: a multicenter, randomized, double-blind, placebo-controlled study. *Prev Med* 2009 Aug-Sep;49(2-3):184-9
- *Vinciguerra et al: Cramps and muscular pain: prevention with pycnogenol in normal subjects, venous patients, athletes, claudicants and in diabetic microangiopathy. *Cancer Lett* 2007 Jun 18;251(1):43-52

Red Oranges (navels, valencias, Blood) have the same orange-coloured peel on the outside but inside, they are a deep red to maroon colour. These red oranges have anti-inflammatory properties which also protect the chondroitin content in joints, particularly important in those with arthritis.

- *Frasca et al: Involvement of inducible nitric oxide synthase and cyclooxygenase-2 in the anti-inflammatory effects of a red orange extract in human chondrocytes. *Nat Prod Res* 2010 Sep;24(15):1469-80

Reishi mushrooms are known immune boosters but they are also effective in relieving the pain of herpes and neuralgia.

- *Hijikata et al: Effect of an herbal formula containing Ganoderma lucidum on reduction of herpes zoster pain: a pilot clinical trial. *Am J Chin Med* 2005;33(4):517-23
- *Hijikata and Yamada: Effect of Ganoderma lucidum on postherpetic neuralgia. *J Nutr* 2006 Mar;136(3 Suppl):816S-820S

Resveratrol is a potent antioxidant with analgesic effects. It is found in the skins of blueberries and grapes but not much in wine (despite the propaganda).

- *Falchi et al: Central antalgic activity of resveratrol. *Arch Ital Biol* 2010 Dec;148(4):389-96
- *Hsia et al: Effects of resveratrol, a grape polyphenol, on uterine contraction and Ca²⁺ mobilization in rats in vivo and in vitro. *Mutat Res* 1993 Nov;303(3):109-12
- *Remsberg et al: Pharmacometrics of pterostilbene: preclinical pharmacokinetics and metabolism, anti-cancer, antiinflammatory, antioxidant and analgesic activity. *Phytother Res* 2008 Feb;22(2):169-79
- *Sharma et al: Effect of insulin and its combination with resveratrol or curcumin in attenuation of diabetic neuropathic pain: participation of nitric oxide and TNF-alpha. *Phytother Res* 2007 Mar;21(3):278-83

Riboflavin (vitamin B2) helps prevent migraines but take it with a full B complex since they all work together for better effect and less likely to create a deficiency if taken separately.

- *Schoenen et al: Effectiveness of high-dose riboflavin in migraine prophylaxis. A randomized controlled trial. *Neurology* 1998 Feb;50(2):466-70

Rose Hips have a high vitamin C content but they are becoming harder to find in supplemental form. Vitamin C is a known antioxidant and likely the reason for it being effective in relieving pain.

- *Chrubasik et al: A one-year survey on the use of a powder from *Rosa canina* lito in acute exacerbations of chronic pain. *Phytother Res* 2008 Sep;22(9):1141-8

St. John's Wort proves twice as effective as ibuprofen in relieving pain.

- *Bukhari et al: Antinociceptive activity of methanolic extracts of St. John's Wort (*Hypericum perforatum*) preparation. *Pak J Pharm Sci* 2004 Jul;17(2):13-9

Saffron, Celery seed, and Anise seed prove more effective than mefenamic acid for menstrual pain.

- *Nahid et al: The effect of an Iranian herbal drug on primary dysmenorrhea: a clinical controlled trial. *J Midwifery Womens Health* 2009 Sep-Oct;54(5):401-4

SAMe (S-adenosylmethionine) is proving effective in relieving the pain of neuralgia disorders and arthritis.

- *Bottiglieri et al: The clinical potential of ademetionine (S-adenosylmethionine) in neurological disorders. *Drugs* 1994 Aug;48(2):137-52
- *Jacobsen et al: Oral S-adenosylmethionine in primary fibromyalgia. Double-blind clinical evaluation. *Scand J Rheumatol* 1991;20(4):294-302
- *König: A long-term (two years) clinical trial with S-adenosylmethionine for the treatment of osteoarthritis. *Am J Med* 1987 Nov 20;83(5A):89-94
- *Maccagno et al: Double-blind controlled clinical trial of oral S-adenosylmethionine versus piroxicam in knee osteoarthritis. *Am J Med* 1987 Nov 20;83(5A):72-7
- *Padova: S-adenosylmethionine in the treatment of osteoarthritis. Review of the clinical studies. *Am J Med* 1987 Nov;83(5A):60-5

Savory is an herb that appears to be effective in relieving sinus pain and inflammation.

- *Uslu et al: Effects of aqueous extracts of *Satureja hortensis* L. on rhinosinusitis treatment in rabbit. *J Ethnopharma* 2002 Oct;82(2-3):83-7

Serrapeptase is an enzyme that relieves pain and inflammation but it should be taken on an empty stomach for greatest effect.

- *Al-Khateeb & Nusair: Effect of the proteolytic enzyme serrapeptase on swelling, pain and trismus after surgical extraction of mandibular third molars. *Int J Oral Maxillofacial Sur* 2008, Mar;37(3):264-268
- *Chopra et al: A randomized, double-blind, placebo-controlled study comparing the efficacy and safety of paracetamol, serratiopeptidase, ibuprofen and betamethasone using the dental impaction pain model. *Int J Oral Maxillofacial Sur* 2009, Apr;38(4):350-55
- *Esch et al: Objective measurement of swelling of the upper ankle joint in treatment with serrapeptase— a prospective study. *Fortschritte der Medizin* 1989;107(4):67-8, 71-2 [English Abstract (lang: ger)]
- *Panagariya et al: A preliminary trial of serratiopeptidase in patients with carpal tunnel syndrome. *J Assoc Physicians India* 1999 Dec;47(12):1170-2

Sesame oil has anti-inflammatory effects.

- *Chopra et al: Sesamol suppresses neuro-inflammatory cascade in experimental model of diabetic neuropathy. *J Pain* 2010 Oct;11(10):950-7

Shiitake mushrooms protect the liver against acetaminophen damage. Shiitake and White button mushrooms reduce the incidences and severity of collagen-induced arthritis. Immunity (autoimmunity) to collagen type II can occur to cause arthritis rather than cure it.

- *Chandra et al: White button and shiitake mushrooms reduce the incidence and severity of collagen-induced arthritis in dilute brown non-agouti mice. *J Nutr* 2011 Jan;141(1):131-6
- *Sasidharan et al: In vitro antioxidant activity and hepatoprotective effects of Lentinula edodes against paracetamol-induced hepatotoxicity. *Molecules* 2010 Jun;15(6):4478-89

Tart Cherries suppress inflammation and pain as effectively as indomethacin; prevent muscle damage; and improve recovery after exercise – in humans and horses.

- *Connolly et al: Efficacy of a tart cherry juice blend in preventing the symptoms of muscle damage. *J Nat Prod* 2003 Feb;66(2):263-8
- *Ducharme et al: Effect of a tart cherry juice blend on exercise-induced muscle damage in horses. *Am J Vet Res* 2009 Jun;70(6):758-63
- *Howatson et al: Influence of tart cherry juice on indices of recovery following marathon running. *Scand J Med Sci Sports* 2010 Dec;20(6):843-52
- *Seeram et al: Cyclooxygenase inhibitory and antioxidant cyanidin glycosides in cherries and berries. *Phytomed* 2001 Sep;8(5):362-9
- *Tall et al: Tart cherry anthocyanins suppress inflammation-induced pain behavior in rat. *Indian J Med Res* 2005 Dec;122(6):540-6
- *Tall et al: Tart cherry anthocyanins suppress inflammation-induced pain behavior in rat. *Behav Brain Res* 2004 Aug 12;153(1):181-8
- *Traustadóttir et al: Tart cherry juice decreases oxidative stress in healthy older men and women. *J Nutr* 2009 Oct;139(10):1896-900

Tribulus is an herb comparable to indomethacin for relieving pain.

- *Heidari et al: The analgesic effect of Tribulus terrestris extract and comparison of gastric ulcerogenicity of the extract with indomethacin in animal experiments. *Int J Dev Neurosci* 2010 Jun;28(4):289-95

Ursolic acid (found in many berries and herbs) is comparable to ibuprofen for relieving pain but without the stomach upsets.

- *Kang et al: The anti-arthritic effect of ursolic acid on zymosan-induced acute inflammation and adjuvant-induced chronic arthritis models. *J Pharm Pharmacol* 2008 Oct;60(10):1347-54

Various Natural Health Products have anti-inflammatory effects on a number of arthritic disorders. Those tested include EGCG, Resveratrol, and Curcumin, among others.

*Khalifé & Zafarullah: Molecular targets of natural health products in arthritis. *Arthritis Res Ther* 2011 Feb 3;13(1):102

Vitamin D3 deficiency can cause **Myalgias** (persistent muscle pain). One study found that a single mega dose of vitamin D improved menstrual and other pain-related disorders in women. Dosages are often limited to 1000 or 2000 IU per day but even this is rarely enough to meet the minimum most people need.

*Badsha et al: Myalgias or non-specific muscle pain in Arab or Indo-Pakistani patients may indicate vitamin D deficiency. *Clin Rheumatol* 2009 Aug;28(8):971-3

*Bertone-Johnson & Manson: Vitamin D for Menstrual and Pain-Related Disorders in Women. *Arch Intern Med* 2012;172(4):367-69

*Plotnikoff and Quigley: Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. *Mayo Clin Proc* 2003 Dec;78(12):1463-70

*Waltman et al: Vitamin D insufficiency and musculoskeletal symptoms in breast cancer survivors on aromatase inhibitor therapy. *Cancer Nurs.* 2009 Mar-Apr;32(2):143-50

Vitamin E, Fish oil, and Nettle combination decreases the need for analgesics.

*Jacquet et al: Phytalgic, a food supplement, vs placebo in patients with osteoarthritis of the knee or hip: a randomised double-blind placebo-controlled clinical trial. *Arthritis Res Ther* 2009 Dec 16;11(6):R192

Water is an important part of pain relief that is often ignored. Keeping well hydrated often relieves pain. (Batmanghelidj)

White button mushrooms have anti-inflammatory effects.

*Yu et al: The effects of whole mushrooms during inflammation. *BMC Immunol* 2009;10:12

Wobenzym is an enzyme combination that also includes the bioflavonoid, rutin. It is proving effective as an anti-inflammatory and a protector against scar tissue formation.

*Lanchava et al: Wobenzym in treatment of recurrent obstructive bronchitis in children. *Georg Med News* 2005 Oct;(127):50-3

*Minaev et al: Polyzymatic therapy in prevention of adhesive processes in the abdominal cavity in children. *Vestn Khir Im I I Grek* 2006;165(1):49-54

*Mukhin: Antioxidant effect of wobenzym applied for patients with chronic glomerulonephritis. *Lik Sprava* 2007 Jan-Mar;(1-2):58-61

*Riabokon et al: The effect of Wobenzym on the atherogenic potential and inflammatory factors at the rehabilitation stage for patients who have had a myocardial infarct. *Lik Sprava* 2000 Jul-Aug;(5):111-4

*Tilscher et al: Results of a double-blind, randomized comparative study of Wobenzym-placebo in patients with cervical syndrome. *Wien Med Wochenschr* 1996;146(5):91-5

Yacon is a tuber grown in the Andes mountain regions that is related to sunflower and Jerusalem artichoke. It is showing significant antioxidant, antimicrobial and anti-inflammatory activity while helping to build bone.

*Hong et al: Melampolides from the Leaves of *Smallanthus sonchifolius* and their inhibitory activity of lps-induced nitric oxide production. *Chem Pharmaceut Bull* 2008;56(2):199

*Melampolides from the leaves of *Smallanthus sonchifolius* and their inhibitory activity of lps-induced nitric oxide production. *Chem Pharm Bull (Tokyo)* 2008 Feb;56(2):199-202

*Ragusa et al: A bioactive diterpene from *Smallanthus sonchifolius*. *Nat Prod Commun* 2008;3(10):1663-66



ANTIBIOTICS

(USED TO TREAT **bacterial** INFECTIONS, INCLUDING LEPROSY AND TUBERCULOSIS)

COMMON EXAMPLES:

aminoglycosides (-mycin, -micin)

gentamicin – Cidomycin, Garamycin, and others

neomycin – Mycifradin, Neo-Fradin, Neo-Tabs

streptomycin

... and others

anti-tuberculars

ethambutol – Myambutol

isoniazid – INH and others

pyrazinamide – Tebrazid and others

rifampin – Rifadin and others

cephalosporins (five generations and counting)

chlorhexidine – Oro-Clense, Peridex and others

dapsone – DDS, Aczone, Avlosulfon, Dapsone

fluoroquinolones (-oxacin's)

ciprofloxacin – Cipro, Ciloxam, and others

levofloxacin – Iquix, Levaquin, Quixin

ofloxacin – Floxin, Ocuflax

... and others

furazolidine – Furoxon

linezolid – Zyvox

loracarbef – Lorabid

macrolides

azithromycin – Zithromax and others

clarithromycin – Biaxin

erythromycin – Apo-Erythro, Diomycin, E-Mycin, Erybid, and others

... and others

metronidazole – Apo-Metronidazole, Flagyl, Metro, Nidagel, and others

nitrofurantoin – Furadantin, Macrobid, Macrofantin, Nitro Macro, Urantoin

penicillins – amoxicillin, ampicillin, penicillin, and others

streptogramins (for VRSA)

sulfonamides (sulfa drugs)

sulfasalazine – Azulfidine and others used in Crohn’s or ulcerative colitis

sulfamethoxazole – Septra, Gantanol and others

tetracyclines (or any of the many **cyclines**)

trimethoprim – Proloprim

... and many more...

DEplete:

A, beta carotene, B1, B2, B3, B5, B6, B7, B8, B9, B12, C, D, E, K, PABA, glutathione/NAC, choline, calcium, copper, iron, magnesium, potassium, selenium, sodium, zinc, carnitine, good intestinal bacteria, CoQ10

⌘ **Antibiotics have no effect on viruses** so they should not be used for such infections as colds, flu, or most upper respiratory infections. They also have **no effect** on sinus infections since the majority of those are viral infections.

*Braglia: Research: Antibiotics Will Not Help Your Sinuses. GreenMedInfo newsletter 2012 Feb 21

*Garbutt et al: Amoxicillin for acute rhinosinusitis: a randomized controlled trial. JAMA 2012 Feb 15;307(7):685-92

*Nyquist et al: Antibiotic prescribing for children with colds, upper respiratory tract infections, and bronchitis. JAMA 1998 Mar 18;279(11):875-7

⌘ **Antibiotics** literally mean “against life”. They kill bacteria, both the bad that is causing an infection and the good that is needed for the immune and digestive systems. Therefore, taking a PRO-biotic (“for life”) is vital to rebuilding the immune system so that it can naturally fight off invaders - of the bacterial kind. (see more on Probiotics below)

⌘ **Antibiotics** promote obesity, especially in children.

*Mercola: This Commonly Used Drug Found to Promote Obesity. Nov 24, 2011

⌘ **Drug-resistant infections** are causing grave concern and for good reason. The main cause is over-use of antibiotics which have been found in meat, milk, and community water supplies. As a result, there is an increase in ‘superbugs’ – those that mutate and become antibiotic-resistant. Therefore, use antibiotics only when absolutely necessary and then replenish your system with the nutrients they destroy, especially PRObiotics.

SUGGESTED ALTERNATIVES:

Acacia gum, Arjuna, Clove, Cinnamon, and Eucalyptus have strong antimicrobial activity against several multi-strain resistant bacteria.

*Khan et al: Antimicrobial activity of five herbal extracts against multi drug resistant (MDR) strains of bacteria and fungus of clinical origin. Molecules 2009 Feb 4;14(2):586-97

Aloe vera has some anti-bacterial effects.

- *Ferro et al: In vitro susceptibilities of *Shigella flexneri* and *Streptococcus pyogenes* to inner gel of *Aloe barbadensis* Miller. *Antimicrob Agents Chemother* 2003 Mar;47(3):1137-9
- *Shilpakala et al: Susceptibilities of *Escherichia coli* and *Staphylococcus aureus* to *Aloe barbadensis*. *Cochrane Database Syst Rev* 2002(2):CD001480
- **Alpinia galanga*, a member of the ginger family, is effective against several drug-resistant bacteria.
- *Latha et al: Antiplasmid activity of 1'-acetoxychavicol acetate from *Alpinia galanga* against multi-drug resistant bacteria. *J Ethnopharmacol* 2009 Jun 25;123(3):522-5

Angelica (Dong quai) has significant anti-Tubercular activity.

- *Deng et al: Anti-TB polyynes from the roots of *Angelica sinensis*. *Phytother Res* 2005 Sep;19(9):733-9

Apples reduce the side effects caused by the cholera vaccine and with Hops, protects ligament cells in the mouth. Buy only organic apples as they are the #1 food that contains pesticides, many of which cause cancer.

- *Apples worst for pesticides on produce list. *CBC News*, Jun 14, 2011
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. *WebMD Health News* June 13, 2011
- *Inaba et al: Apple- and hop-polyphenols protect periodontal ligament cells stimulated with enamel matrix derivative from *Porphyromonas gingivalis*. *J Periodontol* 2005 Dec;76(12):2223-9
- *Shabecoff: 100 Chemicals for Apples Add Up to Enigma on Safety. *NY Times* Feb 5, 1989
- *The Full List: 53 Fruits and Veggies. *Environmental Working Group*. www.ewg.org/foodnews/list/
- *Yoshino et al: Co-administration of cholera toxin and apple polyphenol extract as a novel and safe mucosal adjuvant strategy. *Vaccine* 2009 Jul 30;27(35):4808-17

Astragalus is an herb that enhances the immune system in TB patients as well as children with recurring tonsillitis.

- *Xu et al: Effects of *Astragalus* polysaccharides and astragalosides on the phagocytosis of *Mycobacterium tuberculosis* by macrophages. *Biomed Res* 2011;32(1):19-28
- *Yang et al: Effects of *astragalus membranaceus* on TH cell subset function in children with recurrent tonsillitis. *Phytother Res* 1999 Jun;13(4):349-51

Avocado has antioxidant and anti-microbial effects.

- *Chia & Dykes: Antimicrobial activity of crude epicarp and seed extracts from mature avocado fruit (*Persea americana*) of three cultivars. *Pharm Biol* 2010 Jul;48(7):753-6
- *Rodríguez-Carpena et al: Avocado (*Persea americana* Mill.) phenolics, in vitro antioxidant and antimicrobial activities, and inhibition of lipid and protein oxidation in porcine patties. *J Agric Food Chem* 2011 May 25;59(10):5625-35

Bay leaf is effective against MRSA (Methicillin-resistant *Staphylococcus aureus*).

- *Otsuka et al: Anti-methicillin resistant *Staphylococcus aureus* (MRSA) compounds isolated from *Laurus nobilis*. *Biol Pharm Bull* 2008 Sep;31(9):1794-7

Bee propolis, including the potent Brazilian green bee propolis, is effective against MRSA and other bacterial strains and in preventing ear infections in children chronically prone to them.

- *Campana et al: Antimicrobial activity of two propolis samples against human *Campylobacter jejuni*. *J Med Food* 2009 Oct;12(5):1050-6
- *Leitão et al: Comparative evaluation of in-vitro effects of Brazilian green propolis and *Baccharis dracunculifolia* extracts on cariogenic factors of *Streptococcus mutans*. *Biol Pharm Bull* 2004 Nov;27(11):1834-9
- *Marchisio et al: Effectiveness of a propolis and zinc solution in preventing acute otitis media in children with a history of recurrent acute otitis media. *Int J Immunopathol Pharmacol* 2010 Apr-Jun;23(2):567-75

- *Raghukumar et al: Antimethicillin-resistant Staphylococcus aureus (MRSA) activity of 'pacific propolis' and isolated prenylflavonones. Aliment Pharmacol Ther 1998 Dec;12(12):1279-89
- *Ugur et al: Antimicrobial effects of propolis extracts on Escherichia coli and Staphylococcus aureus strains resistant to various antibiotics and some microorganisms. J Med Food 2000;3(4):173-80

Beetroot, Apple and Citrus pectins have anti-bacterial activity against the staphylococcal bacteria.

- *Fluer et al: Influence of various pectins on production of staphylococcal enterotoxins types A and B]. Zh Mikrobiol Epidemiol Immunobiol 2007 Nov-Dec(6):11-6

Berberine-containing plants (Barberry, Goldenseal, Goldenthrum, Oregon grape) are strong anti-microbials (against bacteria, viruses, fungi, protozoans, helminths, and chlamydia). They also have anti-cancer benefits.

- *Hwang et al: Antimicrobial constituents from goldenseal (the Rhizomes of Hydrastis canadensis) against selected oral pathogens. Planta Med 2003 Jul;69(7):623-7
- *Lin et al: In vitro anti-hepatoma activity of fifteen natural medicines from Canada. Altern Med Rev 2000 Apr;5(2):175-7
- *Mahady et al: In vitro susceptibility of Helicobacter pylori to isoquinoline alkaloids from Sanguinaria canadensis and Hydrastis canadensis. J Med Food 2007 Dec;10(4):694-701
- *Serafim et al: Different concentrations of berberine result in distinct cellular localization patterns and cell cycle effects in a melanoma cell line. Cancer Chemother Pharmacol 2008 May;61(6):1007-18

Beta Glucans are polysaccharides derived from oats, mushrooms, barley or yeasts. Beta glucans are particularly effective for priming and **normalizing** the immune system and protecting the body against a number of pathogenic bacteria.

- *Aviles et al: Active hexose correlated compound enhances resistance to Klebsiella pneumoniae infection in mice in the hindlimb-unloading model of spaceflight conditions. J Appl Physiol 2003 Aug;95(2):491-6
- *Kernodle et al: Prophylactic anti-infective activity of poly-(1-6)-beta-D-Glucopyranosyl-(1-3)-beta-D-glucopyranose glucan in a guinea pig model of Staphylococcal wound infection. Antimicrob Ag Chemother 1998;42:545-49
- *Lahnborg et al: The effect of glucan—a host resistance activator—and ampicillin on experimental intra-abdominal sepsis. J Reticuloendothel Soc 1982;32:347-53
- *Rasmussen et al: Killing of Escherichia coli by mononuclear phagocytes and neutrophils stimulated in vitro with beta-1, 3-D-polyglucose derivatives. Microbiol Immunol 1992;36(11):1173-88
- *Rasmussen & Seljelid: Dynamics of blood components and peritoneal fluid during treatment of murine E. coli sepsis with beta-1, 3-D-polyglucose derivatives. I: Cells. Scand J Immunol 1990 Oct;32(4):321-31
- *Rasmussen & Seljelid: Dynamics of blood components and peritoneal fluid during treatment of murine E. coli sepsis with beta-1, 3-D-polyglucose derivatives. II. Interleukin 1, tumor necrosis factor, prostaglandin E2 and leukotriene B4, Scand J Immunol 1990 Oct;32(4):333-40
- *Rasmussen et al: Dynamics of blood components and peritoneal fluid during treatment of murine E. coli sepsis with beta-1, 3-D-polyglucose derivatives. Scand J Immunol 1985;63:73-80
- *Williams & Diluzio: Glucan induced modification of experimental Staphylococcus aureus infection in normal, leukemic and immunosuppressed mice. Adv Exp Med Biol 1979;121(A):291-306

Black Cumin Seed is an effective anti-bacterial against MRSA.

- *Hannan et al: Anti bacterial activity of Nigella sativa against clinical isolates of methicillin resistant Staphylococcus aureus. J Ayub Med Coll Abbottabad 2008 Jul-Sep;20(3):72-4

Capsaicin, from hot peppers, is effective against the cholera bacterium.

- *Chatterjee et al: Capsaicin, a potential inhibitor of cholera toxin production in Vibrio cholerae. FEMS Microbiol Lett 2010 May;306(1):54-60

Carotenoids, from red, yellow, orange and dark green fruits and vegetables) are effective against a variety of drug-resistant bacteria including *H. Pylori*, often blamed for causing stomach ulcers.

*Molnár et al: Biological activity of carotenoids in red paprika, Valencia orange and Golden delicious apple. *Phytother Res* 2005 Aug;19(8):700-7

Catnip is an herb that is effective against *Staphylococcus aureus*.

*Nostro et al: The effect of *Nepeta cataria* extract on adherence and enzyme production of *Staphylococcus aureus*. *Int J Antimicrob Agents* 2001 Dec;18(6):583-5

Cat's Claw is an herb that boosts the immune system but it also has antibacterial activity.

*Ccahuana-Vasquez et al: Antimicrobial activity of *Uncaria tomentosa* against oral human pathogens. *Braz Oral Res* 2007 Jan-Mar;21(1):46-50

*Eberlin et al: *Uncaria tomentosa* extract increases the number of myeloid progenitor cells in the bone marrow of mice infected with *Listeria monocytogenes*. *Int Immunopharmacol* 2005 Jul;5(7-8):1235-46

Cinnamon and **Oregano** are effective against antibiotic-resistant *Campylobacter*.

*Ravishankar et al: Plant-derived compounds inactivate antibiotic-resistant *Campylobacter jejuni* strains. *J Food Prot* 2008 Jun;71(6):1145-9

Clove inhibits various bacteria and other pathogens.

*Bhamarapravati et al: Extracts of spice and food plants from Thai traditional medicine inhibit the growth of the human carcinogen *Helicobacter pylori*. *Indian J Ophthalmol* 2009 May-Jun;57(3):185-9

*Wu et al: Compounds from *Syzygium aromaticum* possessing growth inhibitory activity against oral pathogens. *J Nat Prod* 1996 Oct;59(10):987-90

Clove, Guava and **Lemongrass** increase effects of antimicrobial drugs.

*Betoni et al: Synergism between plant extract and antimicrobial drugs used on *Staphylococcus aureus* diseases. *Mem Inst Oswaldo Cruz* 2006 Jun;101(4):387-90

Clove and **Holy Basil** protect the body against *Klebsiella* bacteria.

*Saini et al: Induction of resistance to respiratory tract infection with *Klebsiella pneumoniae* in mice fed on a diet supplemented with tulsi (*Ocimum sanctum*) and clove (*Syzygium aromaticum*) oils. *J Microbiol Immunol Infect* 2009 Apr;42(2):107-13

Coconut water has antimicrobial effects.

*Mandal et al: Identification and structural insights of three novel antimicrobial peptides isolated from green coconut water. *Peptides* 2009 Apr;30(4):633-7

Colloidal Silver inhibits several drug-resistant strains of bacteria including *Pseudomonas aeruginosa* and *Aeromonas hydrophilia* in tap water, possibly replacing the need for chlorine.

*Bhattacharyya & Bradley: A case report of the use of nanocrystalline silver dressing in the management of acute surgical site wound infected with MRSA to prevent cutaneous necrosis following revision surgery. *Int J Low Extrem Wounds* 2008 Mar;7(1):45-8

*Edwards-Jones: Antimicrobial and barrier effects of silver against methicillin-resistant *Staphylococcus aureus*. *J Wound Care* 2006 Jul;15(7):285-90

*Panacek et al: Silver colloid nanoparticles: synthesis, characterization, and their antibacterial activity. *J Phys Chem B* 2006 Aug 24;110(33):16248-53

*Silvestry-Rodriguez et al: Inactivation of *Pseudomonas aeruginosa* and *Aeromonas hydrophila* by silver in tap water. *J Environ Sci Health A Tox Hazard Subst Environ Eng* 2007 Sep;42(11):1579-84

Cordyceps mushroom prevents pathogenic bacterial growth, including TB bacteria.

- *Gordien et al: Activity of Scottish plant, lichen and fungal endophyte extracts against *Mycobacterium aurum* and *Mycobacterium tuberculosis*. *Phytother Res* 2009 Oct 13
- *Koh et al: Hot-water extract from mycelia of *Cordyceps sinensis* as a substitute for antibiotic growth promoters. *Biotechnol Lett* 2003 Apr;25(7):585-90
- *Kuo et al: *Cordyceps sinensis* mycelium protects mice from group A streptococcal infection. *Mol Chem Neuropathol* 1998 Feb;33(2):139-48

Cranberry extract resists adherence of *E. Coli* and is just as effective as trimethoprim.

- *Gupta et al: Inhibition of adherence of multi-drug resistant *E. coli* by proanthocyanidin. *Urol Res* 2011 Jun 19
- *McMurdo et al: Cranberry or trimethoprim for the prevention of recurrent urinary tract infections? A randomized controlled trial in older women. *J Antimicrob Chemother* 2009 Feb;63(2):389-95

Cruciferous vegetables (cabbage family) have antibacterial as well as antifungal and antitumour properties.

- *Johansson et al: Growth inhibition of a spectrum of bacterial and fungal pathogens by sulforaphane, an isothiocyanate product found in broccoli and other cruciferous vegetables. *Planta Med* 2008 Jun;74(7):747-50

Curcumin is the active part of Turmeric and has many health benefits including antibiotic and antifungal effects.

- *Wang et al: Study on the antibiotic activity of microcapsule curcumin against foodborne pathogens. *Int J Food Microbiol* 2009 Nov 30;136(1):71-4

Dandelion stimulates the growth of at least 14 strains of *Bifidobacterium*, a necessary PRObiotic. The other necessary probiotics are the *Lactobacillus* strains.

- *Trojanová et al: The bifidogenic effect of *Taraxacum officinale* root. *Fitoterapia* 2004 Dec;75(7-8):760-3

EGCG (epicatechin 3-gallate – from green tea) is effective against MRSA.

- *Shah et al: The polyphenol (-)-epicatechin gallate disrupts the secretion of virulence-related proteins by *Staphylococcus aureus*. *Lett Appl Microbiol* 2008 Feb;46(2):181-5
- *Zhao et al: Mechanism of synergy between epigallocatechin gallate and beta-lactams against methicillin-resistant *Staphylococcus aureus*. *Antimicrob Agents Chemother* 2001 Jun;45(6):1737-42

Essential Oils have anti-bacterial properties, especially Anise, Cinnamon, Clove, Cumin, Eucalyptus, Geranium, Grapefruit, Lavender, Lemon, Lemongrass, Mountain savory, Oregano, Peppermint, Rosewood, Sage, Sandlewood, Spearmint, Tar- ragon, Tea tree (melaleuca), Thyme, Turmeric, and Wintergreen.

- *Amalaradjou et al: Antibiofilm effect of trans-cinnamaldehyde on uropathogenic *Escherichia coli*. *J Urol* 2010 Jul;184(1):358-63
- *Barel et al: The antimicrobial activity of the essential oil from *Achillea fragrantissima*. *J Ethnopharmacol* 1991 May-Jun;33(1-2):187-91
- *Ben-Arye et al: Treatment of upper respiratory tract infections in primary care: a randomized study using aromatic herbs. *Evid Based Compl Alt Med* 2011;2011:690346
- *Caelli et al: Tea tree oil as an alternative topical decolonization agent for methicillin-resistant *Staphylococcus aureus*. *J Hosp Infect* 2000 Nov;46(3):236-7
- *Chaieb et al: The chemical composition and biological activity of clove essential oil, *Eugenia caryophyllata* (*Syzygium aromaticum* L. Myrtaceae): a short review. *Phytother Res* 2007 Jun;21(6):501-6
- *Chang et al: Influence of pH on bioactivity of cinnamon oil against *Legionella pneumophila* and its disinfection efficacy in hot springs. *Brain Res* 2006 Nov 20;1120(1):183-90
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- *Salari et al: Antibacterial effects of *Eucalyptus globulus* leaf extract on pathogenic bacteria isolated from specimens of patients with respiratory tract disorders. *Clin Microbiol Infect* 2006 Feb;12(2):194-6
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- *Shkurupii et al: Use of essential oil of peppermint (*Mentha piperita*) in the complex treatment of patients with infiltrative pulmonary tuberculosis. *Viroi J* 2009 Jan 20;6:8
- *Tohidpour et al: Antibacterial effect of essential oils from two medicinal plants against Methicillin-resistant *Staphylococcus aureus* (MRSA). *Phytomed* 2009 Jul 1
- *Warnke et al: The battle against multi-resistant strains: Renaissance of antimicrobial essential oils as a promising force to fight hospital-acquired infections. *J Craniomaxillofac Surg* 2009 May 25

Fennel, and its **Essential oil**, has significant anti-bacterial activity, especially for multi-drug resistant strains of tuberculosis and *Acinetobacter baumannii*.

- *Camacho-Corona et al: Activity against drug resistant-tuberculosis strains of plants used in Mexican traditional medicine to treat tuberculosis and other respiratory diseases. *Phytother Res* 2008 Jan;22(1):82-5
- *Jazani et al: Antibacterial effects of Iranian fennel essential oil on isolates of *Acinetobacter baumannii*. *Pak J Biol Sci* 2009 May 1;12(9):738-41

Flaxseed oil protects against *Streptococcus pneumoniae* infection. Ground flaxseed also prevents various cancers and digestive disorders.

- *Saini et al: Long-term flaxseed oil supplementation diet protects BALB/c mice against *Streptococcus pneumoniae* infection. *Med Microbiol Immunol* 2010 Feb;199(1):27-34

Garlic is the most-used natural antibiotic available world-wide and certainly the most cost-effective.

- *Bjarnsholt et al: Garlic blocks quorum sensing and promotes rapid clearing of pulmonary *Pseudomonas aeruginosa* infections. *Microbiol* 2005 Dec;151(Pt 12):3873-80
- *Cutler & Wilson: Antibacterial activity of a new, stable, aqueous extract of allicin against methicillin-resistant *Staphylococcus aureus*. *Br J Biomed Sci* 2004;61(2):71-4
- *Fani et al: Inhibitory activity of garlic (*Allium sativum*) extract on multidrug-resistant *Streptococcus mutans*. *J Indian Soc Pedod Prev Dent* 2007 Oct-Dec;25(4):164-8

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- *Harjai et al: Garlic blocks quorum sensing and attenuates the virulence of *Pseudomonas aeruginosa*. *FEMS Immunol Med Microbiol* 2009 Sep 18
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- *Lee et al: Antibacterial activity of vegetables and juices. *Nutrition* 2003 Nov-Dec;19(11-12):994-6
- *Principalli et al: *Lactobacillus rhamnosus* GG inhibits invasion of cultured human respiratory cells by prtF1-positive macrolide-resistant group A streptococci. *Lett Appl Microbiol* 2009 Mar;48(3):368-72
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Grape seed extract is effective against MRSA.

- *Al-Habib et al: Bactericidal effect of grape seed extract on methicillin-resistant *Staphylococcus aureus* (MRSA). *J Toxicol Sci* 2010;35(3):357-64

Grapefruit – the Upside – prevents bacteria from communicating and forming groups. Despite its health benefits, grapefruit cannot be eaten by anyone on medication – even a one-a-day aspirin.

- *Girenavar et al: Grapefruit juice and its furocoumarins inhibits autoinducer signaling and biofilm formation in bacteria. *Int J Food Microbiol* 2008 Jul 15;125(2):204-8

Grapefruit seed extract is effective against several bacterial strains.

- *Brorson & Brorson: Grapefruit seed extract is a powerful in vitro agent against motile and cystic forms of *Borrelia burgdorferi sensu lato*. *Infection* 2007 Jun;35(3):206-8
- *Heggors et al: The effectiveness of processed grapefruit-seed extract as an antibacterial agent: II. Mechanism of action and in vitro toxicity. *J Alt Compl Med* 2002 Jun;8(3):333-40
- *Oyelami et al: The effectiveness of grapefruit (*Citrus paradisi*) seeds in treating urinary tract infections. *J Alt Compl Med* 2005 Apr;11(2):369-71
- *Reagor et al: The effectiveness of processed grapefruit-seed extract as an antibacterial agent: I. An in vitro agar assay. *J Alt Compl Med* 2002 Jun;8(3):325-32

Green Bananas are an effective treatment for children with diarrhea, hospitalized or at home, and is more effective than antibiotics.

- *Rabbani et al: Green banana-supplemented diet in the home management of acute and prolonged diarrhoea in children: a community-based trial in rural Bangladesh. *Trop Med Int Health* 2010 Oct;15(10):1132-9
- *Rabbani et al: Green banana reduces clinical severity of childhood shigellosis: a double-blind, randomized, controlled clinical trial. *Pediatr Infect Dis J* 2009 May;28(5):420-5
- *Rabbani et al: Green banana and pectin improve small intestinal permeability and reduce fluid loss in Bangladeshi children with persistent diarrhea. *Dig Dis Sci* 2004 Mar;49(3):475-84
- *Rabbani et al: Clinical studies in persistent diarrhea: dietary management with green banana or pectin in Bangladeshi children. *Gastroenterol* 2001 Sep;121(3):554-60

Hawthorn has multi-beneficial effects including anti-microbial.

- *Tadić et al: Anti-inflammatory, gastroprotective, free-radical-scavenging, and antimicrobial activities of hawthorn berries ethanol extract. *J Agric Food Chem* 2008 Sep 10;56(17):7700-9

Homeopathics are safer and often more effective than conventional treatment for bacterial infections especially for children with ear and upper respiratory infections;

severe sepsis; relieving pain and bruising after surgery; diarrhea of bacterial or unknown origins; and for sinusitis.

- *Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29
- *Frass et al: Adjunctive homeopathic treatment in patients with severe sepsis: a randomized, double-blind, placebo-controlled trial in an intensive care unit. *Homeopathy* 2005 Apr;94(2):75-80
- *Jacobs et al: Homeopathic treatment of acute childhood diarrhea: results from a clinical trial in Nepal. *J Invest Dermatol* 2008 Oct;128(10):2429-41
- *Jacobs et al: Homeopathy for childhood diarrhea: combined results and metaanalysis from three randomized, controlled clinical trials. *Pediatr Infect Dis J* 2003 Mar;22(3):229-34
- *Jeffrey & Belcher: Use of Arnica to relieve pain after carpal-tunnel release surgery. *Alt Ther Health Med* 2002 Mar-Apr;8(2):66-8
- *Sarrell et al: Efficacy of naturopathic extracts in the management of ear pain associated with acute otitis media. *Arch Pediatr Adolesc Med* 2001 Jul;155(7):796-9
- *Seeley et al: Effect of homeopathic Arnica montana on bruising in face-lifts: results of a randomized, double-blind, placebo-controlled clinical trial. *Arch Facial Plast Surg* 2006 Jan-Feb;8(1):54-9
- *Steinsbekk et al: Homeopathic care for the prevention of upper respiratory tract infections in children: a pragmatic, randomised, controlled trial comparing individualised homeopathic care and waiting-list controls. *Compl Ther Med* 2005 Dec;13(4):231-8
- *Witt et al: Homeopathic treatment of patients with chronic sinusitis: A prospective observational study with 8 years follow-up. *BMC Ear Nose Throat Disord* 2009 Jul 27;9:7
- *Wolf et al: Efficacy of Arnica in varicose vein surgery: results of a randomized, double-blind, placebo-controlled pilot study. *Forsch Komplementarmed Klass Naturheilkd* 2003 Oct;10(5):242-7
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- *Wustrow: Alternative versus conventional treatment strategy in uncomplicated acute otitis media in children: a prospective, open, controlled parallel-group comparison. *Int J Clin Pharmacol Ther* 2004 Feb;42(2):110-9

Kiwifruit contains antioxidants and antibacterial activity.

- *Collins et al: Kiwifruit protects against oxidative DNA damage in human cells and in vitro. *Nutr Cancer* 2001;39(1):148-53
- *Motohashi et al: Cancer prevention and therapy with kiwifruit in Chinese folklore medicine: a study of kiwifruit extracts. *J Ethnopharmacol* 2002 Aug;81(3):357-64

Lemon juice is effective against cholera.

- *de Castillo et al: Bactericidal activity of lemon juice and lemon derivatives against *Vibrio cholerae*. *Biol Pharm Bull* 2000 Oct;23(10):1235-8

Limes are more effective than certain spices against drug-resistant *E. coli* and may inhibit cholera from surviving in foods.

- *Rahman et al: Antibacterial activity of natural spices on multiple drug resistant *Escherichia coli* isolated from drinking water, Bangladesh. *Ann Clin Microbiol Antimicrob* 2011;10:10
- *Rodrigues et al: Protection from cholera by adding lime juice to food - results from community and laboratory studies in Guinea-Bissau, West Africa. *Trop Med Int Health* 2000 Jun;5(6):418-22

Maitake mushroom reduces effective dosage of vancomycin for *Listeria* while enhancing natural immunity.

- *Kodama et al: Addition of Maitake D-fraction reduces the effective dosage of vancomycin for the treatment of *Listeria*-infected mice. *Jpn J Pharmacol* 2001 Dec;87(4):327-32
- *Wang et al: Oral administration of submerged cultivated *Grifola frondosa* enhances phagocytic activity in normal mice. *J Pharm Pharmacol* 2008 Feb;60(2):237-43

Mangosteen fruit is effective against MRSA.

- *Voravuthikunchai & Kitpipit: Activity of medicinal plant extracts against hospital isolates of methicillin-resistant *Staphylococcus aureus*. *Clin Microbiol Infect* 2005 Jun;11(6):510-2

Manuka Honey and other non-pasteurized honey are especially good for preventing infections in wounds, including MRSA and other multi-drug pathogens. The Manuka plant of New Zealand is related to the Tea Tree plant of Australia. Both have superior antimicrobial properties. In one study alone (Cooper 2001) "...759 current infections ceased. The honey dressings did not adhere to or irritate the wound, and they were easily and painlessly renewed." Use only unpasteurized or Manuka honey as the average "grocery store honey" is not real honey and therefore, not medicinally effective.

- *Allen et al: A survey of the antibacterial activity of some new zealand honeys. *J Pharm Pharmacol* 1991 Dec;43(12):817-22
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- *Al-Waili: Investigating the antimicrobial activity of natural honey and its effects on the pathogenic bacterial infections of surgical wounds and conjunctiva. *J Med Food* 2004;7(2):210-22
- *Albietz & Lenton: Effect of antibacterial honey on the ocular flora in tear deficiency and meibomian gland disease. *Cornea* 2006 Oct;25(9):1012-9
- *Brady et al: The sensitivity of dermatophytes to the antimicrobial activity of manuka honey and other honey. *Pharm Pharmacol Comm* 1996 Oct;2(10):471-73
- *Cooper et al: The sensitivity to honey of Gram-positive cocci of clinical significance isolated from wounds. *J Appl Micro* 2002 Nov;93(5):857-63
- *Cooper et al: Manuka honey used to heal a recalcitrant surgical wound. *Eur J Clin Microbiol Infect Dis* 2001 Oct;20(10):758-9
- *Cooper & Molan: The use of honey as an antiseptic in managing *Pseudomonas* infection. *J Wound Care* 1999 Apr;8(4):161-4
- *Cooper et al: Antibacterial activity of honey against strains of *Staphylococcus aureus* from infected wounds. *J R Soc Med* 1999 June;92(6):283-85
- *Eyarefe et al: Small bowel responses to enteral honey and glutamine administration following massive small bowel resection in rabbit. *Afr J Med Med Sci* 2008 Dec;37(4):309-14
- *Gethin & Cowman: Bacteriological changes in sloughy venous leg ulcers treated with manuka honey or hydrogel: an RCT. *J Wound Care* 2008 Jun;17(6):241-4, 246-7
- *Gethin & Cowman: Manuka honey vs. hydrogel--a prospective, open label, multicentre, randomised controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. *J Clin Nurs* 2009 Feb;18(3):466-74
- *Jaganathan: Can flavonoids from honey alter multidrug resistance? *Med Hypoth* 2011 Jan 17
- *Khoo et al: Wound contraction effects and antibacterial properties of Tualang honey on full-thickness burn wounds in rats in comparison to hydrofibre. *BMC Complement Altern Med* 2010;10:48
- *Majtan et al: Honeydew honey as a potent antibacterial agent in eradication of multi-drug resistant *Stenotrophomonas maltophilia* isolates from cancer patients. *Phytother Res* 2010 Sep 29
- *Molan: The antibacterial activity of honey: The nature of the antibacterial activity. *Bee World* 2006;73(1):5-28
- *Molan: Potential of honey in the treatment of wounds and burns. *Am J Clin Dermatol* 2001 Jan 1;2(1):13-19
- *Molan: Why honey is effective as a medicine: The scientific explanation of its effects. *Bee World* 2001;82(1):22-40
- *Natarajan et al: Healing of an MRSA-colonized, hydroxyurea-induced leg ulcer with honey. *J Dermatol Treat* 2001 Mar;12(1):33-6
- *Russell et al: Identification of some antibacterial constituents of New Zealand manuka honey. *J Agric Food Chem* 1990;38(1):10-13

- *Sayed et al: Immune defense of rats immunized with fennel honey, propolis, and bee venom against induced staphylococcal infection. *J Med Food* 2009 Jun;12(3):569-75
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7
- *Somal et al: Susceptibility of *Helicobacter pylori* to the antibacterial activity of manuka honey. *J R Soc Med* 1994 Jan;87(1):9-12
- *Subrahmanyam: Honey dressing versus boiled potato peel in the treatment of burns: a prospective randomized study. *Burns* 1996 Sep;22(6):491-3
- *Visavadia et al: Manuka honey dressing: An effective treatment for chronic wound infections. *Br J Oral Maxillofac Surg* 2008 Jan;46(1):55-6
- *Willix et al: A comparison of the sensitivity of wound-infecting species of bacteria to the antibacterial activity of manuka honey and other honey. *J Appl Microbiol* 1992 Nov;73(5):388-94
- *Wood et al: Manuka honey, a low cost leg ulcer dressing. *NZ Med J* 1997 Mar 28;110(1040):107

Marjoram is a common food spice that has antibacterial and antifungal activity.

- *Leeja & Thoppil: Antimicrobial activity of methanol extract of *Origanum majorana* L. (Sweet marjoram). *J Environ Biol* 2007 Jan;28(1):145-6

Nasturtium and **Horseradish** are just as effective against several infections as standard antibiotics. **Nasturtium** flowers provide a tangy flavour to a salad.

- *Goos et al: Efficacy and safety profile of a herbal drug containing nasturtium herb and horseradish root in acute sinusitis, acute bronchitis and acute urinary tract infection in comparison with other treatments in the daily practice/results of a prospective cohort study. *Arzneimittelforschung*. 2006;56(3):249-57

Naturopathic ear drops are safer and more effective than antibiotics for ear infections.

- *Sarrell et al: Naturopathic treatment for ear pain in children. *Pediatrics*. 2003 May;111(5 Pt 1):e574-9
- *Wustrow: Naturopathic therapy for acute otitis media. An alternative to the primary use of antibiotics. *HNO* 2005 Aug;53(8):728-34

Neem has strong antibacterial properties. **Neem oil** is used the most often and derived from the seeds of a tree native to **India**.

- *Nair et al: Antibacterial activity of some plant extracts used in folk medicine. *J Herb Pharmacother* 2007;7(3-4):191-201
- *Thakurta et al: Antibacterial, antisecretory and antihemorrhagic activity of *Azadirachta indica* used to treat cholera and diarrhea in India. *J Ethnopharmacol* 2007 May 22;111(3):607-12

Neem and **Guava fruit, leaves and bark** have antibacterial effects.

- *Birdi et al: Newer insights into the mechanism of action of *Psidium guajava* L. leaves in infectious diarrhoea. *BMC Compl Alt Med* 2010;10:33
- *Hogue et al: Antibacterial activity of guava (*Psidium guajava* L.) and Neem (*Azadirachta indica* A. Juss.) extracts against foodborne pathogens and spoilage bacteria. *Foodborne Pathog Dis* 2007;4(4):481-8
- *Rahim et al: Antibacterial activity of *Psidium guajava* leaf and bark against multidrug-resistant *Vibrio cholerae*: implication for cholera control. *Jpn J Infect Dis* 2010 Jul;63(4):271-4
- *Vieira et al: Microbicidal effect of medicinal plant extracts (*Psidium guajava* Linn. and *Carica papaya* Linn.) upon bacteria isolated from fish muscle and known to induce diarrhea in children. *Rev Inst Med Trop Sao Paulo* 2001 May-Jun;43(3):145-8

Neem and **Mango** inhibit at least 4 strains of bacteria associated with dental cavities.

- *Prashant et al: The effect of mango and neem extract on four organisms causing dental caries: *Streptococcus mutans*, *Streptococcus salivarius*, *Streptococcus mitis*, and *Streptococcus sanguis*: an in vitro study. *Indian J Dent Res* 2007 Oct-Dec;18(4):148-51

Noni fruit has antibacterial activity against tuberculosis and cholera.

- *Koffi et al: Antimicrobial activity of *Morinda morindoides* on in vitro growth of *Vibrio cholerae* in Côte d'Ivoire. *J Med Food* 2004 Summer;7(2):168-79
- *Saludes et al: Antitubercular constituents from the hexane fraction of *Morinda citrifolia* Linn. (Rubiaceae). *Phytother Res* 2002 Nov;16(7):683-5

Norway Spruce salve has anti-bacterial effects against multiple drug-resistant strains.

- *Rautio et al: Antibacterial effects of home-made resin salve from Norway spruce (*Picea abies*). *APMIS* 2007 Apr;115(4):335-40

Nutmeg is a common spice that protects the mouth from bacteria.

- *Rukayadi et al: In vitro anti-biofilm activity of macelignan isolated from *Myristica fragrans* Houtt. against oral primary colonizer bacteria. *Toxicol Ind Health* 2007 Oct;23(9):507-13

Olive leaf and oil are effective against several drug-resistant strains of bacteria.

- *Camacho-Corona et al: Activity against drug resistant-tuberculosis strains of plants used in Mexican traditional medicine to treat tuberculosis and other respiratory diseases. *Phytother Res* 2008 Jan;22(1):82-5
- *Giamarellos-Bourboulis et al: Oleuropein: a novel immunomodulator conferring prolonged survival in experimental sepsis by *Pseudomonas aeruginosa*. *Shock* 2006 Oct;26(4):410-6
- *Markin et al: In vitro antimicrobial activity of olive leaves. *Mycoses* 2003 Apr;46(3-4):132-6
- *Pereira et al: Phenolic compounds and antimicrobial activity of olive (*Olea europaea* L. Cv. *Cobrançosa*) leaves. *Molecules* 2007 May 26;12(5):1153-62
- *Sudjana et al: Antimicrobial activity of commercial *Olea europaea* (olive) leaf extract. *Front Neurol Neurosci* 2010;28:107-12

Papaya fruit and seeds have broad anti-bacterial properties and perfectly safe to eat during pregnancy. Add a few seeds to smoothies where the peppery flavour makes a nice addition to green drinks while giving anti-bacterial protection.

- *Adebiyi et al: Papaya (*Carica papaya*) consumption is unsafe in pregnancy: fact or fable? Scientific evaluation of a common belief in some parts of Asia using a rat model. *Br J Nutr* 2002 Aug;88(2):199-203
- *Emeruwa: Antibacterial substance from *Carica papaya* fruit extract. *J Nat Prod* 1982 Mar-Apr;45(2):123-7
- *Leite et al: *Carica papaya* seed macerate as inhibitor of conjugative R plasmid transfer from *Salmonella typhimurium* to *Escherichia coli* in vitro and in the digestive tract of gnotobiotic mice. *J Gen Appl Microbiol* 2005 Feb;51(1):21-6
- *Osato et al: Antimicrobial and antioxidant activities of unripe papaya. *Life Sci* 1993;53(17):1383-9
- *Yismaw et al: The invitro assessment of antibacterial effect of papaya seed extract against bacterial pathogens isolated from urine, wound and stool. *Ethiop Med J* 2008 Jan;46(1):71-7

Pau d'Arco bark has anti-microbial properties including preventing MRSA bacteria.

- *Pereira et al: *Tabebuia avellanedae* naphthoquinones: activity against methicillin-resistant staphylococcal strains, cytotoxic activity and in vivo dermal irritability analysis. *Ann Clin Microbiol Antimicrob* 2006 Mar 22;5:5

Phosphatidylcholine improves survival rate of infants with neonatal sepsis caused by *Klebsiella pneumoniae*.

- *Mancilla-Ramírez et al: Phosphatidylcholine induces an increase in the production of interleukin-6 and improves survival of rats with neonatal sepsis caused by *Klebsiella pneumoniae*. *Gac Med Mex* 1995 Jan-Feb;131(1):14-22

Pomegranates have antibacterial activity against a broad range of pathogenic bacteria.

- *Al-Zoreky: Antimicrobial activity of pomegranate (*Punica granatum* L.) fruit peels. *Int J Food Microbiol* 2009 Sep 15;134(3):244-8
- *Lucas & Were: Anti-*Listeria monocytogenes* activity of heat-treated lyophilized pomegranate juice in media and in ground top round beef. *Asian J Androl* 2002 Dec;4(4):295-8
- *Naz et al: Antibacterial activity directed isolation of compounds from *Punica granatum*. *J Food Sci* 2007 Nov;72(9):M341-5

Pomegranate, Copper, and Vitamin C proved effective against *Pseudomonas*. Pomegranate peel also has antibacterial and antifungal effects.

- *Abdollahzadeh et al: Antibacterial and antifungal activities of *punica granatum* peel extracts against oral pathogens. *J Dent (Tehran)* 2011 ;8(1):1-6
- *Gould et al: Antimicrobial pomegranate rind extracts: enhancement by Cu(II) and vitamin C combinations against clinical isolates of *Pseudomonas aeruginosa*. *Br J Biomed Sci* 2009;66(3):129-32

Probiotics, in significant amounts and varied strains, are vital in overcoming various bacterial infections, including superbugs like *C. difficile*, because they strengthen the immune system. 80% of the immune system is in the normal gut flora so it is important to keep the good bacteria well fed feed. When an infection develops, up the dosage. Yogurt does not have nearly enough good bacteria and many brands do not even have active culture. Antibiotics can often cause diarrhea and probiotics have proven to overcome this side effect.

- *Banerjee et al: *Lactobacillus delbrueckii* ssp. *bulgaricus* B-30892 can inhibit cytotoxic effects and adhesion of pathogenic *Clostridium difficile* to Caco-2 cells. *Gut Pathog* 2009;1(1):8
- *Choi et al: Production of a nisin-like bacteriocin by *Lactococcus lactis* subsp. *lactis* A164 isolated from Kimchi. *Eur Rev Med Pharmacol Sci* 2009 Nov-Dec;13(6):461-4
- *Cianci et al: Efficacy of *Lactobacillus Rhamnosus* GR-1 and of *Lactobacillus Reuteri* RC-14 in the treatment and prevention of vaginosis and bacterial vaginitis relapses. *Minerva Ginecol* 2008 Oct;60(5):369-76
- *Duman et al: Efficacy and safety of *Saccharomyces boulardii* in prevention of antibiotic-associated diarrhoea due to *Helicobacter pylori* eradication. *Wei Sheng Yan Jiu* 2011 Jan;40(1):103-6
- *Gao et al: Dose-response efficacy of a proprietary probiotic formula of *Lactobacillus acidophilus* CL1285 and *Lactobacillus casei* LBC80R for antibiotic-associated diarrhea and *Clostridium difficile*-associated diarrhea prophylaxis in adult patients. *Am J Gastroenterol* 2010 Jul;105(7):1636-41
- *Hickson: Probiotics in the prevention of antibiotic-associated diarrhoea and *Clostridium difficile* infection. *Therap Adv Gastroenterol* 2011 May;4(3):185-197
- *Karska-Wysocki et al: Antibacterial activity of *Lactobacillus acidophilus* and *Lactobacillus casei* against methicillin-resistant *Staphylococcus aureus* (MRSA). *Microbiol Res* 2010 Oct 20;165(8):674-86
- *Lee et al: Probiotics prophylaxis in children with persistent primary vesicoureteral reflux. *Pediatr Nephrol* 2007 Sep;22(9):1315-20
- *Lesbros-Pantoflickova et al: *Helicobacter pylori* and Probiotics. *J Nutr* 2007 Mar;137:812S-18S
- *Lkhagvadorj et al: Anti-infectious activity of symbiotics in a novel mouse model of methicillin-resistant *Staphylococcus aureus* infection. *Microbiol Immunol* 2010 May ;54(5):265-75
- *Oishi et al: Effect of probiotics, *Bifidobacterium breve* and *Lactobacillus casei*, on bisphenol A exposure in rats. *Biosci Biotechnol Biochem* 2008 Jun;72(6):1409-15
- *Rohde et al: The use of probiotics in the prevention and treatment of antibiotic-associated diarrhea with special interest in *Clostridium difficile*-associated diarrhea. *Nutr Clin Pract* 2009 Feb-Mar;24(1):33-40
- *Sugawara et al: Perioperative synbiotic treatment to prevent postoperative infectious complications in biliary cancer surgery: a randomized controlled trial. *Ann Surg* 2006 Nov;244(5):706-14

- *Sullivan et al: Effect of supplement with lactic-acid producing bacteria on fatigue and physical activity in patients with chronic fatigue syndrome. *Nutr J* 2009 Jan 26;8:4
- *Szajewska et al: Meta-analysis: *Saccharomyces boulardii* for treating acute diarrhoea in children. *Aliment Pharmacol Ther* 2007 Feb 1;25(3):257-64
- *Wu & Vallance: *Saccharomyces boulardii* ameliorates *Citrobacter rodentium*-induced colitis through actions on bacterial virulence factors. *Am J Physiol Gastrointest Liver Physiol* 2008 Jan;294(1):G295-306
- *Wullt et al: *Lactobacillus plantarum* 299v enhances the concentrations of fecal short-chain fatty acids in patients with recurrent *Clostridium difficile*-associated diarrhea. *Dig Dis Sci* 2007 Sep;52(9):2082-6

Quercetin, a bioflavonoid, inhibits significant oral pathogens.

- *Geoghegan et al: Inhibitory effect of quercetin on periodontal pathogens in vitro. *Phytother Res* 2009 Dec 2

Rosemary is effective against bacterial and fungal infections.

- *Luqman et al: Potential of rosemary oil to be used in drug-resistant infections. *Altern Ther Health Med* 2007 Sep-Oct;13(5):54-9
- *Zilberg et al: Dried leaves of *Rosmarinus officinalis* as a treatment for streptococcosis in tilapia. *J Environ Sci Health A Tox Hazard Subst Environ Eng* 2007 Sep;42(11):1579-84

Saccharomyces boulardii is a **probiotic yeast** and not related to *Candida albicans* yeast that plagues many people. It is particularly valuable for bouts of colitis and controlling diarrhea caused by the ***C. difficile*** bacteria, which is often fatal for many hospital patients, especially the elderly. It should be taken with other probiotics for good protection. In **children**, it is used to overcome ***E. coli*** infections and vesicoureteral reflux (where the urine flows from the bladder back into ureters or kidneys).

- *Akil et al: Influence of oral intake of *Saccharomyces boulardii* on *Escherichia coli* in enteric flora. *Pediatr Nephrol* 2006 Jun;21(6):807-10
- *Castagliuolo et al: *Saccharomyces boulardii* protease inhibits the effects of *Clostridium difficile* toxins A and B in human colonic mucosa. *Infect Immun* 1999 Jan;67(1):302-7
- *Chen et al: *Saccharomyces boulardii* inhibits ERK1/2 mitogen-activated protein kinase activation both in vitro and in vivo and protects against *Clostridium difficile* toxin A-induced enteritis. *J Biol Chem* 2006 Aug 25;281(34):24449-54
- *Dinleyici et al: Clinical efficacy of *Saccharomyces boulardii* and metronidazole compared to metronidazole alone in children with acute bloody diarrhea caused by amebiasis: a prospective, randomized, open label study. *Am J Trop Med Hyg* 2009 Jun;80(6):953-5
- *Lee et al: The effect of *Saccharomyces boulardii* on human colon cells and inflammation in rats with trinitrobenzene sulfonic acid-induced colitis. *Dig Dis Sci* 2008 Jul 10
- *Lee et al: Probiotics prophylaxis in children with persistent primary vesicoureteral reflux. *Pediatr Nephrol* 2007 Sep;22(9):1315-20
- *Mansour-Ghanaei et al: Efficacy of *saccharomyces boulardii* with antibiotics in acute amoebiasis. *World J Gastroenterol* 2003 Aug;9(8):1832-3
- *Ochoa-Repáraz et al: Gut, bugs, and brain: role of commensal bacteria in the control of central nervous system disease. *Ann Neurol* 2011 Feb;69(2):240-7
- *Savaş-Erdeve et al: Efficacy and safety of *Saccharomyces boulardii* in amebiasis-associated diarrhea in children. *Turk J Pediatr* 2009 May-Jun;51(3):220-4
- *Tung et al: Prevention of *Clostridium difficile* infection with *Saccharomyces boulardii*: a systematic review. *Can J Gastroenterol* 2009 Dec;23(12):817-21

Savory has antibacterial and antifungal activity but only with the methanol extraction and not the hexane.

- *Sahin et al: Evaluation of antimicrobial activities of *Satureja hortensis* L. *J Ethnopharmacol* 2003 Jul;87(1):61-5

Shiitake mushroom is a potent antimicrobial.

*Hearst et al: An examination of antibacterial and antifungal properties of constituents of Shiitake (*Lentinula edodes*) and oyster (*Pleurotus ostreatus*) mushrooms. *Complement Ther Clin Pract* 2009 Feb;15(1):5-7

Slovak Honeydew Honey is more effective than Manuka honey (15+) against multi-strains of bacteria.

*Majtan et al: Honeydew honey as a potent antibacterial agent in eradication of multi-drug resistant *Stenotrophomonas maltophilia* isolates from cancer patients. *Phytother Res* 2010 Sep 29

Spices have anti-microbial effects against cholera-type bacteria. Spices tested were basil, clove, garlic, horseradish, marjoram, oregano, rosemary, and thyme.

*Yano et al: Antimicrobial effect of spices and herbs on *Vibrio parahaemolyticus*. *Int J Food Microbiol* 2006 Aug 15;111(1):6-11

Stevia, an herb that is 200 times sweeter than table sugar, is often used by diabetics and non-diabetics alike because of its sweetness, health benefits and no calories. One of the health benefits is that it is effective against *E. coli* (and other food-borne pathogens) without affecting beneficial gut bacteria.

*Tomita et al: Bactericidal activity of a fermented hot-water extract from *Stevia rebaudiana* Bertoni towards enterohemorrhagic *Escherichia coli* O157:H7 and other food-borne pathogenic bacteria. *Microbiol Immunol* 1997;41(12):1005-9

Tripterygium wilfordii is a Chinese herbal medicine that proves superior to sulfasalazine.

*Goldbach-Mansky et al: Comparison of *Tripterygium wilfordii* Hook F versus sulfasalazine in the treatment of rheumatoid arthritis: a randomized trial. *Ann Intern Med* 2009 Aug 18;151(4):229-40

Vitamin D3 is vital for strengthening the immune system. A deficiency can lead to such dangerous infections as Bacterial vaginosis during pregnancy and tuberculosis, among many diseases people are at risk of developing from vitamin D deficiency.

*Bodnar et al: Maternal vitamin D deficiency is associated with bacterial vaginosis in the first trimester of pregnancy. *J Nutr* 2009 Jun;139(6):1157-61

*Fabri et al: Tuberculosis. Vitamin D is required for IFN- γ -mediated antimicrobial activity of human macrophages. *Sci Transl Med* 2011 Oct 12;3(104):104ra102

Winter cherries (*Physalis angulata*) have anti-bacterial effects against *Mycobacterium*.

*Pietro et al: In vitro antimycobacterial activities of *Physalis angulata* L. *Phytomed* 2000 Jul;7(4):335-8

Wormwood is the herb of choice when it comes to getting rid of internal parasites but it also has some antibacterial effects.

*Fiamegos et al: Antimicrobial and efflux pump inhibitory activity of caffeoylquinic acids from *Artemisia absinthium* against gram-positive pathogenic bacteria. *PLoS One* 2011;6(4):e18127

Wormwood, Tarragon, and Eucalyptus prove effective against *E. coli*.

*Shahverdi et al: A TLC bioautographic assay for the detection of nitrofurantoin resistance reversal compound. *J Chromatogr B Analyt Technol Biomed Life Sci* 2007 May 1;850(1-2):528-30



ANTI-DEPRESSANTS

(USED TO TREAT VARIOUS FORMS OF DEPRESSION)

COMMON EXAMPLES:

Tricyclics

- amitriptyline** – Elavil and others
- amoxapine** – Asendin
- doxepin** – Sinequan
- imipramine** – Tofranil and others
- nortriptyline** – Aventyl and others

*MAOs (monoamine oxidase inhibitors)

- eldepryl** – Selegeline
- isocarboxazid** – Marplan
- moclobemide** – Aurorix, Manerix
- phenelzine** – Nardil
- rasagiline** – Azilect
- tranylcypromine** – Parnate

SSRIs (selective serotonin reuptake inhibitors)

- citalopram** – Celexa
- fluoxetine** – Prozac, Sarafem, Fontex
- paroxetine** – Paxil
- sertraline** – Zoloft
- ... and others

Others

- bupropion** – Wellbutrin
- trazadone** – Desyrel
- venlafaxine** – Effexor

DEplete:

B1, B2, B3, B5, B6, B8, B9, B12, C, choline, calcium, chromium, magnesium, selenium, melatonin, CoQ10, DHEA, glutathione/NAC

- ☞ **MAO Caution:** There are at least **four types of foods** that must be **strictly avoided** when taking these drugs. They contain tyramine which can cause serious side effects.

- broad beans (fava, Italian green beans)
- yeast concentrates (Marmite, brewer's yeast, yeast supplements)
- salted, smoked, or pickled fish
- aged cheese

❧ **SSRIs** are linked to sexual dysfunction in both men and women.

*Clayton et al: Burden of phase-specific sexual dysfunction with SSRIs. *J Affect Disor* 2006 Mar;91(1):27-32

❧ **SSRIs** are linked to congenital defects including high blood pressure in babies.

*Baker: SSRI horrors grow: women who take popular antidepressants risk babies with severe high blood pressure. *NaturalNews* Fri Jan 13, 2012

*Malm et al: Selective serotonin reuptake inhibitors and risk for major congenital anomalies. *Obstet Gyn* 2011 Jul;118(1):111-20

❧ **Analgesics** taken regularly with **Antidepressants** increase restless leg syndrome.

*Leutgeb & Martus: Regular intake of non-opioid analgesics is associated with an increased risk of restless legs syndrome in patients maintained on antidepressants. *Eur J Med Res* 2002 Aug 30;7(8):368-78

❧ **Antidepressants** have little or no positive effect compared to a placebo but instead, had more negative results including the increased need for multi-drug treatments.

*Fontanella et al: Psychotropic medication changes, polypharmacy, and the risk of early readmission in suicidal adolescent inpatients. *Ann Pharmacother* 2009 Dec;43(12):1939-47

*Fournier et al: Antidepressant drug effects and depression severity: a patient-level meta-analysis. *JAMA* 2010;303(1):47-53

*Kirsch et al: Initial severity and antidepressant benefits: a meta-analysis of data submitted to the food and drug administration. *PLoS Med* 2008;5(2):e45

*Mojtabai & Olfson: National trends in psychotropic medication polypharmacy in office-based psychiatry. *Arch Gen Psych* 2010;67:26-36

❧ **Antidepressants** are not safe to use in treating cocaine addiction.

*O'Dell et al: Antidepressant drugs appear to enhance cocaine-induced toxicity. *Exp Clin Psychopharmacol* 2000 Feb;8(1):133-41

❧ **Chocolate** consumption increases when depressed.

*Rose et al: Mood food: chocolate and depressive symptoms in a cross-sectional analysis. *Arch Intern Med* 2010 Apr 26;170(8):699-703

❧ **Gastrointestinal inflammation** increases the development of depression.

*Fehér et al: Role of gastrointestinal inflammations in the development and treatment of depression. *Orv Hetil* 2011 Sep 8 ;152(37):1477-85

❧ **Hair loss** is associated with the antidepressant paroxetine (Paxil).

*Zalsman et al: Hair loss associated with paroxetine treatment: a case report. *Clin Neuropharmacol* 1999 Jul-Aug;22(4):246-7

❧ **Nicotine use** during teen years increases the likelihood of depression as adults.

*Iñiguez et al: Nicotine exposure during adolescence induces a depression-like state in adulthood.

Neuropsychopharma 2009 May;34(6):1609-24

☞ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of their active constituents) have long been associated with a significant increase in cancers as well as numerous other dangerous health conditions including disturbing thought processes.

*Wesseling et al: Symptoms of psychological distress and suicidal ideation among banana workers with a history of poisoning by organophosphate or n-methyl carbamate pesticides. *Occup Environ Med* 2010 Nov;67(11):778-84

☞ **Statin drugs** used to lower Cholesterol levels actually increase the likelihood of depression.

*Buajordet et al: Statins – the pattern of adverse effects with emphasis on mental reactions. Data from a national and an international database. *Tidsskr Nor Laegeforen* 1997 Sep 20;117(22):3210-3

*Hyypä et al: Does simvastatin affect mood and steroid hormone levels in hypercholesterolemic men? A randomized double-blind trial. *Psychoneuroendocrin* 2003 Feb;28(2):181-94

*Tatley & Savage: Psychiatric adverse reactions with statins, fibrates and ezetimibe: implications for the use of lipid-lowering agents. *Drug Saf* 2007;30(3):195-201

SUGGESTED ALTERNATIVES:

Astaxanthin helps relieve depression especially when it is alcohol-induced.

*Abadie-Guedes et al: Dose-dependent effects of astaxanthin on cortical spreading depression in chronically ethanol-treated adult rats. *Alcohol Clin Exp Res* 2008 Aug;32(8):1417-21

B-complex, especially B12 and B9 improve the effects of antidepressants since B vitamins are used as co-factors in the manufacture of such necessary neurotransmitters as serotonin and dopamine. (see Appendix for a list of B vitamins according to name and number)

*Coppen & Bolander-Gouaille: Treatment of depression: Time to consider folic acid and vitamin B12. *J Psychopharmacol* 2005;19:59-65

*Fugh-Berman & Cott: Dietary supplements and natural products as psychotherapeutic agents. *Psychosom Med* 1999;61:712-728

*Lindeman et al: Serum vitamin B12, C, and folate concentrations in the New Mexico Elder Health Survey: Correlations with cognitive and affective functions. *J Am Coll Nutr* 2000;19:68-76

*Mitchell: The effect of folic acid and B12 on depression: twelve case studies. *J Orthomol Med* 2007;22(4) pdf

*No authors: Folate in depression: efficacy, safety, differences in formulations, and clinical issues. *J Clin Psychiatry* 2009;70 Suppl 5:12-7

*Tiemeier et al: Vitamin B12, folate, and homocysteine in depression: The Rotterdam study. *Am J Psychiat* 2002;159:2099-2101

*Tolmunen et al: Association between depressive symptoms and serum concentrations of homocysteine in men: A population study. *Am J Clin Nutr* 2004;80:1574-1578

Blue-green algae improves mood and decreases depression.

*Genazzani et al: Effects of Klamath Algae extract on psychological disorders and depression in menopausal women: a pilot study. *Minerva Ginecol* 2010 Oct;62(5):381-8

Carnitine is made in the body by two amino acids, lysine and methionine, and has antidepressant effects especially in older people.

- *Garzya et al: Evaluation of the effects of L-acetylcarnitine on senile patients suffering from depression. *Drugs Exp Clin Res* 1990;16(2):101-6
- *Pettegrew et al: 31P-MRS study of acetyl-L-carnitine treatment in geriatric depression: preliminary results. *Int J Neurosci* 2003 Dec;113(12):1691-701

Curcumin, alone or with **Piperine** (found in black pepper), has anti-depressant qualities that have the same effect as the drugs imipramine and fluoxetine.

- *Bhutani et al: Anti-depressant like effect of curcumin and its combination with piperine in unpredictable chronic stress-induced behavioral, biochemical and neurochemical changes. *Pharmacol Biochem Behav* 2008 Oct 25
- *Hu et al: Antidepressant effects of piperine and its neuroprotective mechanism in rats. *Zhong Xi Yi Jie He Xue Bao* 2009 Jul;7(7):667-70
- *Jain et al: Effect of curcumin on protein glycosylation, lipid peroxidation, and oxygen radical generation in human red blood cells exposed to high glucose levels. *Free Radic Biol Med* 2006 Jul 1;41(1):92-6
- *Kulkarni et al: Potentials of curcumin as an antidepressant. *Sci World J* 2009;9:1233-41
- *Kulkarni et al: Antidepressant activity of curcumin: involvement of serotonin and dopamine system. *Psychopharmacol (Berl)* 2008 Dec;201(3):435-42
- *Lee et al: Piperine from the fruits of *Piper longum* with inhibitory effect on monoamine oxidase and antidepressant-like activity. *Chem Pharm Bull (Tokyo)* 2005 Jul;53(7):832-5
- *Li et al: Antidepressant-like effects of curcumin on serotonergic receptor-coupled AC-cAMP pathway in chronic unpredictable mild stress of rats. *Prog Neuropsychopharma Biol Psych* 2009 Apr 30;33(3):435-49
- *Mao et al: Involvement of serotonergic system in the antidepressant-like effect of piperine. *Prog Neuropsychopharmacol Biol Psych* 2011 Apr 6
- *Sanmukhani et al: Evaluation of antidepressant like activity of curcumin and its combination with fluoxetine and imipramine: an acute and chronic study. *Acta Pol Pharm* 2011 Sep-Oct;68(5):769-75
- *Wattanathorn et al: Piperine, the potential functional food for mood and cognitive disorders. *Pancreas* 2005 Nov;31(4):317-24
- *Xu et al: Antidepressant effects of curcumin in the forced swim test and olfactory bulbectomy models of depression in rats. *Pharmacol Biochem Behav.* 2005 Sep;82(1):200-6
- *Xu et al: The effects of curcumin on depressive-like behaviors in mice. *Eur J Pharmacol* 2005 Jul 25;518(1):40-6

5-HTP/INN (5-Hydroxytryptophan or oxitriptan (INN) is a derivative of tryptophan and the next-best thing since tryptophan cannot be sold in Canada. Along with light, tryptophan treats SAD (seasonal affective disorder). With the coenzyme, NAD (nicotinamide adenine dinucleotide), tryptophan can be as effective as the drug imipramine.

- *Chouinard et al: Tryptophan-nicotinamide, imipramine and their combination in depression. A controlled study. *Acta Psychiatr Scand* 1979 Apr;59(4):395-414
- *Ghadirian et al: Efficacy of light versus tryptophan therapy in seasonal affective disorder. *J Affect Disord* 1998 Jul;50(1):23-7
- *Lindberg et al: Symptom reduction in depression after treatment with L-tryptophan or imipramine. Item analysis of Hamilton rating scale for depression. *Acta Psychiatr Scand* 1979 Sep;60(3):287-94

Ginseng root has been used for thousands of years to correct problems in the body, including depression.

- *Wang et al: Antidepressant-like effects of the active acidic polysaccharide portion of ginseng in mice. *J Ethnopharmacol* 2010 Jul 29

Goji berries/Wolfberry improves the sense of well-being.

- *Amagase & Nanse: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized Lycium barbarum (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12

Graviola fruit and leaves are from a tree that grows in the Amazon jungle. Graviola is proving to have anti-depressive qualities.

- *Hasrat et al: Isoquinoline derivatives isolated from the fruit of *Annona muricata* as 5-HT_{1A} receptor agonists in rats: unexploited antidepressive (lead) products. *J Pharm Pharmacol* 1997 Nov;49(11):1145-9

Homeopathic Medicine is as effective and far better tolerated than Prozac. Outcomes in areas of anxiety, depression, and irritable bowel proved to be more than 75% positive.

- *Adler et al: Homeopathic individualized Q-potencies versus fluoxetine for moderate to severe depression: double-blind, randomized non-inferiority trial. *Evid Based Complement Alternat Med* 2009 Aug 17
- *Mathie & Robinson: Outcomes from homeopathic prescribing in medical practice: a prospective, research-targeted, pilot study. *Homeopathy* 2006;95:199-205
- *Ullman: Homeopathic alternatives to antidepressant drugs. *NaturalNews*, January 09, 2012

Kava is a safe antidepressant herb but, despite its positive effects, it is still not allowed to be sold in Canada.

- *Sarris et al: The kava anxiety depression spectrum study (KADSS): a randomized, placebo-controlled crossover trial using an aqueous extract of *Piper methysticum*. *Psychopharmacology (Berl)* 2009 Aug;205(3):399-407
- *Witte et al: Meta-analysis of the efficacy of the acetonic kava-kava extract WS1490 in patients with non-psychotic anxiety disorders. *Phytother Res* 2005 Mar;19(3):183-8

Lavender is an herb long-used for its calming effects but it may have some antidepressant qualities as well.

- *Lee & Lee: Effects of lavender aromatherapy on insomnia and depression in women college students. *Br J Pharmacol* 1999 Sep;128(2):380-4

Light therapy proves better than Prozac.

- *Lam et al: The Can-SAD study: a randomized controlled trial of the effectiveness of light therapy and fluoxetine in patients with winter seasonal affective disorder. *Am J Psych* 2006 May;163(5):805-12

Lobelia is an herb also known as Indian tobacco and used to treat various lung conditions. While it is used to help people quit smoking, it has some anti-depressant qualities as well.

- *Lobelia: U Maryland Med Center
- *Subarnas et al: An antidepressant principle of *Lobelia inflata* L. (Campanulaceae). *J Pharm Sci* 1992 Jul;81(7):620-1

Nutmeg is a food spice that has some anti-depressant effects.

- *Dhingra & Sharma: Antidepressant-like activity of n-hexane extract of nutmeg (*Myristica fragrans*) seeds in mice. *J Med Food* 2006 Spring;9(1):84-9

Omega-3 fatty acids, especially DHA, has antidepressant qualities and is as effective as Prozac but much safer. Omega-3 fatty acids are found in flax and fish oils and sacha inchi seeds.

- *Clayton et al: Reduced mania and depression in juvenile bipolar disorder associated with long-chain omega-3 polyunsaturated fatty acid supplementation. *Eur J Clin Nutr* 2009 Aug;63(8):1037-40

- *Freeman et al: Randomized dose-ranging pilot trial of omega-3 fatty acids for postpartum depression. *J Psychol* 1975 Mar;89(2d Half):261-5
- *Jazayeri et al: Comparison of therapeutic effects of omega-3 fatty acid eicosapentaenoic acid and fluoxetine, separately and in combination, in major depressive disorder. *Aust N Z J Psychiatry* 2008 Mar;42(3):192-8
- *Levant et al: Decreased brain docosahexaenoic acid content produces neurobiological effects associated with depression: Interactions with reproductive status in female rats. *Psychoneuroendocrin* 2008 Oct;33(9):1279-92
- *Osher & Belmaker: Omega-3 fatty acids in depression: a review of three studies. *CNS Neurosci Ther* 2009;15(2):128-33
- *Oudenhove et al: Fatty acid-induced gut-brain signaling attenuates neural and behavioral effects of sad emotion in humans. *J Clin Invest* 2011 Jul 25

Onions have anti-depressant effects.

- *Sakakibara et al: Antidepressant-like effect of onion (*Allium cepa* L.) powder in a rat behavioral model of depression. *Biosci Biotechnol Biochem* 2008 Jan;72(1):94-100

Pomegranates improve mood and bone quality in postmenopausal women.

- *Mori-Okamoto et al: Pomegranate extract improves a depressive state and bone properties in menopausal syndrome model ovariectomized mice. *J Ethnopharmacol* 2004 May;92(1):93-101

Probiotics help with depression because they repair a damaged digestive tract thereby increasing the absorption of nutrients.

- *Bravo et al: Ingestion of *Lactobacillus* strain regulates emotional behavior and central GABA receptor expression in a mouse via the vagus nerve. *Proc Natl Acad Sci USA* 2011 Sep 20;108(38):16050-5
- *Desbonnet et al: Effects of the probiotic *Bifidobacterium infantis* in the maternal separation model of depression. *Neurosci* 2010 Nov 10;170(4):1179-88

Resveratrol is a potent antioxidant found in the skins of red grapes and proving to have numerous health benefits including an anti-depressant-like effect.

- *Xu et al: Antidepressant-like effect of trans-resveratrol: Involvement of serotonin and noradrenaline system. *Eur Neuropsychopharmacol* 2010 Jun;20(6):405-13

Rhodiola is an herb often used for stress energy and as an adaptogen. It also improves mental and physical performance.

- *Chen et al: The effects of *Rhodiola rosea* extract on 5-HT level, cell proliferation and quantity of neurons at cerebral hippocampus of depressive rats. *Phytomed* 2009 Sept;16(9):830-38
- *Darbinyan et al: Clinical trial of *Rhodiola rosea* L. extract SHR-5 in the treatment of mild to moderate depression. *Nord J Psychiat* 2007;61(5):343-8
- *Darbinyan et al: *Rhodiola rosea* in stress induced fatigue – a double blind cross-over study of a standardized extract SHR-5 with a repeated low-dose regimen on the mental performance of healthy physicians during night duty. *Phytomed* 2000;7:365-71
- *Kelly: *Rhodiola rosea*: A Possible Plant Adaptogen. *Alt Med Rev* 2001;6(3):293-302
- *Perfumi & Mattioli: Adaptogenic and central nervous system effects of single doses of 3% rosavin and 1% salidroside *Rhodiola rosea* L. extract in mice. *Phytoth Res* 2007 Jan;21(1):37-43
- *Qin et al: Effects of *Rhodiola rosea* on level of 5-hydroxytryptamine, cell proliferation and differentiation, and number of neuron in cerebral hippocampus of rats with depression induced by chronic mild stress. *Zhongguo Zhong Yao Za Zhi* 2008 Dec;33(23):2842-6
- *Spasov et al: A double-blind, placebo-controlled pilot study of the stimulating and adaptogenic effect of *Rhodiola rosea* SHR-5 extract on the fatigue of students caused by stress during an examination period with a repeated low-dose regimen. *Phytomed* 2000;7:85-89
- *van Diermen et al: Monoamine oxidase inhibition by *Rhodiola rosea* L. roots. *J Ethnopharmacol* 2009 Mar;122(2):397-401

Rosemary is an herb that is calming with mild anti-depressant effects.

- *Machado et al: Antidepressant-like effect of the extract of *Rosmarinus officinalis* in mice: involvement of the monoaminergic system. *Prog Neuropsychopharmacol Biol Psych* 2009 Jun 15;33(4):642-50

St. John's Wort is a safe alternative to SSRIs but should never be taken with other antidepressants.

- *Franklin et al: Sub-chronic treatment with an extract of *Hypericum perforatum* (St John's wort) significantly reduces cortisol and corticosterone in the rat brain. *Eur Neuropsychopharmacol* 2004 Jan;14(1):7-10
- *Rahimi et al: Efficacy and tolerability of *Hypericum perforatum* in major depressive disorder in comparison with selective serotonin reuptake inhibitors: a meta-analysis. *Prog Neuropsychopharmacol Biol Psychiatry* 2009 Feb 1;33(1):118-27
- *Uebelhack et al: Efficacy and tolerability of *Hypericum* extract STW 3-VI in patients with moderate depression: a double-blind, randomized, placebo-controlled clinical trial. *Zhonghua Gan Zang Bing Za Zhi* 2002 Dec;10(6):449-51

Saffron, a food spice, can be as effective as fluoxetine as an anti-depressant.

- *Akhondzadeh et al: Comparison of *Crocus sativus* L. and imipramine in the treatment of mild to moderate depression: a pilot double-blind randomized trial [ISRCTN45683816]. *BMC Complement Altern Med* 2004 Sep 2;4:12
- *Basti et al: Comparison of petal of *Crocus sativus* L. and fluoxetine in the treatment of depressed outpatients: a pilot double-blind randomized trial. *Prog Neuropsychopharmacol Biol Psych* 2007 Mar 30;31(2):439-42
- *Wang et al: Antidepressant properties of bioactive fractions from the extract of *Crocus sativus* L. *J Nat Med* 2009 Sep 29

SAMe (S-adenosylmethionine) improves depression especially in postmenopausal women and those with osteoarthritis.

- *König: A long-term (two years) clinical trial with S-adenosylmethionine for the treatment of osteoarthritis. *Am J Med* 1987 Nov 20;83(5A):89-94
- *Rosenbaum et al: The antidepressant potential of oral S-adenosyl-L-methionine. *Acta Psychiatr Scand* 1990 May;81(5):432-6
- *Salmagg et al: Double-blind, placebo-controlled study of S-adenosyl-L-methionine in depressed postmenopausal women. *Psychother Psychosom* 1993;59(1):34-40

Sesame oil has several health benefits including a calming effect during depression.

- *Kumar et al: Neuropsychopharmacological effect of sesamol in unpredictable chronic mild stress model of depression: behavioral and biochemical evidences. *Psychopharmacology (Berl)* 2011 Apr;214(4):819-28

Tryptophan (along with light) is an effective antidepressant for SAD (seasonal affective disorder) and reduces the need for medications in treating aggressive psychiatric patients. Tryptophan is banned from Canada and the US but since it is an amino acid, it can be made in the body from other proteins. The closest legal supplement is **5-HTP**.

- *Ghadirian et al: Efficacy of light versus tryptophan therapy in seasonal affective disorder. *J Affect Disord* 1998 Jul;50(1):23-7
- *Lam et al: L-tryptophan augmentation of light therapy in patients with seasonal affective disorder. *Can J Psych* 1997 Apr;42(3):303-6
- *McGrath et al: The effect of L-tryptophan on seasonal affective disorder. *Water Res* 2002 Sep;36(15):3821-33
- *Volavka et al: Tryptophan treatment of aggressive psychiatric inpatients. *Biol Psych* 1990 Oct 15;28(8):728-32

Tryptophan and **Nicotinamide (B3)** has the same effect as imipramine for depression.

*Chouinard et al: Tryptophan-nicotinamide, imipramine and their combination in depression. A controlled study. Acta Psychiatr Scand 1979 Apr;59(4):395-414

Valerian reduces anxiety and depression but since it is also a sleep aid, caution is advised as to when it is taken.

*Hattesoehl et al: Extracts of Valeriana officinalis L. s.l. show anxiolytic and antidepressant effects but neither sedative nor myorelaxant properties. Phytomed 2008 Jan;15(1-2):2-15

Vitamin D3 deficiency is often the result of decreased sunlight exposure, especially for those of us who live in the north, making us more susceptible to depression as well as diabetes, MS, and various cancers.

*Armstrong et al: Vitamin D deficiency is associated with anxiety and depression in fibromyalgia. Clin Rheumatol 2007 Apr;26(4):551-4

*Kent et al: Effect of sunlight exposure on cognitive function among depressed and non-depressed participants: a REGARDS cross-sectional study. Cell Mol Life Sci 2009 Aug;66(16):2759-71

Zinc deficiency can also lead to depression.

*Yary & Aazami: Dietary intake of zinc was inversely associated with depression. Biol Trace Elem Res 2011 Sep 20

ANTI-FUNGALS



(USED TO TREAT YEAST OR OTHER FUNGAL INFECTIONS)

COMMON EXAMPLES:

amphotericin B – Fungizone

corticosteroids (Steroids) – see more depletions from that list)

triamcinolone – Nasacort

mometasone – Nasonex

fluticasone – Fonase

beclomethasone – Beconase

budesonide – Rhinocort

flunisolide – Nasarel

fluconazole – Diflucan

flucytosine – Ancobon, 5-FC, and others

griseofulvin – Fulvicin, Grisactin, and others

itraconazole – Sporanox

ketoconazole – Ketozole, Nizoral

miconazole – Monistat and others

nystatin – Mycostatin and others

DEplete:

B1, B2, B3, B6, B7, B12, E, K, calcium, magnesium, potassium, sodium, good intestinal bacteria

SUGGESTED ALTERNATIVES:

Adzuki beans have antifungal activity.

*Ye & Ng: Purification of angularin, a novel antifungal peptide from adzuki beans. J Pept Sci 2002 Mar;8(3):101-6

Acacia gum, Arjuna, Clove, Cinnamon, and Eucalyptus have strong antimicrobial activity against several multi-drug resistant fungi.

*Khan et al: Antimicrobial activity of five herbal extracts against multi drug resistant (MDR) strains of bacteria and fungus of clinical origin. Molecules 2009 Feb 4;14(2):586-97

Ashwagandha is an herb often used for adrenal gland support but it has anti-fungal effects that help prevent systemic *Aspergillus* infections.

- *Dhuley: Therapeutic efficacy of Ashwagandha against experimental aspergillosis in mice. *Immunopharmacol Immunotoxicol* 1998 Feb;20(1):191-8

Avocado has anti-fungal properties.

- *Donnarumma et al: Effects of AV119, a natural sugar from avocado, on *Malassezia furfur* invasiveness and on the expression of HBD-2 and cytokines in human keratinocytes. *Exp Dermatol* 2007 Nov;16(11):912-9
- *Leite et al: Chemical composition, toxicity and larvicidal and antifungal activities of *Persea americana* (avocado) seed extracts. *Rev Soc Bras Med Trop* 2009 Mar-Apr;42(2):110-3

Bayberry is an herb with mild anti-fungal properties.

- *Popovici et al: Chemical composition of essential oil and headspace-solid microextracts from fruits of *Myrica gale* L. and antifungal activity. *Nat Prod Res* 2008;22(12):1024-32

Bee propolis, Aloe vera and B-complex help treat fungal infections.

- *Iljazović et al: Efficacy in treatment of cervical HRHPV infection by combination of beta interferon, and herbal therapy in woman with different cervical lesions. *Bosn J Basic Med Sci* 2006 Nov;6(4):79-84
- *Oliveira et al: Antifungal activity of propolis extract against yeasts isolated from onychomycosis lesions. *Mem Inst Oswaldo Cruz* 2006 Aug;101(5):493-7

Bees wax, Honey, and Olive oil is an effective topical combination for treating common fungal infections.

- *Waili: An alternative treatment for pityriasis versicolor, tinea cruris, tinea corporis and tinea faciei with topical application of honey, olive oil and beeswax mixture: an open pilot study. *Complement Ther Med* 2004 Mar;12(1):45-7

Berberine-containing plants (Barberry, Goldenseal, Oregon grape, Goldentthread) are strong anti-microbials against a variety of organisms including bacteria, viruses, fungi, protozoans, helminths, and chlamydia.

- *Lin et al: In vitro anti-hepatoma activity of fifteen natural medicines from Canada. *Altern Med Rev* 2000 Apr;5(2):175-7

Black cumin and Cloves have antifungal and antioxidant properties.

- *Abdel-Wahhab & Aly: Antioxidant property of *Nigella sativa* (black cumin) and *Syzygium aromaticum* (clove) in rats during aflatoxicosis. *Hepatology* 2009 Dec;50(6):1756-64
- *Khan et al: The in vivo antifungal activity of the aqueous extract from *Nigella sativa* seeds. *Phytother Res* 2003 Feb;17(2):183-6

Cabbage juice is not only a good digestive aid, but it has some anti-fungal effects as well.

- *Sisti et al: Antifungal activity of *Brassica oleracea* var *botrytis* fresh aqueous juice. *Fitoterapia* 2003 Jul;74(5):453-8

Caper seeds have antifungal properties and can be added to salads or pizzas!

- *Lam & Ng: A protein with antiproliferative, antifungal and HIV-1 reverse transcriptase inhibitory activities from caper (*Capparis spinosa*) seeds. *Zhong Yao Cai* 2004 Nov;27(11):848-50

Cayenne pepper has long been used for pain control and strengthening the heart but it also has anti-fungal properties as well as other antimicrobial effects.

- *De Lucca et al: Fungicidal properties of two saponins from *Capsicum frutescens* and the relationship of structure and fungicidal activity. *Cochrane Database Syst Rev* 2009(3):CD007467

- *Renault et al: CAY-1, a novel antifungal compound from cayenne pepper. *Med Mycol.* 2003 Feb;41(1):75-81

Clove is a spice and potent antioxidant that is effective against *Candida* yeast infections.

- *He et al: In vitro activity of eugenol against *Candida albicans* biofilms. *Mycopathol* 2007 Mar;163(3):137-43
- *Taguchi et al: Protection of oral or intestinal candidiasis in mice by oral or intragastric administration of herbal food, clove (*Syzygium aromaticum*). *Nippon Ishinkin Gakkai Zasshi* 2005;46(1):27-33

Coconut has a long history of health benefits including that of an antimicrobial.

- *Ogbolu et al: In vitro antimicrobial properties of coconut oil on *Candida* species in Ibadan, Nigeria. *J Med Food* 2007 Jun;10(2):384-7
- *Wang & Ng: An antifungal peptide from the coconut. *Peptides* 2005 Dec;26(12):2392-6

Colloidal silver is superior to fluconazole for treating fungal infections.

- *Kim et al: Antifungal effect of silver nanoparticles on dermatophytes. *J Microbiol Biotechnol* 2008 Aug;18(8):1482-4
- *Kim et al: Antifungal activity and mode of action of silver nano-particles on *Candida albicans*. *Biometals* 2008 Sep 4

Cruciferous vegetables (cabbage family) contain high amounts of **I-3-C** (indole-3-carbinol) often used to balance estrogen levels but which also has antimicrobial and antitumour properties.

- *Johansson et al: Growth inhibition of a spectrum of bacterial and fungal pathogens by sulforaphane, an isothiocyanate product found in broccoli and other cruciferous vegetables. *Planta Med* 2008 Jun;74(7):747-50
- *Sisti et al: Antifungal activity of *Brassica oleracea* var. botrytis fresh aqueous juice. *Fitoterapia* 2003 Jul;74(5):453-8
- *Sung & Lee: In vitro antimicrobial activity and the mode of action of indole-3-carbinol against human pathogenic microorganisms. *Yao Xue Xue Bao* 2008 Feb;43(2):128-32

Curcumin/Turmeric have antifungal and antibiotic effects.

- *Martins et al: Curcumin as a promising antifungal of clinical interest. *J Antimicrob Chemother* 2009 Feb;63(2):337-9
- *Neelofar et al: Curcumin as a promising anticandidal of clinical interest. *Can J Microbiol* 2011 Mar;57(3):204-10
- *Sharma et al: Antifungal curcumin induces reactive oxygen species and triggers an early apoptosis but prevents hyphae development by targeting the global repressor TUP1 in *Candida albicans*. *Biosci Rep* 2009 Dec 17
- *Sharma et al: Curcumin modulates efflux mediated by yeast ABC multidrug transporters and is synergistic with antifungals. *Antimicrob Agents Chemother* 2009 Aug;53(8):3256-65
- *Wang et al: Study on the antibiotic activity of microcapsule curcumin against foodborne pathogens. *Int J Food Microbiol* 2009 Nov 30;136(1):71-4
- *Wuthi-udomlert et al: Antifungal activity of *Curcuma longa* grown in Thailand. *Southeast Asian J Trop Med Public Health* 2000;31 Suppl 1:178-82

Dandelion is an under-rated herb with numerous health benefits including several anti-fungal properties.

- *Odintsova et al: Antifungal activity of storage 2S albumins from seeds of the invasive weed dandelion *Taraxacum officinale* Wigg. *Protein Pept Lett* 2009 Nov 1

Echinacea is an herb long used as an immune booster during times of seasonal colds and flus but it is an effective antimicrobial as well.

*Mir-Rashed et al: Disruption of fungal cell wall by antifungal Echinacea extracts. *Med Mycol* 2010 Nov;48(7):949-58

EGCG (epigallocatechin 3-O-gallate) is a substance found in Green Tea that is a potent antifungal against pathogenic yeast infections.

*Park et al: Antifungal susceptibility of epigallocatechin 3-O-gallate (EGCG) on clinical isolates of pathogenic yeasts. *Biochem Biophys Res Commun* 2006 Aug 25;347(2):401-5

Essential oils have potent antimicrobial effects which will include fungi, bacteria, viruses, and parasites. Particularly effective for fungi are the oils of: Anise, Cinnamon, Clove, Cumin, Eucalyptus, Geranium, Grapefruit, Holy Basil, Lavender, Lemon, Lemongrass, Mountain savory, Oregano, Peppermint, Rosemary, Rosewood, Sage, Sandlewood, Spearmint, Tarragon, Tea tree (melaleuca), Thyme, Turmeric, and Wintergreen.

*Amber et al: Anticandidal effect of *Ocimum sanctum* essential oil and its synergy with fluconazole and ketoconazole. *Phytomed* 2010 Oct;17(12):921-5

*Apisariyakul et al: Antifungal activity of turmeric oil extracted from *Curcuma longa* (Zingiberaceae). *J Ethnopharmacol* 1995 Dec 15;49(3):163-9

*Braga et al: Thymol inhibits *Candida albicans* biofilm formation and mature biofilm. *Arch Gen Psychiatry* 2004 Jun;61(6):618-27

*Buck et al: Comparison of two topical preparations for the treatment of onychomycosis: *Melaleuca alternifolia* (tea tree) oil and clotrimazole. *J Fam Pract* 1994 Jun;38(6):601-5

*Chaieb et al: Antioxidant properties of the essential oil of *Eugenia caryophyllata* and its antifungal activity against a large number of clinical *Candida* species. *Mycoses* 2007 Sep;50(5):403-6

*Dalleau et al: In vitro activity of terpenes against *Candida* biofilms. *Int J Antimicrob Agents* 2008 Jun;31(6):572-6

*D'Auria et al: Antifungal activity of *Lavandula angustifolia* essential oil against *Candida albicans* yeast and mycelial form. *Med Mycol* 2005 Aug;43(5):391-6

*Ergin & Arıkan: Comparison of microdilution and disc diffusion methods in assessing the in vitro activity of fluconazole and *Melaleuca alternifolia* (tea tree) oil against vaginal *Candida* isolates. *J Chemo* 2002 Oct;14(5):465-72

*Galván et al: Antifungal and antioxidant activities of the phytochemistry pipsisewa, *Chimaphila umbellata*. *Phytochem* 2008 Feb;69(3):738-46

*Hajjaoui et al: Chemical composition and biological activities of Tunisian *Cuminum cyminum* L. essential oil: a high effectiveness against *Vibrio* spp. strains. *Food Chem Toxicol* 2010 Aug-Sep;48(8-9):2186-92

*He et al: In vitro activity of eugenol against *Candida albicans* biofilms. *Mycopathologia* 2007 Mar;163(3):137-43

*Inouye et al: The vapor activity of oregano, perilla, tea tree, lavender, clove, and geranium oils against a *Trichophyton mentagrophytes* in a closed box. *J Infect Chemother* 2006 Dec;12(6):349-54

*Kosalec et al: Antifungal activity of fluid extract and essential oil from anise fruits (*Pimpinella anisum* L., Apiaceae). *Acta Pharm* 2005 Dec;55(4):377-85

*Lopes-Lutz et al: Screening of chemical composition, antimicrobial and antioxidant activities of *Artemisia* essential oils. *Phytochem* 2008 May;69(8):1732-8

*Luqman et al: Potential of rosemary oil to be used in drug-resistant infections. *Altern Ther Health Med* 2007 Sep-Oct;13(5):54-9

*Maruyama et al: Protective activity of geranium oil and its component, geraniol, in combination with vaginal washing against vaginal candidiasis in mice. *Biol Pharm Bull* 2008 Aug;31(8):1501-6

*Meepagala et al: Antifungal constituents of the essential oil fraction of *Artemisia dracuncululus* L. Var. *Dracuncululus*. *J Agric Food Chem* 2002 Nov 20;50(24):6989-92

*Mondello et al: In vivo activity of terpinen-4-ol, the main bioactive component of *Melaleuca alternifolia* Cheel (tea tree) oil against azole-susceptible and -resistant human pathogenic *Candida* species. *BMC Infect Dis* 2006 Nov 3;6:158

- *Nenoff et al: Antifungal activity of the essential oil of *Melaleuca alternifolia* (tea tree oil) against pathogenic fungi in vitro. *Skin Pharmacol* 1996;9(6):388-94
- *Oliveira et al: Antifungal activity of propolis extract against yeasts isolated from onychomycosis lesions. *Mem Inst Oswaldo Cruz* 2006 Aug;101(5):493-7
- *Pawar & Thaker: In vitro efficacy of 75 essential oils against *Aspergillus niger*. *Mycoses* 2006 Jul;49(4):316-23
- *Romagnoli et al: Antifungal activity of essential oil from fruits of Indian *Cuminum cyminum*. *Pharm Biol* 2010 Jul;48(7):834-8
- *Shin: Anti-*Aspergillus* activities of plant essential oils and their combination effects with ketoconazole or amphotericin B. *Int Immunopharmacol* 2008 Dec 10;8(12):1672-80
- *Soković et al: Antifungal activities of selected aromatic plants growing wild in Greece. *Obes Surg* 2011 Mar;21(3):356-61
- *Syed et al: Treatment of toenail onychomycosis with 2% butenafine and 5% *Melaleuca alternifolia* (tea tree) oil in cream. *Trop Med Int Health* 1999 Apr;4(4):284-7
- *Taguchi et al: Therapeutic effects on murine oral candidiasis by oral administration of cassia (*Cinnamomum cassia*) preparation. *Nippon Ishinkin Gakkai Zasshi* 2010;51(1):13-21
- *Tampieri et al: The inhibition of *Candida albicans* by selected essential oils and their major components. *Mycopathologia* 2005 Apr;159(3):339-45
- *Warnke et al: The battle against multi-resistant strains: Renaissance of antimicrobial essential oils as a promising force to fight hospital-acquired infections. *J Craniomaxillofac Surg* 2009 May 25
- *Essential Science 2009;410-413
- *Higley 2010;296-98

Flaxseed has antifungal activity.

- *Xu et al: Fungistatic activity of flaxseed in potato dextrose agar and a fresh noodle system. *Int J Food Microbiol* 2008 Feb 10;121(3):262-7

French beans have antitumor, antifungal, and anti-HIV effects.

- *Lam & Ng: Isolation and characterization of a French bean hemagglutinin with antitumor, antifungal, and anti-HIV-1 reverse transcriptase activities and an exceptionally high yield. *Phytomed* 2009 Sep 7

Garlic and **Onions** are potent antifungals against at least 18 strains of yeasts and dermatophytes, a group of three types of common fungi responsible for such skin infections as ringworm or Athlete's foot.

- *An et al: Allicin enhances the oxidative damage effect of amphotericin B against *Candida albicans*. *Phytother Res* 2009 Aug;23(8):1103-8
- *Borjihan et al: The vacuole-targeting fungicidal activity of amphotericin B against the pathogenic fungus *Candida albicans* and its enhancement by allicin. *J Antibiot (Tokyo)* 2009 Dec;62(12):691-7
- *Khodavandi et al: Comparison between efficacy of allicin and fluconazole against *Candida albicans* in vitro and in a systemic candidiasis mouse model. *FEMS Microbiol Lett* 2011 Feb;315(2):87-93
- *Shams-Ghahfarokhi et al: In vitro antifungal activities of *Allium cepa*, *Allium sativum* and ketoconazole against some pathogenic yeasts and dermatophytes. *Pharmacol Res* 2010 Feb;61(2):142-8

Grapefruit seed extract has long been used as an antimicrobial.

- *Krajewska-Kulak et al: Effects of 33% grapefruit extract on the growth of the yeast-like fungi, dermatophytes and moulds. *Wiad Parazytol* 2001;47(4):845-9

Honey can be effective against *Candida*, *Aspergillus* mold, and the bacterium *Staphylococcus aureus*. Mixed with Tea Tree oil and cinnamon, honey is also effective against the *Malassezia* yeast (seborrhea). Use only unpasteurized or Manuka honey as the average "grocery store honey" is not real honey and therefore, not medicinally effective.

- *Al-Waili: Mixture of honey, beeswax and olive oil inhibits growth of *Staphylococcus aureus* and *Candida albicans*. Arch Med Res 2005 Jan-Feb;36(1):10-3
- *Al-Waili: An alternative treatment for pityriasis versicolor, tinea cruris, tinea corporis and tinea faciei with topical application of honey, olive oil and beeswax mixture: an open pilot study. Complement Ther Med 2004 Mar;12(1):45-7
- *Boukraâ & Bouhegrane: Additive action of honey and starch against *Candida albicans* and *Aspergillus niger*. Rev Iberoam Micol 2007 Dec 31;24(4):309-11
- *Gupta et al: Role of antifungal agents in the treatment of seborrheic dermatitis. Am J Clin Dermatol 2004;5(6):417-22
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. Food Safety News 2011 Nov 7

Korean Ginseng has significant activity against *Candida* yeast.

- *Sung & Lee: In vitro candidacidal action of Korean red ginseng saponins against *Candida albicans*. Biol Pharm Bull 2008 Jan;31(1):139-42

Lemongrass and **Lemon juice** are effective treatments for oral thrush, which is a fungal infection of the mouth.

- *Wright et al: Treatment of oral thrush in HIV/AIDS patients with lemon juice and lemon grass (*Cymbopogon citratus*) and gentian violet. Phytomed 2009 Mar;16(2-3):118-24

Licorice compounds are showing promise for topically treating vulvovaginal candidiasis, a fungal infection that plagues women.

- *Fatima et al: Antifungal activity of *Glycyrrhiza glabra* extracts and its active constituent glabridin. Am J Clin Nutr 2010 Nov 10
- *Pellati et al: In vitro effects of glycyrrhetic acid on the growth of clinical isolates of *Candida albicans*. Phytother Res 2008 Dec 9

Lycopene is a carotenoid that has some potent health benefits including anti-fungal effects against *Candida* yeast infections.

- *Sung et al: Damage to the cytoplasmic membrane and cell death caused by lycopene in *Candida albicans*. Clin Biochem 2010 Mar;43(4-5):424-9

Marjoram is a common cooking herb that has antifungal and antibacterial activity.

- *Leeja & Thoppil: Antimicrobial activity of methanol extract of *Origanum majorana* L. (Sweet marjoram). J Environ Biol 2007 Jan;28(1):145-6

Moringa oleifera (Miracle or Horseradish tree) extracts and oils have antifungal properties.

- *Chuang et al: Anti-fungal activity of crude extracts and essential oil of *Moringa oleifera* Lam. PLoS One 2011;6(1):e14575

Murill mushrooms kill *Candida* yeast.

- *Martins et al: Polysaccharide-rich fraction of *Agaricus brasiliensis* enhances the candidacidal activity of murine macrophages. Mem Inst Oswaldo Cruz 2008 May;103(3):244-50

Myrrh has been used for thousands of years as an anti-microbial. It is particularly effective for infections of the mouth.

- *Dolaro et al: Local anaesthetic, antibacterial and antifungal properties of sesquiterpenes from myrrh. Planta Med 2000 May;66(4):356-8

Neem and **Herbs** (soapberry and mint) are superior to Betadine for vaginal discharges.

- *Salhan et al: A phase II randomized controlled trial to evaluate the safety and efficacy of Praneem polyherbal vaginal tablets compared with betadine vaginal pessary in women with symptoms of abnormal vaginal discharge. *Asia Pac J Public Health* 2009 Oct;21(4):461-8

Noni fruit is effective against several fungi and has a potent detoxifying activity that is 40 times better than sufloraphane (a compound found in broccoli).

- *Banerjee et al: An extract of *Morinda citrifolia* interferes with the serum-induced formation of filamentous structures in *Candida albicans* and inhibits germination of *Aspergillus nidulans*. *Am J Chin Med* 2006;34(3):503-9
- *Jainkittivong et al: Antifungal activity of *Morinda citrifolia* fruit extract against *Candida albicans*. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009 Sep;108(3):394-8
- *Pawlus et al: An anthraquinone with potent quinone reductase-inducing activity and other constituents of the fruits of *Morinda citrifolia* (noni). *Rejuvenation Res* 2010 Dec;13(6):749-54

Olive leaf extract has broad spectrum antimicrobial activity.

- *Markin et al: In vitro antimicrobial activity of olive leaves. *Mycoses* 2003 Apr;46(3-4):132-6

Papaya works synergistically with fluconazole to inhibit *Candida albicans*.

- *Giordani et al: Fungicidal activity of latex sap from *Carica papaya* and antifungal effect of D(+)-glucosamine on *Candida albicans* growth. *Appl Psychophysiol Biofeedback* 2005 Dec;30(4):375-87
- *Giordani et al: A synergistic effect of *Carica papaya* latex sap and fluconazole on *Candida albicans* growth. *Mycoses* 1997 Dec;40(11-12):429-37

Passion fruit seeds contain an anti-fungal protein.

- *Lam & Ng: Passiflin, a novel dimeric antifungal protein from seeds of the passion fruit. *Phytomed* 2009 Mar;16(2-3):172-80

Pomegranate peel has antifungal and antibacterial effects.

- *Abdollahzadeh et al: Antibacterial and antifungal activities of punica granatum peel extracts against oral pathogens. *J Dent (Tehran)* 2011 ;8(1):1-6

Prickly Ash is a small North American tree that has some potent antimicrobial effects.

- *Bafi-Yeboah et al: Antifungal constituents of northern prickly ash, *Zanthoxylum americanum* mill. *Phytomed* 2005 May;12(5):370-7

Probiotics everyday is a good start in preventing microbes from taking hold but when they do, the intake needs to be increased, especially after taking an anti-fungal or antibiotic. (*Bacillus coagulans* was formerly known as *Lactobacillus sporogenes*)

- *Czaczyk et al: Antifungal activity of *Bacillus coagulans* against *Fusarium* sp. *Acta Microbiol Pol* 2002;51(3):275-83
- *Yang & Chang: Purification of a new antifungal compound produced by *Lactobacillus plantarum* AF1 isolated from kimchi. *Int J Food Microbiol* 2010 Apr 30;139(1-2):56-63

Purslane is a salad green that has some antifungal activity.

- *Oh et al: Detection of antifungal activity in *Portulaca oleracea* by a single-cell bioassay system. *Food Chem Toxicol* 1990 Jul;28(7):483-90

Red Lentils contain antifungal peptides.

- *Wang & Ng: An antifungal peptide from red lentil seeds. *Peptides* 2007 Mar;28(3):547-52

Resveratrol, a potent antioxidant found in the skins of blueberries and red grapes, has antifungal properties.

- *Jeandet et al: Phytoalexins from the Vitaceae: biosynthesis, phytoalexin gene expression in transgenic plants, antifungal activity, and metabolism. *J Agri Food Chem* 2002;50(10):2731-41
- *Jung et al: Fungicidal effect of resveratrol on human infectious fungi. *Arch Pharm Res* 2005 May;28(5):557-60
- *Jung et al: Candidicidal action of resveratrol isolated from grapes on human pathogenic yeast *C. albicans*. *J Microbiol Biotechnol* 2007 Aug;17(8):1324-9

Sarsaparilla was once used as a flavouring in soft drinks. It is still available as an herbal supplement with potent antifungal properties against pathogenic yeasts.

- *Sautour et al: Bioactive steroidal saponins from *Smilax medica*. *Planta Med* 2006 Jun;72(7):667-70

Savory is usually used as a flavour in cooking but it also has antifungal and antibacterial activity but only with the methanol extraction and not when hexane is used.

- *Razzaghi-Abyaneh et al: Inhibitory effects of *Satureja hortensis* L. essential oil on growth and aflatoxin production by *Aspergillus parasiticus*. *Int J Food Microbiol* 2008 Apr 30;123(3):228-33
- *Sahin et al: Evaluation of antimicrobial activities of *Satureja hortensis* L. *J Ethnopharmacol* 2003 Jul;87(1):61-5

Shiitake mushroom is a potent antimicrobial.

- *Hearst et al: An examination of antibacterial and antifungal properties of constituents of Shiitake (*Lentinula edodes*) and oyster (*Pleurotus ostreatus*) mushrooms. *Complement Ther Clin Pract* 2009 Feb;15(1):5-7
- *Ngai & Ng: Lentin, a novel and potent antifungal protein from shiitake mushroom with inhibitory effects on activity of human immunodeficiency virus-1 reverse transcriptase and proliferation of leukemia cells. *Life Sci* 2003 Nov 14;73(26):3363-74

Solanum chrysotrichum, a Mexican nightshade plant, is safe and effective in treating various skin and scalp fungal infections.

- *Herrera-Arellano et al: Clinical and mycological evaluation of therapeutic effectiveness of *Solanum chrysotrichum* standardized extract on patients with Pityriasis capitis (dandruff). A double blind and randomized clinical trial controlled with ketoconazole. *Planta Med.* 2004 Jun;70(6):483-8
- *Herrera-Arellano et al: Effectiveness and tolerability of a standardized phytodrug derived from *Solanum chrysotrichum* on *Tinea pedis*: a controlled and randomized clinical trial. *Planta Med* 2003 May;69(5):390-5
- *Lozoya et al: *Solanum chrysotrichum* (Schldl.) a plant used in Mexico for the treatment of skin mycosis. *J Ethnopharmacol* 1992 Apr;36(2):127-32

Spirulina not only enhances the immune system but has significant antifungal, antiviral, and anticancer activity. *Spirulina* is a blue-green algae derived from aquatic cyanobacteria, *Arthrospira platensis* (Africa, Asia, South America), *Arthrospira pacifica* (Hawaiian Islands) or *Arthrospira maxima* (Central America).

- *Blinkova et al: Biological activity of *Spirulina*. *Zh Mikrobiol Epidemiol Immunobiol* 2001 Mar-Apr;(2):114-8

Tribulus is an herb often used by men to boost testosterone levels but it also displays potent antifungal activity against fluconazole-resistant fungi, including *Candida*.

- *Zhang et al: In vitro and in vivo antifungal activities of the eight steroid saponins from *Tribulus terrestris* L. with potent activity against fluconazole-resistant fungal pathogens. *Biol Pharm Bull* 2005 Dec;28(12):2211-5

Yucca flowers have potent antifungal activity. They are one of many edible flowers that make a nice addition to salads.

- *Favel et al: Antifungal activity of steroidal glycosides from *Yucca gloriosa* L. *Phytother Res* 2005 Feb;19(2):158-61

ANTI-HISTAMINES



(USED TO TREAT ALLERGY SYMPTOMS)

COMMON EXAMPLES:

- astemizole** – Hismanyil
- brompheniramine** – Dimetapp and others
- chlorpheniramine** – Chlorotab and others
- clemastine** – Tavist
- cyproheptadine** – Periactin
- dimenhydrinate** – Dimetabs, Dramamine, and others
- diphenhydramine** – Benadryl, Nytol, and others
- ephedrine** – Synergenex caffeine, 4Ever Fit, and others
- meclizine** – Antivert and others
- pseudoephedrine** – Sudafed, Actifed, Allegra, and others
- terfenadine** – Seldane and others

DEplete:

B2, C, choline, CoQ10

- ☞ **Cow's milk** increases mucus associated with respiratory problems.
 - *Bartley & McGlashan: Does milk increase mucus production? *Med Hypotheses* 2010 Apr;74(4):732-4
- ☞ **Diphenhydramine (Benadryl)** is associated with early pregnancy defects, infant fatalities, and Rhabdomyolysis (break down of muscle tissue).
 - *Baker et al: Fatal diphenhydramine intoxication in infants. *J Forensic Sci* 2003 Mar;48(2):425-8
 - *Emadian et al: Rhabdomyolysis: a rare adverse effect of diphenhydramine overdose. *Am J Emerg Med* 1996 Oct;14(6):574-6
 - *Gilboa et al: Use of antihistamine medications during early pregnancy and isolated major malformations. *Birth Defects Res A Clin Mol Teratol* 2009 Feb;85(2):137-50
- ☞ **Margarine, but not butter,** increases eczema and allergic reactions in children.
 - *Sausenthaler et al: Margarine and butter consumption, eczema and allergic sensitization in children. The LISA birth cohort study. *Pediatr Allergy Immunol* 2006 Mar;17(2):85-93
- ☞ **Measles** may actually prevent allergies while **Vaccines** increase the risk as well as numerous other health issues in children, teens, and adults.

- *Chirumbolo: Use of basophil activation test in the investigation of adverse effects to vaccines. *Hum Vaccin* 2011 Aug;7(8)
- *Claesson: Immunological Links to Nonspecific Effects of DTwP and BCG Vaccines on Infant Mortality. *J Trop Med* 2011;2011:706304
- *Guinovart et al: Leukemia cutis arising at the site of injection of a tetanus vaccine booster. *Actas Dermosifiliogr* 2010 Oct;101(8):727-9
- *Hurwitz & Morgenstern: Effects of diphtheria-tetanus-pertussis or tetanus vaccination on allergies and allergy-related respiratory symptoms among children and adolescents in the United States. *J Manipulative Physiol Ther* 2000 Feb;23(2):81-90
- *No authors listed: Tetanus vaccine may be laced with anti-fertility drug. International/developing countries. *Vaccine Wkly* 1995 May 29 - Jun 5:9-10
- *Orbach et al: Vaccines and autoimmune diseases of the adult. *Discov Med* 2010 Feb;9(45):90-7
- *Patrizi et al: Sensitization to thimerosal in atopic children. *Contact Dermatitis* 1999 Feb;40(2):94-7
- *Rosenlund et al: Allergic disease and atopic sensitization in children in relation to measles vaccination and measles infection. *Pediatrics* 2009 Mar;123(3):771-8
- *Stratton et al: Adverse events associated with childhood vaccines other than pertussis and rubella. Summary of a report from the Institute of Medicine. *JAMA* 1994 May 25;271(20):1602-5

☞ **Meat and Fat consumption** by the mother increases the risk of infant eczema.

- *Saito et al: Maternal meat and fat consumption during pregnancy and suspected atopic eczema in Japanese infants aged 3-4 months: the Osaka Maternal and Child Health Study. *Pediatr Allergy Immunol* 2010 Feb;21(1Pt1):38-46

☞ **Omega-6** over-consumption by pregnant women contributes to childhood allergies.

- *Miyake et al: Maternal fat consumption during pregnancy and risk of wheeze and eczema in Japanese infants aged 16-24 months: the Osaka Maternal and Child Health Study. *Thorax* 2009 Sep;64(9):815-21

☞ **Phthalates** contribute to allergies, asthma and a host of more severe health issues. Phthalates are chemicals added to numerous products from plastics to enteric coatings on drugs and “nutritional” supplements, from packaged food to children’s toys, detergents, clothing ... and many more places.

- *Jaakkola & Knight: The role of exposure to phthalates from polyvinyl chloride products in the development of asthma and allergies: a systematic review and meta-analysis. *Environ Health Perspect* 2008 Jul;116(7):845-53

☞ **Wheat** allergies can develop to the point of anaphylaxis. Wheat and other grains, have a protein called gluten which is often the cause of diverse allergic reactions. Barley is not a suitable alternative for those with wheat allergies since both contain gluten. (See Appendix for Gluten-containing and Gluten-free listing).

- *Pourpak et al: Which cereal is a suitable substitute for wheat in children with wheat allergy? *Pediatr Allergy Immunol* 2005 May;16(3):262-6
- *Humbert et al: Gluten intolerance and skin diseases. *Eur J Dermatol* 2006 Jan-Feb;16(1):4-11
- *Palosuo et al: A novel wheat gliadin as a cause of exercise-induced anaphylaxis. *J Allergy Clin Immunol* 1999 May;103(5 Pt 1):912-7

☞ **Wheat** and **Milk allergies** appear more frequently in those who have eczema and respiratory problems.

- *Finn et al: Serum IgG antibodies to gliadin and other dietary antigens in adults with atopic eczema. *Clin Exp Dermatol* 1985 May;10(3):222-28
- *Varjonen et al: Antigliadin IgE--indicator of wheat allergy in atopic dermatitis. *Allergy* 2000 Apr;55(4):386-91

SUGGESTED ALTERNATIVES:

Agrimony is an herb that is proving its traditional use as an anti-inflammatory, especially in allergy symptoms.

- *Jung et al: Inhibitory effect of Agrimonia pilosa Ledeb. on inflammation by suppression of iNOS and ROS production. *Immunol Invest* 2010 Jan;39(2):159-70
- *Sun et al: Immunomodulatory effect of Eriobotrya japonica seed extract on allergic dermatitis rats. *J Nutr Sci Vitaminol (Tokyo)* 2010;56(2):145-9

Allergen removal from the mother's diet reduces infant colic. Allergens tested included: cow's milk, eggs, peanuts, tree nuts, wheat, soy and fish.

- *Hill et al: Effect of a low-allergen maternal diet on colic among breastfed infants: a randomized, controlled trial. *Arch Pharm Res* 2004 Sep;27(9):930-6
- *Hill et al: A low allergen diet is a significant intervention in infantile colic: results of a community-based study. *J Allergy Clin Immunol* 1995 Dec;96(6Pt1):886-92
- *Hill et al: A low allergen diet is a significant intervention in infantile colic: results of a community-based study. *Arch Dis Child* 1982 Oct;57(10):742-7

Andrographis is an herb used to boost the immune system during illness but it also has anti-inflammatory and anti-allergic activity.

- *Chandrasekaran et al: Effect of an extract of Andrographis paniculata leaves on inflammatory and allergic mediators in vitro. *J Ethnopharmacol* 2010 May 27;129(2):203-7

Apples decrease allergy symptoms. Be sure to eat only **organic** apples because conventionally grown apples are the number one fruit for chemical content.

- *Akiyama et al: Dietary unripe apple polyphenol inhibits the development of food allergies in murine models. *FEBS Lett* 2005 Aug 15;579(20):4485-91
- *Apples worst for pesticides on produce list. *CBC News*, Jun 14, 2011
- *No authors listed: Procyanidin C1 from apple extracts inhibits Fc epsilon RI-mediated mast cell activation. *Int Arch Allergy Immunol* 2008;147(3):213-21
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Asian Pears suppress allergy symptoms.

- *Lee et al: Asian pear pectin administration during presensitization inhibits allergic response to ovalbumin in BALB/c mice. *J Altern Complement Med* 2004 Jun;10(3):527-34

B12 topical helps relieve allergic skin conditions.

- *Januchowski: Evaluation of topical vitamin B(12) for the treatment of childhood eczema. *J Altern Complement Med* 2009 Apr;15(4):387-9
- *Stücker et al: Topical vitamin B12--a new therapeutic approach in atopic dermatitis--evaluation of efficacy and tolerability in a randomized placebo-controlled multicentre clinical trial. *Br J Dermatol* 2004 May;150(5):977-83

Bee Pollen and **Propolis** help prevent and decrease allergy symptoms.

- *Ishikawa et al: Inhibitory effect of honeybee-collected pollen on mast cell degranulation in vivo and in vitro. *Forsch Komplementarmed Klass Naturheilkd* 2002 Feb;9(1):22-30
- *Medeiros et al: Anti-allergic effect of bee pollen phenolic extract and myricetin in ovalbumin-sensitized mice. *J Ethnopharmacol* 2008 Sep 2;119(1):41-6
- *Shinmei et al: Effect of Brazilian propolis on sneezing and nasal rubbing in experimental allergic rhinitis of mice. *Immunopharmacol Immunotoxicol* 2009;31(4):688-93

Beta-glucans (found in oats, barley, mushrooms or derived from yeasts) improve allergy symptoms. (See more studies under Immunosuppressants)

*Kirmaz et al: Effects of glucan treatment on the Th1/Th2 balance in patients with allergic rhinitis: a double-blind placebo-controlled study. *Eur Cytokine Netw* 2005 Jun;16(2):128-34

Black currants help reduce allergy symptoms.

*Dejima et al: Effects of polysaccharide derived from black currant on relieving clinical symptoms of Japanese cedar pollinosis: a randomized double-blind, placebo-controlled trial. *Biosci Biotechnol Biochem* 2007 Dec;71(12):3019-25

Black cumin seeds help relieve allergy symptoms.

*Nikakhlagh et al: Herbal treatment of allergic rhinitis: the use of *Nigella sativa*. *Am J Otolaryngol* 2010 Oct 12

Burdock root has potent antioxidant and allergy-preventing properties since it helps cleanse the blood of impurities.

*Chan et al: A review of the pharmacological effects of *Arctium lappa* (burdock). *Inflammopharma* 2011;19(5):245-54

*Knipping et al: In vitro and in vivo anti-allergic effects of *Arctium lappa* L. *Exp Biol Med* (Maywood) 2008 Aug 14

*Sohn et al: Anti-allergic and anti-inflammatory effects of butanol extract from *Arctium Lappa* L. *Clin Mol Aller* 2011 Feb 8;9:4

Butterbur is an herb that helps reduce seasonal allergy symptoms including headaches.

*Lee et al: A placebo-controlled evaluation of butterbur and fexofenadine on objective and subjective outcomes in perennial allergic rhinitis. *Clin Exp Allergy* 2004 Apr;34(4):646-9

*Lee et al: Butterbur, a herbal remedy, attenuates adenosine monophosphate induced nasal responsiveness in seasonal allergic rhinitis. *Clin Exp Allergy* 2003 Jul;33(7):882-6

*Lipton et al: *Petasites hybridus* root (butterbur) is an effective preventive treatment for migraine. *Neurology* 2004 Dec 28;63(12):2240-4

Chlorella is a green algae that has numerous health benefits including the reduction of some milk allergies.

*Hasegawa et al: Oral administration of hot water extracts of *Chlorella vulgaris* reduces IgE production against milk casein in mice. *Int J Immunopharmacol* 1999 May;21(5):311-23

Cinnamon stops the formation of eczema-like skin allergy symptoms.

*Sung et al: Inhibitory effects of *Cinnamomum cassia* extract on atopic dermatitis-like skin lesions induced by mite antigen in NC/Nga mice. *Headache* 2005 Mar;45(3):196-203

Clove reduces allergy symptoms.

*Kim et al: Effect of *Syzygium aromaticum* extract on immediate hypersensitivity in rats. *J Ethnopharmacol* 1998 Mar;60(2):125-31

Colloidal Oatmeal and **Rice** used topically is a better and safer treatment than steroids for skin allergy symptoms.

*Cerio et al: Mechanism of action and clinical benefits of colloidal oatmeal for dermatologic practice. *J Drugs Dermatol* 2010 Sep;9(9):1116-20

*Pigatto et al: An evaluation of the allergic contact dermatitis potential of colloidal grain suspensions. *J Exp Bot* 2000 Oct;51(351):1635-45

Curcumin is the main active substance found in the cooking spice, Turmeric. Curcumin has many health benefits including the prevention and relief of allergy symptoms.

- *Choi et al: Inhibitory effects of curcumin on passive cutaneous anaphylactoid response and compound 48/80-induced mast cell activation. *Anat Cell Biol* 2010 Mar;43(1):36-43
- *Kobayashi et al: Curcumin inhibition of *Dermatophagoides farinea*-induced interleukin-5 (IL-5) and granulocyte macrophage-colony stimulating factor (GM-CSF) production by lymphocytes from bronchial asthmatics. *Biochem Pharmacol* 1997 Oct 1;54(7):819-24
- *Kurup et al: Immune response modulation by curcumin in a latex allergy model. *Clin Mol Allergy* 2007;5:1
- *Kurup & Barrios: Immunomodulatory effects of curcumin in allergy. *Mol Nutr Food Res* 2008 Sep;52(9):1031-9
- *Lee et al: Curcumin, a constituent of curry, suppresses IgE-mediated allergic response and mast cell activation at the level of Syk. *J Allergy Clin Immunol* 2008 May;121(5):1225-31
- *Matsuda et al: Anti-allergic principles from Thai zedoary: structural requirements of curcuminoids for inhibition of degranulation and effect on the release of TNF-alpha and IL-4 in RBL-2H3 cells. *Bioorg Med Chem* 2004 Nov 15;12(22):5891-8
- *Suzuki et al: Elucidation of anti-allergic activities of curcumin-related compounds with a special reference to their anti-oxidative activities. *Biol Pharm Bull* 2005 Aug;28(8):1438-43
- *Trinh et al: Inhibitory effects of curcuminoids on passive cutaneous anaphylaxis reaction and scratching behavior in mice. *Arch Pharm Res* 2009 Dec;32(12):1783-7

Dehydration is linked to allergy symptoms and psoriasis as well as other health issues. Since the body is made up of about 75% water, it is important to always stay well hydrated.

- *Berardesca et al: In vivo hydration and water-retention capacity of stratum corneum in clinically uninvolved skin in atopic and psoriatic patients. *Acta Derm Venereol* 1990;70(5):400-4
- *Tanaka et al: Decreased hydration state of the stratum corneum and reduced amino acid content of the skin surface in patients with seasonal allergic rhinitis. *Br J Dermatol* 1998 Oct;139(4):618-21

Ellagic acid (found in such foods as berries, walnuts, pecans, and pomegranates) has anti-allergy effects.

- *Rogerio et al: Anti-inflammatory effects of *Lafoensia pacari* and ellagic acid in a murine model of asthma. *Eur J Pharmacol* 2008 Feb 2;580(1-2):262-70

Essential oils are safely used on children to relieve allergic skin conditions but they must be added a carrier oil since essential oils are very potent and could irritate the skin. 36 oils were tested with these being the most effective for treating allergies: Marjoram, Frankinsence, German chamomile, Myrrh, Thyme, and Lavender.

- *Anderson et al: Evaluation of massage with essential oils on childhood atopic eczema. *Phytother Res* 2000 Sep;14(6):452-6

Food Dyes, Aspartame (an artificial sweetener) and **Glutamic acid** (an amino acid processed as a flavour enhancer, eg. MSG) can aggravate sensitivities to the point of anaphylaxis.

- *Collins-Williams: Clinical spectrum of adverse reactions to tartrazine. *J Asthma* 1985;22(3):139-43
- *Desmond & Trautlein: Tartrazine (FD&C yellow #5) anaphylaxis: a case report. *Ann Allergy* 1981 Feb;46(2):81-2
- *Glutamic acid. *Innvista* - www.innvista.com/health/nutrients/proteins/glutamic.htm
- *Lau et al: Synergistic interactions between commonly used food additives in a developmental neurotoxicity test. *Toxicol Sci* 2006 Mar;90(1):178-87
- *MacCara: Tartrazine: a potentially hazardous dye in Canadian drugs. *Can Med Assoc J* 1982 Apr 15;126(8):910-4
- *Ros et al: A follow-up study of patients with recurrent urticaria and hypersensitivity to aspirin, benzozates and azo dyes. *Br J Dermatol* 1976 Jul;95(1):19-24

Gallic acid (found in such foods as blueberries, walnuts, apples, flax seed and watercress) helps prevent some allergic reactions.

- *Kim et al: Gallic acid inhibits histamine release and pro-inflammatory cytokine production in mast cells. *Zhong Xi Yi Jie He Xue Bao* 2004 Jan;2(1):30-2

GLA (gamma-linolenic acid) is an effective and safe treatment for eczema-like conditions in infants or adults. GLA is the “good” part of omega-6 fatty acid and found in such oils as borage, evening primrose, and black currant seed. It is also found in such foods as blueberries, walnuts, apples, flax seed and watercress.

- *Andreassi et al: Efficacy of gamma-linolenic acid in the treatment of patients with atopic dermatitis. *J Int Med Res* 1997 Sep-Oct;25(5):266-74
- *Fiocchi et al: The efficacy and safety of gamma-linolenic acid in the treatment of infantile atopic dermatitis. *J Int Med Res* 1994 Jan-Feb;22(1):24-32
- *Horrobin: Essential fatty acid metabolism and its modification in atopic eczema. *Am J Clin Nutr* 2000 Jan;71(1 Suppl):367S-72S
- *Kanehara et al: Clinical effects of undershirts coated with borage oil on children with atopic dermatitis: a double-blind, placebo-controlled clinical trial. *J Dermatol* 2007 Dec;34(12):811-5
- *Linnamaa et al: Blackcurrant seed oil for prevention of atopic dermatitis in newborns: a randomized, double-blind, placebo-controlled trial. *Clin Exp Allergy* 2010 Aug;40(8):1247-55
- *Morse & Clough: A meta-analysis of randomized, placebo-controlled clinical trials of Efamol evening primrose oil in atopic eczema. Where do we go from here in light of more recent discoveries? *Curr Pharm Biotechnol* 2006 Dec;7(6):503-24
- *van Gool et al: Gamma-linolenic acid supplementation for prophylaxis of atopic dermatitis--a randomized controlled trial in infants at high familial risk. *Am J Clin Nutr* 2003 Apr;77(4):943-51
- *Yoon et al: The therapeutic effect of evening primrose oil in atopic dermatitis patients with dry scaly skin lesions is associated with the normalization of serum gamma-interferon levels. *Skin Pharmacol Appl Skin Physiol* 2002 Jan-Feb;15(1):20-5

Homeopathic remedies safely and effectively treat allergy symptoms.

- *Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29
- *Friese & Zabalotnyi: Homeopathy in acute rhinosinuitis: a double-blind, placebo controlled study shows the efficiency and tolerability of a homeopathic combination remedy. *HNO* 2007 Apr;55(4):271-7
- *Kim et al: Treatment of seasonal allergic rhinitis using homeopathic preparation of common allergens in the southwest region of the US: a randomized, controlled clinical trial. *Ann Pharmacother* 2005 Apr;39(4):617-24
- *Lüdtke & Wiesenauer: A meta-analysis of homeopathic treatment of pollinosis with *Galphimia glauca*. *Cancer Lett* 2011 Feb 28;301(2):168-76
- *Reilly et al: Is homeopathy a placebo response? Controlled trial of homeopathic potency, with pollen in hayfever as model. *Lancet* 1986 Oct 18;2(8512):881-6
- *Weiser et al: A randomized equivalence trial comparing the efficacy and safety of Luffa comp.-Heel nasal spray with cromolyn sodium spray in the treatment of seasonal allergic rhinitis. *Forsch Komplementarmed* 1999 Jun;6(3):142-8
- *Witt et al: Homeopathic medical practice: long-term results of a cohort study with 3981 patients. *BMC Public Health* 2005;5:115
- *Zabolotnyi et al: Efficacy of a complex homeopathic medication (Sinfrontal) in patients with acute maxillary sinusitis: a prospective, randomized, double-blind, placebo-controlled, multicenter clinical trial. *Explore (NY)* 2007 Mar-Apr;3(2):98-109

Hops is an herb used in the brewing industry and often added to herbal sleep-inducing remedies but it also helps relieve allergy symptoms.

*Takubo et al: Effects of hop extracts on nasal rubbing and sneezing in BALB/c mice. *Biol Pharm Bull* 2006 Apr;29(4):689-92

Loquats (fruit, seeds, and leaves) relieve some allergy symptoms.

*Kim & Shin: Anti-inflammatory effect of leaves of *Eriobotrya japonica* correlating with attenuation of p38 MAPK, ERK, and NF-kappaB activation in mast cells. *Toxicol In Vitro* 2009 Oct;23(7):1215-9

*Kim et al: Effect of leaves of *Eriobotrya japonica* on anaphylactic allergic reaction and production of tumor necrosis factor-alpha. *Immunopharmacol Immunotoxicol* 2009 Jun;31(2):314-9

*Sun et al: Immunomodulatory effect of *Eriobotrya japonica* seed extract on allergic dermatitis rats. *J Nutr Sci Vitaminol (Tokyo)* 2010;56(2):145-9

Mangos have anti-allergy and anti-parasitic effects and may reduce the risk of anaphylactic reactions.

*García et al: Anthelmintic and anti-allergic activities of *Mangifera indica* L. stem bark components Vimang and mangiferin. *Phytother Res* 2003 Dec;17(10):1203-8

*Lee et al: Mangiferin inhibits passive cutaneous anaphylaxis reaction and pruritus in mice. *Planta Med* 2009 Oct;75(13):1415-7

Mangosteen fruit has antihistamine and anti-inflammatory effects.

*Nakatani et al: Inhibitions of histamine release and prostaglandin E2 synthesis by mangosteen, a Thai medicinal plant. *Biol Pharm Bull* 2002 Sep;25(9):1137-41

Medicinal mushrooms (*Cordyceps*, *Murill*) prevent allergies and improve airway inflammation in asthmatics.

*Ellertsen & Hetland: An extract of the medicinal mushroom *Agaricus blazei* Murill can protect against allergy. *Clin Mol Allergy* 2009;7:6

*Lin et al: Effects of fermented *Cordyceps* powder on pulmonary function in sensitized guinea pigs and airway inflammation in sensitized rats. *Zhongguo Zhong Yao Za Zhi* 2001 Sep;26(9):622-5

*Wang et al: Effect of dongchong xiacao capsule on airway inflammation of asthmatic patients. *J Hypertens*. 2005 Sep;23(9):1699-706

Mediterranean Diet in early life helps prevent the development of allergies.

*Chatzi & Kogevinas: Prenatal and childhood Mediterranean diet and the development of asthma and allergies in children. *Public Health Nutr* 2009 Sep;12(9A):1629-34

Minerals (calcium, magnesium, and phosphorus) and **Seaweed** decrease allergy symptoms in children if they were first taken by their pregnant mothers.

*Miyake et al: Dietary intake of seaweed and minerals and prevalence of allergic rhinitis in Japanese pregnant females: baseline data from the Osaka Maternal and Child Health Study. *Ann Epidemiol* 2006 Aug;16(8):614-21

Motherwort is an herb that reduces inflammation associated with allergy symptoms.

*Shin et al: Anti-inflammatory activity of Motherwort (*Leonurus sibiricus* L.). *Immunopharmacol Immunotoxicol* 2009;31(2):209-13

MSM (methylsulfonylmethane) is a sulfur compound found in all parts of the body. It has several functional abilities including that of relieving seasonal allergy symptoms.

*Barrager et al: A multicentered, open-label trial on the safety and efficacy of methylsulfonylmethane in the treatment of seasonal allergic rhinitis. *J Altern Complement Med* 2002 Apr;8(2):167-73

Nasal irrigation helps relieve and prevent sinus infections and allergy symptoms.

*Rabago et al: Nasal irrigation for chronic sinus symptoms in patients with allergic rhinitis, asthma, and nasal polyposis: a hypothesis generating study. *WMJ* 2008 Apr;107(2):69-75

*Tomooka et al: Clinical study and literature review of nasal irrigation. *Laryngoscope* 2000 Jul;110(7):1189-93

Olbas oil is a combination of essential oils that makes an excellent sinus and upper respiratory decongestant during allergies or infections.

*Zalewski et al: Clinical evaluation of Olbas oil effect on nasal mucosa in acute rhinitis patients during common cold. *Otolaryngol Pol* 1997;51 Suppl 25:312-4

Omega-3 fatty acids help prevent allergies (in humans and their pets)

*Bensignor et al: Efficacy of an essential fatty acid-enriched diet in managing canine atopic dermatitis: a randomized, single-blinded, cross-over study. *Vet Dermatol* 2008 Jun;19(3):156-62

*Furuhjelm et al: Fish oil supplementation in pregnancy and lactation may decrease the risk of infant allergy. *Acta Paediatr.* 2009 Sep;98(9):1461-7

*Gueck et al: Alterations of mast cell mediator production and release by gamma-linolenic and docosahexaenoic acid. *Ethn Dis* 2010;20(1 Suppl 1):S1-65-72

*Miyake et al: Fish and fat intake and prevalence of allergic rhinitis in Japanese females: the Osaka Maternal and Child Health Study. *J Am Coll Nutr* 2007 Jun;26(3):279-87

*Oliwiecki et al: Levels of essential and other fatty acids in plasma and red cell phospholipids from normal controls and patients with atopic eczema. *Acta Derm Venereol* 1991;71(3):224-8

*Saevik et al: A randomized, controlled study to evaluate the steroid sparing effect of essential fatty acid supplementation in the treatment of canine atopic dermatitis. *Swed Dent J* 2006;30(2):55-60

Onions help prevent allergies.

*Kaiser et al: Anti-allergic effects of herbal product from *Allium cepa* (bulb). *J Med Food* 2009 Apr;12(2):374-82

Oyster mushrooms can help relieve allergy symptoms.

*Yatsuzuka et al: Effect of *Usuhiratake* (*Pleurotus pulmonarius*) on sneezing and nasal rubbing in BALB/c mice. *Biol Pharm Bull* 2007 Aug;30(8):1557-60

Passion flower is an herb with multiple functions including anti-asthma effects.

*Dhawan et al: Antiasthmatic activity of the methanol extract of leaves of *Passiflora incarnata*. *Phytother Res* 2003 Aug;17(7):821-2

Peaches have anti-allergic effects but buy only **organic** peaches since they are number 4 on the list of produce with numerous pesticides.

*Shin et al: Anti-allergic inflammatory activity of the fruit of *Prunus persica*: role of calcium and NF-kappaB. *Food Chem Toxicol* 2010 Jul 12

*The Full List: 53 Fruits and Veggies. Environmental Working Group - www.ewg.org/foodnews/list/

Peppermint helps relieve allergy symptoms.

*Inoue et al: Effects of peppermint (*Mentha piperita* L.) extracts on experimental allergic rhinitis in rats. *Biol Pharm Bull* 2001 Jan;24(1):92-5

Perilla (a common name for plants of the mint family) and **Rosmarinic acid** (a polyphenol from mint plants) reduce allergy symptoms.

*Oh et al: Effect of *Perilla frutescens* var. *acuta* Kudo and rosmarinic acid on allergic inflammatory reactions. *Exp Biol Med* (Maywood) 2011 Jan;236(1):99-106

*Yanagisawa et al: Effects of maternal exposure to di-(2-ethylhexyl) phthalate during fetal and/or neonatal periods on atopic dermatitis in male offspring. *Environ Health Perspect* 2008 Sep;116(9):1136-41

Prebiotics (a dietary fiber that feeds probiotics), taken during the first two years of life, significantly reduces allergies.

- *Arslanoglu et al: Early dietary intervention with a mixture of prebiotic oligosaccharides reduces the incidence of allergic manifestations and infections during the first two years of life. *J Nutr* 2008 Jun;138(6):1091-5

Probiotics prevent and relieve allergy symptoms, including eczema, in all people from prenatal to the elderly.

- *Abrahamsson et al: Probiotics in prevention of IgE-associated eczema: a double-blind, randomized, placebo-controlled trial. *J Allergy Clin Immunol* 2007 May;119(5):1174-80
- *Angelis et al: Probiotic preparation has the capacity to hydrolyze proteins responsible for wheat allergy. *J Food Prot* 2007 Jan;70(1):135-44
- *Beaulieu et al: Anti-inflammatory potential of a malleable matrix composed of fermented whey proteins and lactic acid bacteria in an atopic dermatitis model. *J Inflamm (Lond)* 2007;4:6
- *Böttcher et al: Low breast milk TGF-beta2 is induced by *Lactobacillus reuteri* supplementation and associates with reduced risk of sensitization during infancy. *Pediatr Allergy Immunol* 2008 Sep;19(6):497-504
- *Choi et al: Anti-inflammatory activity of the ethanol extract of Chungkukjang, Korean fermented bean: 5-lipoxygenase inhibition. *J Med Food* 2008 Sep;11(3):539-43
- *Forsythe et al: Oral treatment with live *Lactobacillus reuteri* inhibits the allergic airway response in mice. *Am J Respir Crit Care Med* 2007 Mar 15;175(6):561-9
- *Gerasimov et al: Probiotic supplement reduces atopic dermatitis in preschool children: a randomized, double-blind, placebo-controlled, clinical trial. *Am J Clin Dermatol* 2010;11(5):351-61
- *Hoang et al: *Lactobacillus rhamnosus* cell lysate in the management of resistant childhood atopic eczema. *Inflamm Allergy Drug Targets* 2010 Jul 1;9(3):192-6
- *Ishida et al: Clinical effects of *Lactobacillus acidophilus* strain L-92 on perennial allergic rhinitis: a double-blind, placebo-controlled study. *Biochem Biophys Res Commun* 2003 Feb 21;301(4):1062-8
- *Ishida et al: Clinical effects of *Lactobacillus acidophilus* strain L-92 on perennial allergic rhinitis: a double-blind, placebo-controlled study. *J Dairy Sci* 2005 Feb;88(2):527-33
- *Ivory et al: Oral delivery of *Lactobacillus casei* Shirota modifies allergen-induced immune responses in allergic rhinitis. *Clin Exp Allergy* 2008 Aug;38(8):1282-9
- *Johansson et al: Early colonization with a group of *Lactobacilli* decreases the risk for allergy at five years of age despite allergic heredity. *PLoS One* 2011;6(8):e23031
- *Kalliomäki & Isolauri: Pandemic of atopic diseases--a lack of microbial exposure in early infancy? *Curr Drug Targets Infect Disord* 2002 Sep;2(3):193-9
- *Kalliomäki et al: Probiotics in primary prevention of atopic disease: a randomised placebo-controlled trial. *Lancet* 2001 Apr 7;357(9262):1076-9
- *Karimi et al: *Lactobacillus reuteri*-induced regulatory T cells protect against an allergic airway response in mice. *Am J Respir Crit Care Med* 2008 Nov 21
- *Kim et al: Effect of probiotic mix (*Bifidobacterium bifidum*, *Bifidobacterium lactis*, *Lactobacillus acidophilus*) in the primary prevention of eczema: a double-blind, randomized, placebo-controlled trial. *Pediatr Allergy Immunol* 2010 Mar;21(2 Pt 2):e386-93
- *Kuitunen et al: Probiotics prevent IgE-associated allergy until age 5 years in cesarean-delivered children but not in the total cohort. *J Allergy Clin Immunol* 2009 Feb;123(2):335-41
- *Kukkonen et al: Probiotics and prebiotic galacto-oligosaccharides in the prevention of allergic diseases: a randomized, double-blind, placebo-controlled trial. *J Allergy Clin Immunol* 2007 Jan;119(1):192-8
- *Marsella: Evaluation of *Lactobacillus rhamnosus* strain GG for the prevention of atopic dermatitis in dogs. *Proc Natl Acad Sci USA* 2009 Jun 30;106(26):10859-64
- *Michail et al: Efficacy of probiotics in the treatment of pediatric atopic dermatitis: a meta-analysis of randomized controlled trials. *Ann Allergy Asthma Immunol* 2008 Nov;101(5):508-16
- *Park et al: New functional probiotic *Lactobacillus sakei* probio 65 alleviates atopic symptoms in the mouse. *J Med Food* 2008 Sep;11(3):405-12
- *Rosenfeldt et al: Effect of probiotics on gastrointestinal symptoms and small intestinal permeability in children with atopic dermatitis. *J Pediatr* 2004 Nov;145(5):612-6
- *Tang et al: Probiotics and prebiotics: clinical effects in allergic disease. *Pediatrics* 2010 Oct;126(5):626-34

- *Tang: Probiotics and prebiotics: immunological and clinical effects in allergic disease. Nestle Nutr Workshop Ser Pediatr Program 2009;64:219-38
- *Trinh et al: Anti-allergic effects of fermented *Ixeris sonchifolia* and its constituent in mice. J Microbiol Biotechnol 2010 Jan;20(1):217-23
- *Valsecchi et al: Probiotics and children: is an integration useful in allergic diseases? Pediatr Med Chir 2008 Jul-Aug;30(4):197-203
- *West et al: Probiotics during weaning reduce the incidence of eczema. Pediatr Allergy Immunol 2009 Aug;20(5):430-7
- *Weston et al: Effects of probiotics on atopic dermatitis: a randomised controlled trial. Arch Dis Child 2005 Sep;90(9):892-7
- *Wickens et al: A differential effect of 2 probiotics in the prevention of eczema and atopy: a double-blind, randomized, placebo-controlled trial. J Allergy Clin Immunol 2008 Oct;122(4):788-94
- *Woo et al: Effect of *Lactobacillus sakei* supplementation in children with atopic eczema-dermatitis syndrome. Ann Allergy Asthma Immunol 2010 Apr;104(4):343-8
- *Woo et al: Effect of *Lactobacillus sakei* supplementation in children with atopic eczema-dermatitis syndrome. Int J Canc 2003 Aug 20;106(2):178-86
- *Xiao et al: Effect of probiotic *Bifidobacterium longum* BB536 [corrected] in relieving clinical symptoms and modulating plasma cytokine levels of Japanese cedar pollinosis during the pollen season. A randomized double-blind, placebo-controlled trial. J Investig Allergol Clin Immunol 2006;16(2):86-93
- *Zhu et al: Meta analysis of lactic acid bacteria as probiotics for the primary prevention of infantile eczema. Zhongguo Dang Dai Er Ke Za Zhi 2010 Sep;12(9):734-9

Pycnogenol is a potent antioxidant extracted from pine tree bark that prevents histamine release which causes an allergic reaction.

- *Sharma et al: Pycnogenol inhibits the release of histamine from mast cells. Phytother Res 2003 Jan;17(1):66-9
- *Wilson et al: A randomized, double-blind, placebo-controlled exploratory study to evaluate the potential of pycnogenol for improving allergic rhinitis symptoms. Phytother Res 2010 Aug;24(8):1115-9

Quercetin is a bioflavonoid known to be a natural antihistamine.

- *Cruz et al: Immunomodulatory pretreatment with *Kalanchoe pinnata* extract and its quercitrin flavonoid effectively protects mice against fatal anaphylactic shock. Int Immunopharmacol 2008 Dec 10;8(12):1616-21
- *Park et al: Quercetin regulates Th1/Th2 balance in a murine model of asthma. Int Immunopharmacol 2009 Mar;9(3):261-67
- *Richards: Quercetin: Natural support for allergy & inflammation relief and more. ProHealth, Apr 9, 2010

Resveratrol is a potent antioxidant extracted from the skins of red grapes that decreases the risk of allergies.

- *Cheong et al: Anti-allergic action of resveratrol and related hydroxystilbenes. Planta Med 1999 Apr;65(3):266-8
- *Lim et al: trans-Resveratrol, an extract of red wine, inhibits human eosinophil activation and degranulation. Br J Pharmacol 2008 Dec;155(7):995-1004
- *Min et al: Quercetin inhibits expression of inflammatory cytokines through attenuation of NF-kappaB and p38 MAPK in HMC-1 human mast cell line. Inflamm Res 2007 May;56(5):210-5
- *Moon et al: Quercetin inhalation inhibits the asthmatic responses by exposure to aerosolized-ovalbumin in conscious guinea-pigs. Arch Pharm Res 2008 Jun;31(6):771-8
- *Ragazzi et al: Resveratrol activity on guinea pig isolated trachea from normal and albumin-sensitized animals. Pharmacol Res Commun 1988 Dec;20 Suppl 5:79-82

Rooibos Tea boosts antibody production which reduces allergic reactions. Rooibos is native to South Africa and safe to drink even for babies.

*Kunishiro et al: Effects of rooibos tea extract on antigen-specific antibody production and cytokine generation in vitro and in vivo. *Biosci Biotechnol Biochem* 2001 Oct;65(10):2137-45

Rose petal extracts decrease allergy symptoms, including inflammation and pain.

*Choi & Hwang: Investigations of anti-inflammatory and antinociceptive activities of *Piper cubeba*, *Physalis angulata* and *Rosa hybrida*. *J Ethnopharmacol* 2003 Nov;89(1):171-5

*Jeon et al: Anti-allergic effects of white rose petal extract and anti-atopic properties of its hexane fraction. *Cell Mol Neurobiol* 2000 Oct;20(5):591-604

Royal Jelly suppresses any development of allergic skin conditions.

*Taniguchi et al: Oral administration of royal jelly inhibits the development of atopic dermatitis-like skin lesions in NC/Nga mice. *Int Immunopharmacol* 2003 Sep;3(9):1313-24

St. John's Wort cream or oil relieves allergic skin conditions. It is especially helpful in reducing the pain of shingles.

*Schempp et al: Topical treatment of atopic dermatitis with St. John's wort cream--a randomized, placebo controlled, double blind half-side comparison. *Phytomed* 2003;10 Suppl 4:31-7

Siberian Ginseng decreases allergy symptoms.

*Jeong et al: Inhibitory effects of mast cell-mediated allergic reactions by cell cultured Siberian Ginseng. *Phytomed* 2003 Mar;10(2-3):95-105

*Jeong et al: Inhibitory effects of mast cell-mediated allergic reactions by cell cultured Siberian Ginseng. *Immunopharmacol Immunotoxicol* 2001 Feb;23(1):107-17

Spirulina reduces allergy symptoms. *Spirulina* is a blue-green algae derived from marine bacteria: *Arthrospira platensis* (Africa, Asia, South America), *Arthrospira pacifica* (Hawaiian Islands) or *Arthrospira maxima* (Central America).

*Cingiet al: The effects of spirulina on allergic rhinitis. *Eur Arch Otorhinolaryngol* 2008 Oct;265(10):1219-23

Vegetarian Diet improves allergic skin conditions.

*Tanaka et al: Vegetarian diet ameliorates symptoms of atopic dermatitis through reduction of the number of peripheral eosinophils and of PGE2 synthesis by monocytes. *J Physiol Anthropol Appl Human Sci* 2001 Nov;20(6):353-61

Vitamins D and E are often deficient in those with allergies and supplementation improves allergic conditions.

*Ehlayel et al: Is high prevalence of vitamin D deficiency evidence for asthma and allergy risks? *Eur Ann Allergy Clin Immunol* 2011 Jun 43(3):81-8

*Javanbakht et al: Randomized controlled trial using vitamins E and D supplementation in atopic dermatitis. *J Dermatolog Treat* 2010 Jul 24

*Tsourelis-Nikita et al: Evaluation of dietary intake of vitamin E in the treatment of atopic dermatitis: a study of the clinical course and evaluation of the immunoglobulin E serum levels. *Leuk Res* 2003 Mar;27(3):275-83

ANTI-PARASITICS - EXTERNAL



(USED TO TREAT FLEAS, LICE, SCABIES, ETC)

lindane

gamma benzene hexachloride – Gambex™ shampoo

Hexit

Kwell

... and others

benzyl benzoate

OTC flea and pest medications for animals

Advantage™, Frontline™, Bio-Spot™, Program™, Sentinel™

... and others

DEplete:

E, GABA

Warning: Lindane is often prescribed for children as a remedy for lice. It is a **chlorinated hydrocarbon neurotoxic pesticide** which has been banned in over 50 countries but still sold in North America. NEVER USE ON INFANTS OR CHILDREN, so says the Canadian Paediatric Society on the Government of Canada website. In my opinion, it should not be used on pets, the elderly or anyone else for that matter.

☞ **Lindane** is a neurotoxin that interferes with GABA, which is the main neurotransmitter of the central nervous system (CNS). It affects the brain with side effects ranging from headaches and dizziness to anemia, seizures, convulsions, and death.

- *Aks et al: Acute Accidental Lindane Ingestion in Toddlers. *Ann Emerg Med* 1995 Nov;26(5):647-51
- *Arisi et al: Brain and liver lipid peroxidation levels following acute and short-term lindane administration in the rat. *Toxicol Lett* 1994 Oct;74(1):61-68
- *Bloomquist et al: Inhibition of gamma-aminobutyric acid-stimulated chloride flux in mouse brain vesicles by polychlorocycloalkane and pyrethroid insecticides. *Neurotox* 1986 Fall;7(3):11-20
- *Davies et al: Lindane Poisonings. *Arch Dermatol* 1983;119(2):142-44
- *Ginsburg et al: Absorption of lindane (gamma benzene hexachloride) in infants and children. *J Ped* 1977 Dec;91(6):998-1000
- *Lawrence & Casida: Interactions of lindane, toxaphene and cyclodienes with brain-specific -butylbicyclophosphorothionate receptor. *Life Sc* 1984 July 9;35(2):171-7
- *Llorens et al: Lindane inhibition of [35S]TBPS binding to the GABA A receptor in rat brain. *Neurotox Teratol* 1990 Nov/Dec;12(6):607-10
- *Loge: Aplastic anemia following exposure to benzene hexachloride (lindane). *JAMA* 1965;193(2):110-

14

- *Parmar et al: Effect of lindane on hepatic and brain cytochrome P450s and influence of P450 modulation in lindane induced neurotoxicity. Food Chem Toxicol 2003 Aug;41(8):1077-87
- *Suñol et al: Regional concentrations of GABA, serotonin and noradrenaline in brain at onset of seizures induced by lindane (γ -hexachlorocyclohexane). Neuropharmacol 1988 July;27(7):677-81
- *Suñol et al: Convulsant effect of lindane and regional brain concentration of GABA and dopamine. Toxicol 1988 May;49(2-3):247-52
- *Tsushimoto et al: Cytotoxic, mutagenic, and cell-cell communication inhibitory properties of DDT, lindane, and chlordane on Chinese hamster cells in vitro. Arch Environ Contam Tox 12(6):721-29
- *Tusell et al: Relationship between lindane concentration in blood and brain and convulsant response in rats after oral or intraperitoneal administration. Arch Tox 60(6):432-37

☞ **Lindane** is a well-known carcinogen (for over 40 years), especially to the liver and prostate. Chronic exposure also increases the risk for diabetes, thyroid diseases, and hypertension as well as other dangerous health conditions.

- *Band et al: Prostate cancer risk and exposure to pesticides in British Columbia farmers. Prost 2010 Aug 26
- *Donato & Zani: Chronic exposure to organochlorine compounds and health effects in adults: diabetes and thyroid diseases. Ann Ig 2010 May-Jun;22(3):185-98
- *Goncharov et al: Blood pressure in relation to concentrations of PCB congeners and chlorinated pesticides. Environ Health Perspect 2011 Mar;119(3):319-25
- *Ito et al: Histopathologic studies on liver tumorigenesis induced in mice by technical polychlorinated biphenyls and its promoting effect on liver tumors induced by benzene hexachloride. J Natl Can Inst 1973 Nov;51(5):1637-46
- *Kroll et al: Effect of lindane and phenobarbital on cyclooxygenase-2 expression and prostanoid synthesis by Kupffer cells. Carcinogen 1999;20(8):1411-16
- *Reuber: Carcinogenicity of lindane. Environ Res 1979 Aug;19(2):460-81
- *Wolfe et al: Tumorigenic responses to lindane in mice: potentiation by a dominant mutation. Carcinogen 1987;8(12):1889-97

☞ **Lindane** affects the reproductive system.

- *Dalsenter et al: Reproductive toxicity and tissue concentrations of lindane in adult male rats. Hum Exp Toxicol 1996 May;15(5):406-10
- *Pereira et al: Sex difference in enhancement of GGTase-positive foci by hexachlorobenzene and lindane in rat liver. Can Lett 1982 Jan;15(1):95-101
- *Sircar & Lahiri: Lindane (γ -HCH) causes reproductive failure and fetotoxicity in mice. Toxicol 1989 Dec;59(2):171-77
- *Uphouse & Williams: Diestrous treatment with lindane disrupts the female rat reproductive cycle. Toxicol 1989 July;48(1):21-28

SUGGESTED ALTERNATIVES TO DRUGS:

Aloe vera proves to be just as effective for treating scabies as benzyl benzoate but without the side effects. Taken internally, aloe also protects the liver and other cells against Lindane-induced toxicity.

- *Etim et al: The protective effect of aloe vera juice on lindane induced hepatotoxicity and genotoxicity. Pak J Pharm Sci 2006 Oct;19(4):337-40
- *Oyelami et al: Preliminary study of effectiveness of aloe vera in scabies treatment. Phytother Res 2009 Mar 9

Essential oils are safe and effective against several parasites but they should be added to a carrier oil or a shampoo since essential oils are strong and could cause contact dermatitis if used alone. **Clove oil** proved to be the most effective of 38 oils

tested for mosquito bites and chiggers but others can also be effective including Tea tree (melaleuca) (especially for head lice), Oregano, Citronella, Cinnamon, Pine, and Eucalyptus.

- *Choi et al: Efficacy of spray formulations containing binary mixtures of clove and eucalyptus oils against susceptible and pyrethroid/ malathion-resistant head lice (Anoplura: Pediculidae). J Med Entomol 2010 May;47(3):387-91
- *Eamsobhana et al: Laboratory evaluation of aromatic essential oils from thirteen plant species as candidate repellents against Leptotrombidium chiggers (Acari: Trombiculidae), the vector of scrub typhus. Exp Appl Acarol 2009 Mar;47(3):257-62
- *Trongtokit et al: Comparative repellency of 38 essential oils against mosquito bites. Phytother Res 2005 Apr;19(4):303-9
- *Yang et al: Ovicidal and adulticidal activities of Origanum majorana essential oil constituents against insecticide-susceptible and pyrethroid/malathion-resistant Pediculus humanus capitis (Anoplura: Pediculidae). J Agric Food Chem 2009 Mar 25;57(6):2282-7
- *Yang et al: Ovicidal and adulticidal activities of Cinnamomum zeylanicum bark essential oil compounds and related compounds against Pediculus humanus capitis (Anoplura: Pediculidae). Int J Parasitol 2005 Dec;35(14):1595-600

Grapefruit seed extract is safer and just as effective as any prescribed chemical.

- *Abdel-Ghaffar et al: Efficacy of a grapefruit extract on head lice: a clinical trial. Parasitol Res 2009 Nov 27

Neem is a safe and effective anti-parasitic treatment to use on head lice.

- *Abdel-Ghaffar & Semmler: Efficacy of neem seed extract shampoo on head lice of naturally infected humans in Egypt. Parasitol Res 2007 Jan;100(2):329-32

Neem and **Turmeric** is a safe combination to apply to scabies.

- *Charles & Charles: The use and efficacy of Azadirachta indica ADR ('Neem') and Curcuma longa ('Turmeric') in scabies. A pilot study. Trop Geogr Med 1992 Jan;44(1-2):178-81

Vitamin E and **Alpha-lipoic acid** protect the brain from lindane damage.

- *Bist et al: Inhibition of lindane-induced toxicity using alpha-lipoic acid and vitamin E in the brain of Mus musculus. Protoplasma 2010 Jun;242(1-4):49-53
- *Bist & Bhatt: The evaluation of effect of alpha-lipoic acid and vitamin E on the lipid peroxidation, gamma-amino butyric acid and serotonin level in the brain of mice (Mus musculus) acutely intoxicated with lindane. Neurolog Sc 2009 Jan;276(1-2):99-102



ANTI-PARASITICS - INTERNAL

(USED TO TREAT MALARIA, CRYPTOSPORIDIUM, GIARDIA, CYCLOSPORA, LEISHMANIA AND OTHERS)

COMMON EXAMPLES:

amodiaquine – Camoquin

chloroquine – Aralen

hydroxychloroquine – Plaquenil

pentamidine – NebuPent, Pentacarinat, Pentam 300

pyrimethamine – Daraprim

quinine

...and others

DEplete:

B6, B9, D, calcium, magnesium

SUGGESTED ALTERNATIVES:

Aloe vera has some anti-leishmania effects.

*Dutta et al: Aloe vera leaf exudate induces a caspase-independent cell death in Leishmania donovani promastigotes. J Med Microbiol 2007 May;56(Pt 5):629-36

Artemisia (Wormwood) and **Artemisinin** are more effective in combination with such substances as **Curcumin**, as treatments for malaria and leishmania.

*Atemnkeng et al: Evaluation of Artemisia annua infusion efficacy for the treatment of malaria in Plasmodium chabaudi chabaudi infected mice. Exp Parasitol 2009 Aug;122(4):344-8

*Dondorp et al: Artesunate versus quinine in the treatment of severe falciparum malaria in African children (AQUAMAT): an open-label, randomised trial. Lancet 2010; 376 (9753):1647-57

*Dondorp et al: Artesunate versus quinine for treatment of severe falciparum malaria: a randomised trial. Lancet 2005; 366(9487):717-25

*Nandakumar et al: Curcumin-artemisinin combination therapy for malaria. Antimicrob Agents Chemother 2006 May;50(5):1859-60

*Sen et al: Artemisinin triggers induction of cell-cycle arrest and apoptosis in Leishmania donovani promastigotes. J Med Microbiol 2007 Sep;56(Pt 9):1213-8

Asafoetida is an oily gum resin that is effective against Schistosoma mansoni, a parasitic fluke that infects millions of people worldwide.

- *Ramadan et al: Effect of *Ferula assafoetida* on experimental murine *Schistosoma mansoni* infection. *J Appl Physiol* 2007 Feb;102(2):516-28

Avocado seed extract has some anti-parasitic effects.

- *Leite et al: Chemical composition, toxicity and larvicidal and antifungal activities of *Persea americana* (avocado) seed extracts. *Rev Soc Bras Med Trop* 2009 Mar-Apr;42(2):110-3

Banana compounds, transformed by fungi, kill the leishmania parasite.

- *Luque-Ortega et al: Fungus-elicited metabolites from plants as an enriched source for new leishmanicidal agents: antifungal phenyl-phenalenone phytoalexins from the banana plant (*Musa acuminata*) target mitochondria of *Leishmania donovani* promastigotes. *Antimicrob Agents Chemother* 2004 May;48(5):1534-40

Beta glucan (Lentinan) from Shitake mushrooms may be a prophylactic treatment for malaria and other micro-parasitics.

- *Di Luzio & Williams: The role of glucan in the prevention and modification of microparasitic diseases. *Prog Clin Biol Res* 1984;161:443-56
- *Zhou et al: The shitake mushroom-derived immuno-stimulant lentinan protects against murine malaria blood-stage infection by evoking adaptive immune-responses. *Int Immunopharmacol* 2009 Apr;9(4):455-62

Berberine-containing plants (Barberry, Goldenseal, Oregon grape, Goldenthread) are strong anti-microbials against a variety of bacteria, viruses, fungi, protozoans, helminths, and chlamydia.

- *Lin et al: In vitro anti-hepatoma activity of fifteen natural medicines from Canada. *Altern Med Rev* 2000 Apr;5(2):175-7

Coconut husk fibre extract kills leishmaniasis and nematodes.

- *Costa et al: Anthelmintic activity of *Cocos nucifera* L. on intestinal nematodes of mice. *Res Vet Sci* 2010 Feb;88(1):101-3
- *Mendonça-Filho et al: Leishmanicidal activity of polyphenolic-rich extract from husk fiber of *Cocos nucifera* Linn. (Palmae). *Res Microbiol* 2004 Apr;155(3):136-43
- *Oliveira et al: Anthelmintic activity of *Cocos nucifera* L. against sheep gastrointestinal nematodes. *Vet Parasitol* 2009 Jan 22;159(1):55-9

Curcumin is effective against flukes, worms and other parasites.

- *Charoensuk et al: Curcumin induces a nuclear factor-erythroid 2-related factor 2-driven response against oxidative and nitrative stress after praziquantel treatment in liver fluke-infected hamsters. *Int J Parasitol* 2011 Jan 21
- *Magalhães et al: In vitro schistosomicidal activity of curcumin against *Schistosoma mansoni* adult worms. *Acta Pharmacol Sin* 2009 Mar;30(3):227-81
- *Pinlaor et al: Curcumin reduces oxidative and nitrative DNA damage through balancing of oxidant-antioxidant status in hamsters infected with *Opisthorchis viverrini*. *Mol Nutr Food Res* 2009 Oct;53(10):1316-28
- *Sriraj et al: Effect of curcumin on pathogenesis of hamster-opisthorchiasis through apoptosis-related gene expression. *Southeast Asian J Trop Med Public Health* 2009 Nov;40(6):1208-15

Echinacea decreases proliferation of and the inflammation caused by *Leishmania*.

- *Canlas et al: Echinacea and trypanosomatid parasite interactions: growth-inhibitory and anti-inflammatory effects of Echinacea. *Pharm Biol* 2010 Sep;48(9):1047-52

Homeopathics prove to be beneficial in treating malaria.

- *Lira-Salazar et al: Effects of homeopathic medications *Eupatorium perfoliatum* and *Arsenicum album* on parasitemia of *Plasmodium berghei*-infected mice. *Homeopathy* 2006 Oct;95(4):223-8

Mango has anti-parasitic effects.

- *García et al: Anthelmintic and antiallergic activities of *Mangifera indica* L. stem bark components Vimang and mangiferin. *Phytother Res* 2003 Dec;17(10):1203-8

Myrrh is effective against flukes.

- *Al-Mathal & Fouad: Myrrh (*Commiphora molmol*) in treatment of human and sheep *dicrocoeliasis dendriticum* in Saudi Arabia. *J Egypt Soc Parasitol* 2004 Aug;34(2):713-20
- *Fathy et al: Effect of Mirazid (*Commiphora molmol*) on experimental heterophyidiasis. *J Egypt Soc Parasitol* 2005 Dec;35(3):1037-50

Neem has anti-malarial properties.

- *Udeinya et al: An antimalarial extract from neem leaves is antiretroviral. *Toxicol In Vitro* 2009 Mar;23(2):251-8

Noni fruit has some anti-parasitic effects.

- *Brito et al: Anthelmintic activity of aqueous and ethanolic extracts of *Morinda citrifolia* fruit on *Ascaridia galli*. *Rev Bras Parasitol Vet* 2009 Oct-Dec;18(4):32-6

Papaya seeds are strong anti-parasitics. Adding a few seeds to your green smoothie adds a peppery flavour as well as parasitic protection.

- *Kermanshai et al: Benzyl isothiocyanate is the chief or sole anthelmintic in papaya seed extracts. *Phytochem* 2001 Jun;57(3):427-35
- *Okeniyi et al: Effectiveness of dried *Carica papaya* seeds against human intestinal parasitosis: a pilot study. *J Med Food* 2007 Mar;10(1):194-6
- *Satrija et al: Anthelmintic activity of papaya latex against patent *Heligmosomoides polygyrus* infections in mice. *J Ethnopharmacol* 1995 Nov 3;48(3):161-4

Pumpkin seeds (paralyzes parasites) followed by **Cascara** or **Senna** (for removal) in one hour.

- *Obregón et al: Preclinical studies of *cucurbita maxima* (pumpkin seeds) a traditional intestinal antiparasitic in rural urban areas. *Rev Gastroenterol Peru* 2004 Oct-Dec;24(4):323-7

Quassia is obtained from the bark of the tree and is more effective than quinine for malaria.

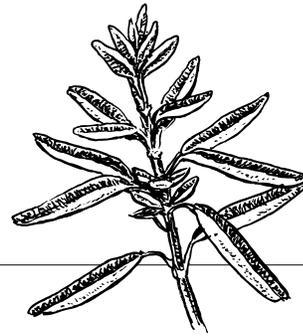
- *Cachet et al: Antimalarial activity of simalikalactone E, a new quassinoid from *quassia amara* L. (*Simaroubaceae*). *Antimicrob Agents, Chemother* 2009 Oct;53(10):4393-98
- *Houëla et al: Quassinoid constituents of *Quassia amara* L. leaf herbal tea. Impact on its antimalarial activity and cytotoxicity. *J Ethnopharm* 2009 Oct 29;126(1):114-18
- *Jensen et al: *Pediculosis capitis* treated with quassia tincture. *Acta Derm Venereol* 1978;58(6):557-9

Thyme, Yarrow, and Propolis prove superior to the drug glucantime (which is not available in Canada or the US) for Leishmaniasis.

- *Nilforoushzadeh et al: Comparison of *Thymus vulgaris* (Thyme), *Achillea millefolium* (Yarrow) and propolis hydroalcoholic extracts versus systemic glucantime in the treatment of cutaneous leishmaniasis in balb/c mice. *Biosci Biotechnol Biochem* 2008 Jan;72(1):94-100

ANTI-PSYCHOTICS

(USED TO TREAT VARIOUS MENTAL DISORDERS)



COMMON EXAMPLES:

- chlorpromazine** – Thorazine and others
- clomipramine** – Anafranil
- clozapine** – Clozaril
- fluoxetine** – Prozac, Sarafem, Fontex
- fluphenazine** – Anatensol, Prolixin, and others
- haloperidol** – Haldol
- lithium** – Eskalith, Lithizine, Lithobid and others
- molindone** – Moban
- promethazine** – Phenergan and others
- risperidone** – Risperdal and others
- thioridazine** – Apo-Thioridazine and others
- trifluoperazine** – Novo-Flurazine, Stelazine, and others

DEplete:

A, B2, B3, B6, B8, B9, B12, C, D, E, K, calcium, iron, potassium, selenium, CoQ10, glycine, NAC

⌘ **Anti-psychotic medications** are causing more harm than good, especially to older adults. The risk is greater with higher doses and with the use of haloperidol.

*Banerjee : The use of antipsychotic medication for people with dementia: Time for action . November 2009 pdf

*Huybrechts et al: Differential risk of death in older residents in nursing homes prescribed specific antipsychotic drugs: population based cohort study. BMJ 2012 Feb 23;344:e977

*Null et al: Death by Medicine. Online pdf with 152 references and an alarming number of facts.

⌘ **Aspartame**, a dangerous sugar substitute, is linked to certain mental disorders, compromised learning and emotional functioning.

*Humphries et al: Direct and indirect cellular effects of aspartame on the brain. Eur J Clin Nutr 2008 Apr;62(4):451-62

⌘ **Cholesterol (low levels)** and **Cholesterol-lowering medications** are linked to aggressive behavior and other neuropsychiatric behaviors.

- *Duits & Bos: Psychiatric disorders with use of simvastatin. *Ned Tijdschr Geneesk* 1993 Jun 26;137(26):1312-5
- *Golomb et al: Severe irritability associated with statin cholesterol-lowering drugs. *QJM* 2004 Apr;97(4):229-35
- *Hillbrand et al: Serum cholesterol and aggression in hospitalized male forensic patients. *J Behav Med* 1995 Feb;18(1):33-43
- *Muldoon et al: Effects of lovastatin on cognitive function and psychological well-being. *Am J Med* 2000 May;108(7):538-46
- *Olson et al: Lipid-lowering medication use and aggression scores in women: a report from the NHLBI-sponsored WISE study. *J Womens Health (Larchmt)* 2008 Mar;17(2):187-94
- *Tatley & Savage: Psychiatric adverse reactions with statins, fibrates and ezetimibe: implications for the use of lipid-lowering agents. *Drug Saf* 2007;30(3):195-201
- *Virkkunen: Serum cholesterol levels in homicidal offenders. A low cholesterol level is connected with a habitually violent tendency under the influence of alcohol. *Neuropsychobio* 1983;10(2-3):65-9

☞ **Fluoride consumption** (added to water supply, toothpaste etc and obtained from dentists) during pregnancy is linked to an increased risk of neurological and psychiatric disorders in adulthood.

- *Flace et al: Effects of developmental fluoride exposure on rat ultrasonic vocalization, acoustic startle reflex and pre-pulse inhibition. *Eur Rev Med Pharmacol Sci* 2010 Jun;14(6):507-12

☞ **Gluten intolerance** increases the risk of schizophrenia. Gluten is a protein found in many cereal grains. (see Appendix for foods that do or do not contain gluten)

- *Bürk et al: Neurological symptoms in patients with biopsy proven celiac disease. *Mov Disord* 2009 Dec 15;24(16):2358-62
- *Cascella et al: Prevalence of celiac disease and gluten sensitivity in the United States clinical antipsychotic trials of intervention effectiveness study population. *Schiz Bull* 2011 Jan;37(1):94-100
- *Dickerson et al: Markers of gluten sensitivity and celiac disease in recent-onset psychosis and multi-episode schizophrenia. *Biol Psych* 2010 Jul 1;68(1):100-4
- *Dohan et al: Is schizophrenia rare if grain is rare? *Biol Psych* 1984 Mar;19(3):385-99
- *Jackson et al: Neurologic and psychiatric manifestations of celiac disease and gluten sensitivity. *Psych Q* 2011 Aug 30
- *Kalaydjian et al: The gluten connection: the association between schizophrenia and celiac disease. *Acta Psych Scand* 2006 Feb;113(2):82-90
- *Samaroo et al: Novel immune response to gluten in individuals with schizophrenia. *Schiz Res* 2010 May;118(1-3):248-55
- *Singh & Kay: Wheat gluten as a pathogenic factor in schizophrenia. *Sci* 1976 Jan 30;191(4225):401-2

☞ **Herbs** can **increase the effects of Lithium**, causing possible toxicity: Butcher's broom, buchu, dandelion, and juniper.

☞ **Pesticide exposure** is linked to psychological distress and suicidal tendencies.

- *Wesseling et al: Symptoms of psychological distress and suicidal ideation among banana workers with a history of poisoning by organophosphate or n-methyl carbamate pesticides. *Occup Environ Med* 2010 Nov;67(11):778-84

☞ **Statin drugs** taken to reduce Cholesterol levels are associated with adverse mental and physical conditions. (see more under Cholesterol)

- *Berner: Statins can produce ataxia in bipolar disorder: two case reports. *J Clin Psych* 2010 Mar;71(3):359
- *Buajordet et al: Statins--the pattern of adverse effects with emphasis on mental reactions. Data from a national and an international database. *Tidsskr Nor Laegeforen* 1997 Sep 20;117(22):3210-3
- *Hyypää et al: Does simvastatin affect mood and steroid hormone levels in hypercholesterolemic

men? A randomized double-blind trial. *Psychoneuroendocrin* 2003 Feb ;28(2):181-94

*Tatley & Savage: Psychiatric adverse reactions with statins, fibrates and ezetimibe: implications for the use of lipid-lowering agents. *Drug Saf* 2007 ;30(3):195-201

☞ **Steroid treatments** cause mood and cognitive changes similar to bipolar disorder.

*Brown: Effects of glucocorticoids on mood, memory, and the hippocampus. Treatment and preventive therapy. *Ann N Y Acad Sci* 2009 Oct;1179:41-55

☞ **Tamiflu** is linked to neuropsychiatric disorders.

*Nakamura et al: Possible neuropsychiatric reaction to high-dose oseltamivir during acute 2009 H1N1 influenza A infection. *Clin Infect Dis* 2010 Apr1;50(7):e47-9

*No authors listed: Oseltamivir: neuropsychiatric disorders. *Prescrire Int* 2007 Oct;16(91):200

*No authors listed: Oseltamivir: cutaneous and neurological adverse effects in children. *Prescrire Int* 2006 Oct;15(85):182-3

☞ **Varenicline** (Champix in Canada and Chantix in the US) is sold mainly to help people quit smoking but it is strongly linked to the worsening of psychiatric disorders.

*DiPaula & Thomas: Worsening psychosis induced by varenicline in a hospitalized psychiatric patient. *Pharmacother* 2009 Jul;29(7):852-7

SUGGESTED ALTERNATIVES:

Alpha lipoic acid and **Niacinamide (B3)** are effective in treating schizophrenia.

*Seybolt: Is it time to reassess alpha lipoic acid and niacinamide therapy in schizophrenia? *Med Hypotheses* 2010 Dec;75(6):572-5

Amino acids, Arginine and Lysine, reduce anxiety and psychosocial stress.

*Jezova et al: Subchronic treatment with amino acid mixture of L-lysine and L-arginine modifies neuroendocrine activation during psychosocial stress in subjects with high trait anxiety. *Nutr Neurosci* 2005 Jun;8(3):155-60

*Smriga et al: Oral treatment with L-lysine and L-arginine reduces anxiety and basal cortisol levels in healthy humans. *Biomed Res* 2007 Apr;28(2):85-90

B12 and **B9 deficiencies** are linked to OCD (obsessive-compulsive disorder).

*Atmaca et al: Serum folate and homocysteine levels in patients with obsessive-compulsive disorder. *Psych Clin Neurosci* 2005 Oct;59(5):616-20

*Hermesh et al: Vitamin B12 and folic acid serum levels in obsessive compulsive disorder. *Acta Psychiatr Scand* 1988 Jul;78(1):8-10

DHEA (Dehydroepiandrosterone – a hormone that can be made in the body) is useful in treating schizophrenia. DHEA supplements are not allowed to be sold in Canada.

*Strous et al: Dehydroepiandrosterone augmentation in the management of negative, depressive, and anxiety symptoms in schizophrenia. *Arch Gen Psychiatry* 2003 Feb;60(2):133-41

EPUFAs (essential polyunsaturated fatty acids) significantly reduce symptoms of schizophrenia and bipolar disorder in children and adults. EPUFAs are important brain substances and neuron function regulators and include: **Omega-6**, especially effective is **GLA** (gamma-linolenic acid, the “good part of omega-6 found in such oils as borage, evening primrose, and black currant seed and in such foods as blueberries,

walnuts, apples, flax seed and watercress) and **Omega-3** from fish, flaxseed or sacha inchi seeds.

- *Amminger et al: Long-Chain ω -3 fatty acids for indicated prevention of psychotic disorders, a randomized, placebo-controlled trial. *Arch Gen Psych* 2010;67(2):146-54
- *Arvindakshan et al: Supplementation with a combination of Ω -3 fatty acids and antioxidants (vitamins E and C) improves the outcome of schizophrenia. *Schiz Res* 2003 Aug;62(3):195-204
- *Clayton et al: Reduced mania and depression in juvenile bipolar disorder associated with long-chain omega-3 polyunsaturated fatty acid supplementation. *Eur J Clin Nutr* 2009 Aug;63(8):1037-40
- *Clayton et al: Long-chain omega-3 polyunsaturated fatty acids in the blood of children and adolescents with juvenile bipolar disorder. *Lipids* 2008 Nov;43(11):1031-8
- *Emsley et al: Clinical potential of omega-3 fatty acids in the treatment of schizophrenia. *CNS Drugs* 2003;17(15):1081-1091(11)
- *Evansa et al: Red blood cell membrane essential fatty acid metabolism in early psychotic patients following antipsychotic drug treatment. *Prostaglandins, Leukotri EFA*s 2003 Dec;69(6):393-99
- *Frangou et al: Efficacy of ethyl-eicosapentaenoic acid in bipolar depression: randomised double-blind placebo-controlled study. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2005 Mar;25(3):222-4
- *Freeman et al: Omega-3 Fatty Acids: Evidence Basis for Treatment and Future Research in Psychiatry. *J Clin Psych* 2006 Dec;67:12:154-67
- *Freeman: Omega-3 fatty acids in psychiatry: A Review. *Ann Clin Psych* 2000;12(3):159-65
- *Horrobin: The relationship between schizophrenia and essential fatty acid and eicosanoid metabolism. *Prostaglan Leukotri EFA*s 1992 May;46(1):71-77
- *Khan et al: Reduced erythrocyte membrane essential fatty acids and increased lipid peroxides in schizophrenia at the never-medicated first-episode of psychosis and after years of treatment with antipsychotics. *Schiz Res* 2002 Nov;58(1):1-10
- *McNamara et al: Deficits in docosahexaenoic acid and associated elevations in the metabolism of arachidonic acid and saturated fatty acids in the postmortem orbitofrontal cortex of patients with bipolar disorder. *J Ayub Med Coll Abbottabad* 2008 Apr-Jun;20(2):118-24
- *McNamara & Carlson: Role of omega-3 fatty acids in brain development and function: Potential implications for the pathogenesis and prevention of psychopathology. *Prosta Leukotri EFA*s 2006 Oct-Nov;75(4-5):329-49
- *Maes et al: Lowered Ω 3 polyunsaturated fatty acids in serum phospholipids and cholesteryl esters of depressed patients. *Psych Res* 1999 Mar;85(3):275-91
- *Mahadik et al: Prevention of oxidative stress-mediated neuropathology and improved clinical outcome by adjunctive use of a combination of antioxidants and omega-3 fatty acids in schizophrenia. *Int Rev Psych* 2006;18(2):119-31
- *Osher & Belmaker: Omega-3 fatty acids in depression: a review of three studies. *CNS Neurosci Ther* 2009;15(2):128-33
- *Peet & Stokes: Omega-3 fatty acids in the treatment of psychiatric disorders. *Drugs* 2005;65(8):1051-1059(9)
- *Puri et al: Eicosapentaenoic acid treatment in schizophrenia associated with symptom remission, normalisation of blood fatty acids, reduced neuronal membrane phospholipid turnover and structural brain changes. *Intl J Clin Pract* 2000;54(1):57-63
- *Ranjekar et al: Decreased antioxidant enzymes and membrane essential polyunsaturated fatty acids in schizophrenic and bipolar mood disorder patients. *Psych Res* 2003 Dec;121(2):109-22
- *Reddy et al: Reduced red blood cell membrane essential polyunsaturated fatty acids in first episode schizophrenia at neuroleptic-naive baseline. *Schiz Bull* 2004;30(4):901-911
- *Sarris et al: Omega-3 for bipolar disorder: meta-analyses of use in mania and bipolar depression. *J Clin Psych* 2011 Aug 9
- *Scorza et al: Omega-3 consumption and sudden cardiac death in schizophrenia. *Prostaglan Leukot Essent Fatty Acids* 2009 Oct;81(4):241-5
- *Turnbull et al: Efficacy of omega-3 fatty acid supplementation on improvement of bipolar symptoms: a systematic review. *Arch Psychiatr Nurs* 2008 Oct;22(5):305-11

- *Vaddadi et al: A double-blind trial of essential fatty acid supplementation in patients with tardive dyskinesia. *Early Hum Dev* 1996 Jul 19;45(3):203-14
- *Vaddadi: Use of gamma-linolenic acid in the treatment of schizophrenia and tardive dyskinesia. *Prostagl Leukotri EFAs* 1992 May;46(1):67-70
- *Vaddadi et al: A double-blind trial of essential fatty acid supplementation in patients with tardive dyskinesia. *Psych Res* 1989 Mar;27(3):313-23
- *Wozniak et al: Omega-3 fatty acid monotherapy for pediatric bipolar disorder: a prospective open-label trial. *Eur Neuropsychopharmacol* 2007 May-Jun;17(6-7):440-7

Ginkgo biloba is an herb often used to improve memory but it also has properties that reduce fear and symptoms of tardive dyskinesia in schizophrenics.

- *Yang et al: Extract of Ginkgo biloba EGb761 facilitates extinction of conditioned fear measured by fear-potentiated startle. *Neuropsychopharmacol* 2007 Feb;32(2):332-42
- *Zhang et al: Extract of ginkgo biloba treatment for tardive dyskinesia in schizophrenia: a randomized, double-blind, placebo-controlled trial. *Clin Gastroenterol Hepatol* 2006 Dec;4(12):1502-6

Glycine is an amino acid that, by assisting medication, significantly improves cognitive abilities in schizophrenia.

- *Heresco-Levy et al: High-dose glycine added to olanzapine and risperidone for the treatment of schizophrenia. *Acta Psychiatr Scand* 2006 Feb;113(2):82-90
- *Javitt et al: Adjunctive high-dose glycine in the treatment of schizophrenia. *Cancer Lett* 2000 Jul 31;155(2):115-20

High Homocysteine levels play a role in the development of bipolar disorders and associated with various neurological dysfunctions. Lowering homocysteine levels can be accomplished by adding certain B vitamins (6, 9, 12) along with a B-complex. (see Appendix for a list of B vitamins according to name and number)

- *Dias et al: Serum homocysteine levels and cognitive functioning in euthymic bipolar patients. *Acta Vet Hung* 2005;53(3):319-24
- *Ientile et al: Homocysteine, vitamin determinants and neurological diseases. *Front Biosci (Schol Ed)* 2010;2:359-72
- *Smith et al: Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: A randomized controlled trial. *PLoS ONE* 2010;5(9):e12244
- *Spence et al: Understanding the complexity of homocysteine lowering with vitamins. *JAMA* 2011;306(23):2610-11

Inositol (B8) is an effective treatment for OCD (obsessive-compulsive disorder).

- *Fux et al: Inositol treatment of obsessive-compulsive disorder. *Am J Psych* 1996 Sep;153(9):1219-21
- *Harvey et al: Defining the neuromolecular action of myo-inositol: application to obsessive-compulsive disorder. *Prog Neuropsychopharmacol Biol Psych* 2002 Jan;26(1):21-32

Light therapy proves to be more effective than Prozac.

- *Lam et al: The Can-SAD study: a randomized controlled trial of the effectiveness of light therapy and fluoxetine in patients with winter seasonal affective disorder. *Am J Psych* 2006 May;163(5):805-12

Melatonin is a substance produced in the body but often taken as a supplement to induce sleep. It is an excellent scavenger of Hydroxyl radicals that are formed in the body and which contribute to bipolar disorders and schizophrenia.

- *Korotkova et al: Study of OH radicals in human serum blood of healthy individuals and those with pathological schizophrenia. *Int J Mol Sci* 2011;12(1):401-10
- *Li et al: Melatonin decreases production of hydroxyl radical during cerebral ischemia-reperfusion. *Zhongguo Yao Li Xue Bao* 1997 Sep;18(5):394-6
- *Life Extension Magazine, "The Dangerous Hydroxyl Radical", December 1995

- *Poeggeler et al: Melatonin, hydroxyl radical-mediated oxidative damage, and aging: A hypothesis. *J Pineal Res* 1993 May;14(4):151-68
- *Reiter: Interactions of the pineal hormone melatonin with oxygen-centered free radicals: a brief review. *Braz J Med Bio Res* 1993;26(11):1141-55
- *Shamir et al: Melatonin treatment for tardive dyskinesia a double-blind, placebo-controlled, crossover study. *Arch Gen Psych* 2001;58:1049-52
- *Stasica et al: Melatonin as a hydroxyl radical scavenger. *J Pineal Res* 1998 Aug;25(1):65-66

Milk Thistle is an herb often used to strengthen the liver but it is also an effective treatment for OCD (obsessive-compulsive disorder) compared to fluoxetine.

- *Sayyah et al: Comparison of Silybum marianum (L.) Gaertn. with fluoxetine in the treatment of obsessive-compulsive disorder. *Prog Neuropsychopharmacol Biol Psych* 2010 Mar17;34(2):362-365

NAC (N-acetyl cysteine) is an amino acid that is safe and effective for depressive symptoms in bipolar disorder.

- *Berk et al: N-acetyl cysteine for depressive symptoms in bipolar disorder--a double-blind randomized placebo-controlled trial. *Biol Psychiatry* 2008 Sep 15;64(6):468-75
- *Lafleur et al: N-acetylcysteine augmentation in serotonin reuptake inhibitor refractory obsessive-compulsive disorder. *Digestion* 2008;78(4):224-8

St. John's Wort has value in treating SAD (seasonal affective disorder) but it **must never** be taken with other medications.

- *Terman & Terman: Controlled trial of naturalistic dawn simulation and negative air ionization for seasonal affective disorder. *Pharmacopsych* 1997 Sep;30 Suppl 2:89-93

SAMe (S-adenosyl-methionine) reduces aggressive behavior in schizophrenics.

- *Strous et al: Improvement of aggressive behavior and quality of life impairment following S-adenosyl-methionine (SAM-e) augmentation in schizophrenia. *Eur Neuropsychopharmacol* 2009 Jan;19(1):14-22

Tryptophan (along with light) is an effective treatment for social phobia and SAD (seasonal affective disorder). It also reduces the need for medications in treating aggressive psychiatric patients. Tryptophan is banned in Canada and the US but since it is an amino acid, it can be made in the body from other proteins or eaten in foods such as gourd seeds. The closest legal supplement is **5-HTP**.

- *Ghadirian et al: Efficacy of light versus tryptophan therapy in seasonal affective disorder. *J Affect Disord* 1998 Jul;50(1):23-7
- *Hudson et al: Protein-source tryptophan as an efficacious treatment for social anxiety disorder: a pilot study. *Can J Physiol Pharmacol* 2007 Sep;85(9):928-32
- *Lam et al: L-tryptophan augmentation of light therapy in patients with seasonal affective disorder. *Can J Psych* 1997 Apr;42(3):303-6
- *McGrath et al: The effect of L-tryptophan on seasonal affective disorder. *Water Res* 2002 Sep;36(15):3821-33
- *Volavka et al: Tryptophan treatment of aggressive psychiatric inpatients. *Biol Psych* 1990 Oct 15;28(8):728-32

Vitamin D deficiency, from prenatal onwards, corresponds significantly to occurrences of schizophrenia.

- *Kinney et al: Relation of schizophrenia prevalence to latitude, climate, fish consumption, infant mortality, and skin color: a role for prenatal vitamin d deficiency and infections? *Schizophr Bull* 2009 May;35(3):582-95

Vitamin E significantly improves tardive dyskinesia (a movement disorder) that often occurs during prolonged or high doses of some anti-psychotic medications.

- *Adler et al: Long-term treatment effects of vitamin E for tardive dyskinesia. *Biolog Psych* 1998 June;43(12):868-72
- *Adler et al: Vitamin E treatment of tardive dyskinesia. *Am J Psych* 1993 Sep;150(9):1405-07
- *Cadeti & Lohr: Possible involvement of free radicals in neuroleptic-induced movement disorders evidence from treatment of tardive dyskinesia with vitamin E. *Ann NY Acad Sci* 1989 Dec;570:176-85
- *Dabiri et al: Effectiveness of vitamin E for treatment of long-term tardive dyskinesia. *Am J Psych* 1994 June;151(6):925-26
- *Egan et al: Treatment of tardive dyskinesia with vitamin E. *Am J Psych* 1992 Jun;149(6):773-77
- *Elkashaf et al: Vitamin E in the treatment of tardive dyskinesia. *Am J Psych* 1990 Apr;147(4):505-6
- *Lohr & Caligiuri: A double-blind placebo-controlled study of vitamin E treatment of tardive dyskinesia. *J Clin Psych* 1996 Apr;57(4):167-73
- *Lohr et al: Vitamin E in the treatment of tardive dyskinesia: the possible involvement of free radical mechanisms. *Schiz Bull* 1988;14(2):291-96
- *Peet et al: Tardive dyskinesia, lipid peroxidation and sustained amelioration with vitamin E treatment. *Int Clin Psychopharmacol* 1993;8(3):151-53
- *Zhang et al: The Effect of vitamin E treatment on tardive dyskinesia and blood superoxide dismutase: a double-blind placebo-controlled trial. *J Clin Psychopharma* 2004;24(1):83-6

Vitamins and **Minerals** have therapeutic value in treating OCD (obsessive-compulsive disorder) as well as many other conditions.

- *Rucklidge: Successful treatment of OCD with a micronutrient formula following partial response to Cognitive Behavioral Therapy (CBT): a case study. *J Anxiety Disord* 2009 Aug;23(6):836-40

ANTI-SPASMODICS/MUSCLE RELAXANTS



(USED TO RELIEVE MUSCLE SPASMS OR CRAMPS)

COMMON EXAMPLES:

baclofen – Lioresal, Nu-Baclo

dantrolene – Dantrium

dicyclomine – Bentyl, Bentylol, and others

hyoscyamine – Cystospaz, Levsin, and others

DEplete:

C, B9, calcium, iron, magnesium

⚠ **Medications** can contribute to muscle cramping. Diuretics are especially notorious because they remove minerals needed to prevent cramping along with the fluid buildup.

*Lim & Jacob: Magnesium deficiency in patients on long-term diuretic therapy for heart failure. *BMJ* 1972;3:620

*Shiel: Myositis (Muscle Inflammation)...Check the Meds! *MedicineNet* online article

*Sheil: Muscle Cramps. *eMedicineHealth* online article

*Stöppler: Muscle Cramps (of Skeletal Muscles). *MedicineNet*

SUGGESTED ALTERNATIVES:

Anise seed has long been used as an anti-spasmodic.

*Tirapelli et al: Antispasmodic and relaxant effects of the hidroalcoholic extract of *Pimpinella anisum* (Apiaceae) on rat anococcygeus smooth muscle. *J Clin Gastroenterol* 2001 Jul;33(1):27-31

Coriander seed is a natural muscle relaxant.

*Emamghoreishi et al: *Coriandrum sativum*: evaluation of its anxiolytic effect in the elevated plus-maze. *Mol Cancer Ther* 2007 Mar;6(3):1013-21

Essential Oils have anti-spasmodic effects, relieving pain and improving circulation. Often used in a carrier oil, essential oil massages reduce cramping. Peppermint oil can be taken internally to relieve gastric spasms and improve digestion. Oils studied as anti-spasmodics include Peppermint, Rosemary, and Thyme.

*Beer et al: Effect of Thymol on the spontaneous contractile activity of the smooth muscles. *Phytomed* 2007 Jan;14(1):65-9

- *Hiki et al: Peppermint oil reduces gastric spasm during upper endoscopy: a randomized, double-blind, double-dummy controlled trial. *Gastrointest Endosc.* 2003 Apr;57(4):475-82
- *Sagorchev et al: Investigations into the specific effects of rosemary oil at the receptor level. *Phytomed* 2009 Dec 22

Mineral deficiencies are often the cause of cramping, especially in the legs. Taking electrolytes (potassium, sodium, chloride, bicarbonate) and other minerals including magnesium and calcium can help relieve cramping particularly after exercise. Minerals can safely be taken by anyone including pregnant women.

- *Bergeron: Heat cramps: fluid and electrolyte challenges during tennis in the heat. *J Sci Med Sport* 2003 Mar;6(1):19-27
- *Clarkson & Haymes: Exercise and mineral status of athletes: calcium, magnesium, phosphorus, and iron. *Med Sci Sport Exer* 1995 June;27(6):831-43
- *Clinton et al: Painful muscle spasm reversed by magnesium sulphate. A case report. *S Afr Med J* 1985 Aug 31;68(5):332-3
- *Dahle et al: The effect of oral magnesium substitution on pregnancy-induced leg cramps. *Am J Obstet Gyn* 1995 July;173(1):175-80
- *Kugelmas: Preliminary observation: oral zinc sulfate replacement is effective in treating muscle cramps in cirrhotic patients. *J Am Coll Nutr* 2000 Feb;19(1):13-15

Noni fruit has antispasmodic and vasodilating effects that can help reduce muscle spasms.

- *Gilani et al: Antispasmodic and vasodilator activities of *Morinda citrifolia* root extract are mediated through blockade of voltage dependent calcium channels. *BMC Complement Altern Med* 2010 Jan 13;10(1):2
- *West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Purslane is an herb, often used in salads, that has muscle relaxant properties that work better than drugs.

- *Habtemariam et al: The muscle relaxant properties of *Portulaca oleracea* are associated with high concentrations of potassium ions. *J Ethnopharmacol* 1993 Dec;40(3):195-200
- *Okwuasaba et al: Comparison of the skeletal muscle relaxant properties of *Portulaca oleracea* extracts with dantrolene sodium and methoxyverapamil. *J Ethnopharmacol* 1987 Jul;20(2):85-106

Valerian is an herb with calming and antispasmodic effects.

- *Hazelhoff et al: Antispasmodic effects of valeriana compounds: an in-vivo and in-vitro study on the guinea-pig ileum. *Cancer Lett* 2008 Jun 18;264(2):218-28



ANTI-VIRALS/ANTI-RETROVIRALS

(USED TO TREAT HIV, HERPES, INFLUENZA, CHICKENPOX, SHINGLES, COLD SORES, AND OTHERS)

COMMON EXAMPLES:

ANTIVIRALS

acyclovir – Avirax and others
amantadine – Symmetrel
famciclovir – Famvir
foscarnet – Foscavir
ganciclovir – DHPG, Cytovene, Vitrasert, and others
oseltamivir – Tamiflu
ribavirin – Copegus, Rebetol, Ribasphere, Virazole
rimantadine – Flumadine
valacyclovir – Valtrex
zanamivir – Relenza
... and many others

ANTI-RETROVIRALS

abacavir – Epzicom, Ziagen
adefovir – Hepsera
amprenavir – Agenerase
cidofovir – Vistide
delavirdine – Rescriptor
didanosine – Videx
emtricitabine – Emtriva
efavirenz – Sustiva
enfurvitide – Fuzeon
indinavir – Crixivan
lamivudine – 3TC, Epivir, and others
nelfinavir – Viracept
nevirapine – Viramune

ritonavir – Norvir
saquinavir – Fortovase, Invirase
stavudine – Zeerit
tenofovir – Viread
zidovudine – AZT
...and many others

DEplete:

B1, B2, B12, E, calcium, carnitine, copper, iron, magnesium, NAC, potassium, zinc, CoQ10

⌘ **Vaccines** using animal cells are linked to retrovirus infections associated with chronic fatigue and prostate cancer.

*Miyazawa et al: Endogenous retroviruses as potential hazards for vaccines. *Biologic* 2010 May;38(3):371-6

⌘ **Viral infections** can subclinically prime a host for central nervous system (CNS) autoimmune diseases such as MS (multiple sclerosis), long after the original infection.

*Theil et al: Viruses can silently prime for and trigger central nervous system autoimmune disease. *J Neurovirol* 2001 Jun;7(3):220-7

⌘ **HPV (human papilloma virus)** has been all over the news of late especially regarding enforced vaccinations. There are some 200 different kinds of the HP virus but the infamous Gardasil vaccine addresses only 4 types (GreenMedInfo) and does not have any effect on those who already have the virus. In the UK, Cervarix is the competing vaccine used on young women – and boys, of all things (Mathis: Dec 19, 2011; CBS news). The side effects from these vaccines can be devastating, often leading to a variety of autoimmune disorders (as do other vaccines). There is even a new name for these disorders: “Post-Gardasil Syndrome”. Recently, Tomljenovic & Shaw concluded that

“clinical trials show no evidence that HPV vaccination can protect against cervical cancer. Similarly, contrary to claims that cervical cancer is the second most common cancer in women worldwide, existing data show that this only applies to developing countries. In the Western world cervical cancer is a rare disease with mortality rates that are several times lower than the rate of reported serious adverse reactions (including deaths) from HPV vaccination.”

There are dozens of nutrients that can prevent and overcome the HPV without the harmful side effects of vaccines or drugs. Some natural alternatives are indicated below under HPV.

*CBS News: HPV vaccine now recommended for all boys, CDC says, February 3, 2012

*The Greater Good, documentary, Dr. Mercola dot com

*Hildesheim et al: Effect of human papillomavirus 16/18 L1 viruslike particle vaccine among young

women with preexisting infection: a randomized trial. JAMA. 2007 Aug 15;298(7):743-53

*Mathis: Medical journal openly questions science, ethics of HPV vaccinations. NaturalNews article, Friday Jan 13, 2012

*Mathis, Rosemary: Post-Gardasil Syndrome - the new name for the spectrum of side effects following HPV vaccination. NaturalNews, Wed, Dec 7, 2011

*Mathis: Gardasil boys come marching in - 4 new Gardasil deaths reported to VAERS. NaturalNews Dec 19, 2011

*Orbach et al: Vaccines and autoimmune diseases of the adult. Discov Med 2010 Feb;9(45):90-7

*Sutton et al: CNS demyelination and quadrivalent HPV vaccination. Mult Scler 2009 Jan;15(1):116-9

*Sims: Girl,13, left in 'waking coma' and sleeps for 23 hours a day after severe reaction to cervical cancer jabs. UK Daily Mail, Wed Nov 16, 2011

*Tomljenovic & Shaw: Human papillomavirus (HPV) vaccine policy and evidence-based medicine: Are they at odds? Ann Med Dec 22, 2011 (posted online)

SUGGESTED ALTERNATIVES:

Aloe vera induces interferon production while displaying anti-viral effects against at least two potent viruses.

*Lin et al: Aloe-emodin is an interferon-inducing agent with antiviral activity against Japanese encephalitis virus and enterovirus 71. Planta Med 2009 Mar;75(4):337-9

Alpha lipoic acid, Milk Thistle, and Selenium give a powerful triple approach for Hep C that is superior to traditional interferon and antiviral drugs which work less than 30% of the time.

*Berkson et al: A conservative triple antioxidant approach to the treatment of hepatitis C. Combination of alpha lipoic acid (thioctic acid), silymarin, and selenium: three case histories. Med Klin (Munich) 1999 Oct 15;94 Suppl 3:84-9

Antiviral nutrients include A, C, E, NAC, Quercetin, Resveratrol, Selenium, Zinc (more on each below)

*Friel & Lederman: A nutritional supplement formula for influenza A (H5N1) infection in humans. J Nat Prod 2003 Aug;66(8):1124-7

Artemisinin is a compound found in such herbs as wormwood and inhibits a wide range of viruses including HPV.

*Efferth et al: The antiviral activities of artemisinin and artesunate. Clin Infect Dis 2008 Sep 15;47(6):804-11

Asafoetida is an herb with antiviral effects against H1N1 flu.

*Lee et al: Influenza A (H1N1) antiviral and cytotoxic agents from Ferula assa-foetida. J Nat Prod 2009 Sep;72(9):1568-72

Astragalus is an herb often used to support the immune system but it is also effective against a broad ranges of viruses including viral myocarditis, which affects the heart.

*Fauce et al: Telomerase-based pharmacologic enhancement of antiviral function of human CD8+ T lymphocytes. J Immunol 2008 Nov 15;181(10):7400-6

*Huang et al: Effect of Astragalus membranaceus on T-lymphocyte subsets in patients with viral myocarditis. Zhongguo Zhong Xi Yi Jie He Za Zhi 1995 Jun;15(6):328-30

*Liu et al: Influence of ganciclovir and astragalus membranaceus on proliferation of hematopoietic progenitor cells of cord blood after cytomegalovirus infection in vitro. Zhonghua Er Ke Za Zhi 2004 Jul;42(7):490-4

- *Mao et al: Modulatory effect of *Astragalus membranaceus* on Th1/Th2 cytokine in patients with herpes simplex keratitis. *Am J Physiol Endocrinol Metab* 2007 Jun;292(6):E1906-16
- *Song et al: QiHong prevents death in coxsackievirus B3 induced murine myocarditis through inhibition of virus attachment and penetration. *Exp Biol Med (Maywood)* 2007 Dec;232(11):1441-8
- *Tang et al: Clinical and experimental effectiveness of *Astragali* compound in the treatment of chronic viral hepatitis B. *J Int Med Res* 2009 May-Jun;37(3):662-7
- *Zhu et al: In vivo and in vitro antiviral activities of calycosin-7-O-beta-D-glucopyranoside against coxsackie virus B3. *Biol Pharm Bull* 2009 Jan;32(1):68-73

Bamboo extract has antiviral effects against herpes viruses.

- *Sakai et al: Anti-human cytomegalovirus activity of constituents from *Sasa albo-marginata* (Kumazasa in Japan). *Antivir Chem Chemother* 2008;19(3):125-32

Banana lectins have immune-regulating activity and inhibits the HIV virus and cancer cells.

- *Cheung et al: *Musa acuminata* (Del Monte banana) lectin is a fructose-binding lectin with cytokine-inducing activity. *Phytomed* 2009 Jun;16(6-7):594-600
- *Swanson et al: A lectin isolated from bananas is a potent inhibitor of HIV replication. *J Biol Chem* 2010 Mar 19;285(12):8646-55

Bee Propolis (with or without **Echinacea** and **Vitamin C**) is a potent antiviral that is superior to acyclovir for genital herpes.

- *Cohen et al: Effectiveness of an herbal preparation containing echinacea, propolis, and vitamin C in preventing respiratory tract infections in children: a randomized, double-blind, placebo-controlled, multicenter study. *Arch Pediatr Adolesc Med* 2004 Mar;158(3):217-21
- *Giurcăneanu et al: Treatment of cutaneous herpes and herpes zoster with Nivcrisol-D. *Virologie* 1988 Jan-Mar;39(1):21-4
- *Nolkemper et al: Mechanism of herpes simplex virus type 2 suppression by propolis extracts. *Phytomed* 2009 Aug 12
- *Schnitzler et al: Antiviral activity and mode of action of propolis extracts and selected compounds. *Phytother Res* 2009 May 27
- *Vynograd et al: A comparative multi-centre study of the efficacy of propolis, acyclovir and placebo in the treatment of genital herpes (HSV). *Phytomed* 2000 Mar;7(1):1-6

Berberine-containing plants (Barberry, Goldenseal, Oregon grape, Goldenthread) are strong anti-microbials against a variety of organisms including bacteria, viruses, fungi, protozoans, helminths, and chlamydia.

- *Lin et al: In vitro anti-hepatoma activity of fifteen natural medicines from Canada. *Altern Med Rev* 2000 Apr;5(2):175-7

Beta Glucans are polysaccharides derived from oats, mushrooms, or yeasts. They are particularly effective for priming and **normalizing** the immune system; protecting the body from a number of viruses, including West Nile and H1N1; and effective in those who have been vaccinated and those who have not.

- *ECDC Influenza Team. H5N1 virus resistant to oseltamivir isolated from Vietnamese patient. *Euro Surveill* 2005 Oct 20;10(10):E051020.2
- *Feldman et al: Randomized phase II clinical trials of Wellmune WGP® for immune support during cold and flu season. *J Appl Res* 2009;9(1-2)
- *Jain: Influence of vitamins and trace-elements on the incidence of respiratory infection in the elderly. *Nutr Res* 2002;22:85-7
- *Jung et al: Anti-viral effect of *Saccharomyces cerevisiae* beta-glucan to swine influenza virus by increased production of interferon-gamma and nitric oxide. *J Vet Med B Infect Dis Vet Public Health* 2004 Mar;51(2):72-6

- *Moyad et al: Immunogenic yeast-based fermentate for cold/flu-like symptoms in nonvaccinated individuals. *J Altern Complement Med* 2010 Feb;16(2):213-8
- *Moyad et al: Effects of a modified yeast supplement on cold/flu symptoms. *Urol Nurs* 2008 Feb;28(1):50-5
- *Nogusa et al: Low-dose supplementation with active hexose correlated compound improves the immune response to acute influenza infection in C57BL/6 mice. *Nutr Res* 2009 Feb;29(2):139-43
- *Ohta et al: In vivo anti-influenza virus activity of an immunomodulatory acidic polysaccharide isolated from *Cordyceps militaris* grown on germinated soybeans. *J Agric Food Chem* 2007 Dec 12;55(25):10194-9
- *Ritz et al: Supplementation with active hexose correlated compound increases the innate immune response of young mice to primary influenza infection. *JPEN J Parenter Enteral Nutr* 2006 Jan-Feb;30(1):10-5
- *Rondanelli et al: The biological activity of beta-glucans. *Minerva Med* 2009 Jun;100(3):237-45
- *Talbot & Talbot: Effect of BETA 1, 3/1, 6 GLUCAN on upper respiratory tract infection symptoms and mood state in marathon athletes. *J Sports Sci Med* 2009;8:509-515
- *Wang et al: Oral administration of active hexose correlated compound enhances host resistance to West Nile encephalitis in mice. *J Nutr* 2009 Mar;139(3):598-602
- *Wang et al: Sulfated beta-glucan derived from oat bran with potent anti-HIV activity. *Planta Med* 2002 May;68(5):397-401

Beetroot has anti-influenza properties.

- *Prahoveanu et al: Prophylactic effect of a *Beta vulgaris* extract on experimental influenza infection in mice. *Virologie* 1986 Apr-Jun;37(2):121-3

Black cohosh is an herb often used by women for menopausal symptoms but it also has anti-HIV activity.

- *Sakurai et al: Anti-AIDS agents. Part 57: Actein, an anti-HIV principle from the rhizome of *Cimicifuga racemosa* (black cohosh), and the anti-HIV activity of related saponins. *Bioorg Med Chem Lett* 2004 Mar 8;14(5):1329-32

Black Cumin Seed has antiviral effects especially against herpes viruses.

- *Salm & Hossain: Protective effect of black seed oil from *Nigella sativa* against murine cytomegalovirus infection. *Int J Immunopharmacol* 2000 Sep;22(9):729-40

Bromelain is an enzyme derived from Pineapple that has anti-viral properties. Bromelain also demonstrates a therapeutic effect in the treatment of Pityriasis lichenoides chronica, a skin disorder thought to be caused by viruses.

- *Braun et al: Therapeutic use, efficiency and safety of the proteolytic pineapple enzyme Bromelain-POS in children with acute sinusitis in Germany. *In Vivo* 2005 Mar-Apr;19(2):417-21
- *Massimiliano et al: Role of bromelain in the treatment of patients with pityriasis lichenoides chronica. *J Dermatolog Treat* 2007;18(4):219-22
- *Smirnova et al: Flu virion as a substrate for proteolytic enzymes. *Bioorg Khim* 2008 May-Jun;34(3):409-15

Caper seeds have anti-HIV effects.

- *Lam & Ng: A protein with antiproliferative, antifungal and HIV-1 reverse transcriptase inhibitory activities from caper (*Capparis spinosa*) seeds. *Zhong Yao Cai* 2004 Nov;27(11):848-50

Carnitine is an amino acid that is especially useful in treating painful neuropathy associated with anti-retroviral toxicity.

- *Hart et al: Acetyl-L-carnitine: a pathogenesis based treatment for HIV-associated antiretroviral toxic neuropathy. *AIDS* 2004 Jul 23;18(11):1549-60
- *Herzmann et al: Long-term effect of acetyl-L-carnitine for antiretroviral toxic neuropathy. *HIV Clin Trials* 2005 Nov-Dec;6(6):344-50

*Osio et al: Acetyl-L-carnitine in the treatment of painful antiretroviral toxic neuropathy in human immunodeficiency virus patients: an open label study. *J Peripher Nerv Syst* 2006 Mar;11(1):72-6

*Osio et al: A double-blind, parallel-group, placebo-controlled, multicentre study of acetyl L-carnitine in the symptomatic treatment of antiretroviral toxic neuropathy in patients with HIV-1 infection. *HIV Med* 2007 May;8(4):241-50

Cat's claw is an herb often used to strengthen the immune system and appears to reduce infection caused by Dengue virus-2.

*Reis et al: Immunomodulating and antiviral activities of *Uncaria tomentosa* on human monocytes infected with Dengue Virus-2. *Int Immunopharmacol* 2008 Mar;8(3):468-76

Chinese Skullcap is an herb that inhibits herpes viruses.

*Blach-Olszewska et al: Production of cytokines and stimulation of resistance to viral infection in human leukocytes by *Scutellaria baicalensis* flavones. *J Interferon Cytokine Res* 2008 Sep;28(9):571-81

*Evers et al: Human cytomegalovirus-inhibitory flavonoids: studies on antiviral activity and mechanism of action. *Antiviral Res* 2005 Dec;68(3):124-34

Cistus incanus (Pink Rockrose) is an herb that is proving to be a better anti-viral than amantadine.

*Ehrhard et al: A polyphenol rich plant extract, CYSTUS052, exerts anti influenza virus activity in cell culture without toxic side effects or the tendency to induce viral resistance. *Antiviral Res* 2007 Oct;76(1):38-47

Coconut has antimicrobial properties which includes anti-viral.

*Esquenazi et al: Antimicrobial and antiviral activities of polyphenolics from *Cocos nucifera* Linn. (Palmae) husk fiber extract. *Res Microbiol* 2002 Dec;153(10):647-52

Coleus forskohlii is an Ayurvedic plant that has several health benefits including as an HIV inhibitor.

*Bodiwala et al: Anti-HIV diterpenes from *Coleus forskohlii*. *Nat Prod Commun* 2009 Sep;4(9):1173-5

Colloidal Silver inhibits the Hep B virus.

*Lu et al: Silver nanoparticles inhibit hepatitis B virus replication. *Antivir Ther* 2008;13(2):253-62

CoQ10 and **Carnitine** prevent the toxic effects of anti-retroviral-induced neuropathy. The ubiquinol form of CoQ10 proves better than the cheaper ubiquinone form.

*Cherry et al: Ubisol-Aqua: coenzyme Q10 prevents antiretroviral toxic neuropathy in an in vitro model. *Curr HIV Res* 2010 Apr 1;8(3):232-9

*Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9

*Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17

Cordyceps mushrooms improve liver function in those with Hep B.

*Gong et al: Effects of *Cordyceps sinensis* on T lymphocyte subsets and hepatofibrosis in patients with chronic hepatitis B. *Hunan Yi Ke Da Xue Xue Bao* 2000 Jun 28;25(3):248-50

*Ko et al: Compound *Cordyceps* TCM-700C exhibits potent hepatoprotective capability in animal model. *Fitoterapia* 2010 Jan;81(1):1-7

Curcumin is a potent antiviral as well as an anti-cancer agent.

*Dairaku et al: Inhibitory effect of curcumin on IMP dehydrogenase, the target for anticancer and antiviral chemotherapy agents. *Biosci Biotechnol Biochem* 2010;74(1):185-7

*Rai et al: Design and development of curcumin bioconjugates as antiviral agents. *Nucleic Acids Symp Ser (Oxf)* 2008(52):599-600

Dandelion has anti-influenza properties.

*He et al: Anti-influenza virus effect of aqueous extracts from dandelion. *Virology* 2011 Dec 14 ;8(1):538

Dandelion, Licorice and **Chinese herbs** appear safe and effective in reducing herpes infection in pregnant women.

*Xing et al: Clinical and experimental study on antiviral activity of reducing against human cytomegalovirus. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2000 Apr;20(4):245-7

Diet rich in fruits and vegetables significantly lowers the risk of viral infections including HIV and herpes.

*Arendt et al: Plasma antioxidant capacity of HIV-seropositive and healthy subjects during long-term ingestion of fruit juices or a fruit-vegetable-concentrate containing antioxidant polyphenols. *Toxicology In Vitro* 2000 Oct;14(5):405-8

*Thomas et al: Micronutrient intake and the risk of herpes zoster: a case-control study. *Int J Epidemiol* 2006 Apr;35(2):307-14

Echinacea has antiviral effects as well as immune-boosting properties.

*Senchina et al: Effects of Echinacea extracts on macrophage antiviral activities. *Phytother Res* 2010 Jun;24(6):810-6

*Senchina et al: Year-and-a-half old, dried Echinacea roots retain cytokine-modulating capabilities in an in vitro human older adult model of influenza vaccination. *NMR Biomed* 2009 Jul;22(6):585-92

*Sharma et al: Echinacea as an antiinflammatory agent: the influence of physiologically relevant parameters. *Phytother Res* 2009 Jun;23(6):863-7

*Sharma et al: Induction of multiple pro-inflammatory cytokines by respiratory viruses and reversal by standardized Echinacea, a potent antiviral herbal extract. *Antiviral Res* 2009 Aug;83(2):165-70

Elderberry is a potent virus blocker including that of HIV.

*Barak et al: The effect of Sambucol, a black elderberry-based, natural product, on the production of human cytokines: I. Inflammatory cytokines. *Eur Cytokine Netw* 2001 Apr-Jun;12(2):290-6

*Roschek et al: Elderberry flavonoids bind to and prevent H1N1 infection in vitro. *Phytochem* 2009 Aug 12

*Zakay-Rones et al: Inhibition of several strains of influenza virus in vitro and reduction of symptoms by an elderberry extract (*Sambucus nigra* L.) during an outbreak of influenza B Panama. *J Altern Complement Med* 1995 Winter;1(4):361-9

*Zakay-Rones et al: Randomized study of the efficacy and safety of oral elderberry extract in the treatment of influenza A and B virus infections. *J Int Med Res* 2004 Mar-Apr;32(2):132-40

Elderberry, Chondroitin, Glucosamine and **Olive Leaf** makes an effective combination in preventing viral infections.

*Konlee: A new triple combination therapy. *Posit Health News* 1998 Fall;(No 17):12-4

Elderberry, Green Tea and **Cinnamon** is another anti-viral combination.

*Fink et al: HIV type-1 entry inhibitors with a new mode of action. *Antivir Chem Chemother* 2009;19(6):243-55

Enzymes are safer and as effective as any pharmaceutical intervention for herpes.

*Billigmann: Enzyme therapy--an alternative in treatment of herpes zoster. A controlled study of 192 patients. *Fortschr Med* 1995 Feb 10;113(4):43-8

Essential oils are strong anti-microbials making some of them potent antivirals that can be used internally or externally with knowledgeable guidance. The oils that have the most antiviral effects include: Cinnamon, Clove, Eucalyptus, Lemon, Melissa, Myrrh, Oregano, Tea tree, Peppermint, Rosewood, Thieves, Thyme. **Throat sprays**

and **Nasal inhalers** are also available that have essential oil content and are effective in treating sore throats and sinus congestion.

- *Ben-Arye et al: Treatment of upper respiratory tract infections in primary care: a randomized study using aromatic herbs. *Evid Based Comple Alter Med* 2011;2011:690346
- *Hayashi et al: Inhibitory effect of cinnamaldehyde, derived from *Cinnamomi cortex*, on the growth of influenza A/PR/8 virus in vitro and in vivo. *Antiviral Res* 2007 Apr;74(1):1-8
- *Hubbert et al: Efficacy and tolerability of a spray with *Salvia officinalis* in the treatment of acute pharyngitis - a randomised, double-blind, placebo-controlled study with adaptive design and interim analysis. *Eur J Med Res* 2006 Jan 31;11(1):20-6
- *Kurokawa et al: Purification and characterization of eugenin as an anti-herpesvirus compound from *Geum japonicum* and *Syzygium aromaticum*. *J Pharmacol Exp Ther* 1998 Feb;284(2):728-35
- *Nenoff et al: Antifungal activity of the essential oil of *Melaleuca alternifolia* (tea tree oil) against pathogenic fungi in vitro. *Skin Pharmacol* 1996;9(6):388-94
- *Nolkemper et al: Antiviral effect of aqueous extracts from species of the Lamiaceae family against Herpes simplex virus type 1 and type 2 in vitro. *Planta Med* 2006 Dec;72(15):1378-82
- *Schuhmacher et al: Virucidal effect of peppermint oil on the enveloped viruses herpes simplex virus type 1 and type 2 in vitro. *Phytomed* 2003;10(6-7):504-10
- *Schnitzler et al: Antiviral activity of Australian tea tree oil and eucalyptus oil against herpes simplex virus in cell culture. *Pharmazie* 2001 Apr;56(4):343-7
- *Vazquez & Zawawi: Efficacy of alcohol-based and alcohol-free melaleuca oral solution for the treatment of fluconazole-refractory oropharyngeal candidiasis in patients with AIDS HIV Clin Trials. 2002 Sep-Oct;3(5):379-85

Fiber (pectins, flaxseed, acacia and myrrh gums) inhibits influenza viruses.

- *Green & Woolley: Inhibition by certain polysaccharides of hemagglutination and of multiplication of influenza virus. *J Exp Med* 1947 Jun 30;86(1):55-64

Fig latex is safe and effective to use for removing warts, which are usually caused by viruses.

- *Bohlooli et al: Comparative study of fig tree efficacy in the treatment of common warts (*Verruca vulgaris*) vs. cryotherapy. *Int J Dermatol* 2007 May;46(5):524-6

Flavonoids, especially kaempferol found in numerous fruits and vegetables, exhibit antiviral properties including that of herpes.

- *Mitrocotsa et al: Evaluation of the antiviral activity of kaempferol and its glycosides against human cytomegalovirus. *Planta Med* 2000 May;66(4):377-9

French beans have anti-HIV, antitumor and antifungal effects.

- *Lam & Ng: Isolation and characterization of a French bean hemagglutinin with antitumor, antifungal, and anti-HIV-1 reverse transcriptase activities and an exceptionally high yield. *Phytomed* 2009 Sep 7

Garlic is a potent antiviral against herpes and other viruses.

- *Guo et al: Demonstration of the anti-viral activity of garlic extract against human cytomegalovirus in vitro. *Chin Med J (Engl)* 1993 Feb;106(2):93-6
- *Liu et al: Experimental study on the prevention and treatment of murine cytomegalovirus hepatitis by using allitridin. *Antiviral Res* 2004 Feb;61(2):125-8
- *Shu et al: An experimental study on the effect of allitridin on inhibiting the expression of HCMV immediate-early antigens in vitro. *Zhongguo Zhong Yao Za Zhi* 2003 Oct;28(10):967-70
- *Zhen et al: Experimental study on the action of allitridin against human cytomegalovirus in vitro: Inhibitory effects on immediate-early genes. *Antiviral Res* 2006 Oct;72(1):68-74
- *Zhen et al: Effects of allitridin on the expression of human cytomegalovirus immediate early antigens-IE72 and IE86 in human embryonic lung cells. *Zhongguo Zhong Yao Za Zhi* 2005 Jan;30(1):47-9

Ginger is a potent antiviral.

*Sookkongwaree et al: Inhibition of viral proteases by Zingiberaceae extracts and flavones isolated from *Kaempferia parviflora*. *Pharmazie* 2006 Aug;61(8):717-21

Grapefruit – the Upside – inhibits the Hep C virus – but it cannot be eaten by anyone taking medication of any kind – even a one-a-day aspirin.

*Nahmias et al: Apolipoprotein B-dependent hepatitis C virus secretion is inhibited by the grapefruit flavonoid naringenin. *Hepatology* 2008 May;47(5):1437-45

Herbal combinations are more effective at inhibiting various viral infections than drugs even for children.

*Ayisi & Nyadedzor: Comparative in vitro effects of AZT and extracts of *Ocimum gratissimum*, *Ficus polita*, *Clausena anisata*, *Alchornea cordifolia*, and *Elaeophorbium drupifera* against HIV-1 and HIV-2 infections. *Antiviral Res* 2003 Mar;58(1):25-33

*Hussein et al: Inhibitory effects of sudanese medicinal plant extracts on hepatitis C virus (HCV) protease. *Phytother Res* 2000 Nov;14(7):510-6

*Kubo & Nishimura: Antipyretic effect of Mao-to, a Japanese herbal medicine, for treatment of type A influenza infection in children. *Phytomed* 2007 Feb;14(2-3):96-101

*Kurokawa et al: Purification and characterization of eugenin as an anti-herpesvirus compound from *Geum japonicum* and *Syzygium aromaticum*. *J Pharmacol Exp Ther* 1998 Feb;284(2):728-35

*Kurokawa et al: Efficacy of traditional herbal medicines in combination with acyclovir against herpes simplex virus type 1 infection in vitro and in vivo. *Antiviral Res* 1995 May;27(1-2):19-37

*Senthilkumar and Venkatesalu: Phytochemical analysis and antibacterial activity of the essential oil of *Clausena anisata* (Willd.) Hook. f. ex Benth. *Inter J Int Bio* 2009;5(2):116

*Shiraki et al: Cytomegalovirus infection and its possible treatment with herbal medicines. *Nippon Rinsho*. 1998 Jan;56(1):156-60

*Xing et al: Clinical and experimental study on antiviral activity of reduqing against human cytomegalovirus. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2000 Apr;20(4):245-7

*Yu et al: Anti-influenza virus effects of the aqueous extract from *Mosla scabra*. *J Ethnopharmacol* 2010 Feb 3;127(2):280-5

Hep C Herbal anti-virals include: Boswellia, Caraway, Clove, Gum arabic.

*Hussein et al: Inhibitory effects of sudanese medicinal plant extracts on hepatitis C virus (HCV) protease. *Phytother Res* 2000 Nov;14(7):510-6

Homeopathics are safer for children with ear infections and superior to conventional treatment. They are also effective against the flu and warts.

*Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29

*Ferley et al: A controlled evaluation of a homoeopathic preparation in the treatment of influenza-like syndromes. *Br J Clin Pharmacol* 1989 Mar;27(3):329-35

*Haidvogel et al: Homeopathic and conventional treatment for acute respiratory and ear complaints: a comparative study on outcome in the primary care setting. *BMC Complement Altern Med* 2007;7:7

*Kainz et al: Homoeopathic versus placebo therapy of children with warts on the hands: a randomized, double-blind clinical trial. *Dermatology* 1996;193(4):318-20

*Vickers & Smith: Homoeopathic *Oscillocochinum* for preventing and treating influenza and influenza-like syndromes. *Cochrane Database Syst Rev* 2000(2):CD001957

*Wustrow: Alternative versus conventional treatment strategy in uncomplicated acute otitis media in children: a prospective, open, controlled parallel-group comparison. *Int J Clin Pharmacol Ther* 2004 Feb;42(2):110-9

Honey is effective in treating herpes and other viral lesions but the honey must be non-pasteurized or Manuka since the typical grocery store honey does not possess any medicinally healing properties. (see more under Antibiotics)

- *Al-Waili: Topical honey application vs. acyclovir for the treatment of recurrent herpes simplex lesions. *Med Sci Monit* 2004 Aug;10(8):MT94-8
- *Alandejani et al: Effectiveness of honey on *Staphylococcus aureus* and *Pseudomonas aeruginosa* biofilms. *Otolaryngol Head Neck Surg* 2009 Jul;141(1):114-8
- *Molan: Why honey is effective as a medicine: The scientific explanation of its effects. *Bee World* 2001;82(1):22-40
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7

Hops is a calming herb used in the brewing industry but it also has antiviral activity.

- *Buckwold et al: Antiviral activity of hop constituents against a series of DNA and RNA viruses. *Antiviral Res* 2004 Jan;61(1):57-62

HPV (human papillomavirus)

- Aloe, Propolis, B-complex with Interferon is an effective combination for treating women with cervical lesions.

- *Iljazović et al: Efficacy in treatment of cervical HRHPV infection by combination of beta interferon, and herbal therapy in woman with different cervical lesions. *Bosn J Basic Med Sci* 2006 Nov;6(4):79-84

- Artemisinin derivatives (found in such herbs as wormwood) strongly inhibit HPV-induced tumor formation including those that have progressed to the neoplastic state.

- *Disbrow et al: Dihydroartemisinin is cytotoxic to papillomavirus-expressing epithelial cells in vitro and in vivo. *Cancer Res* 2005 Dec 1;65(23):10854-61

- B12 and B9 decrease the risk of infection.

- *Piyathilake et al: Indian women with higher serum concentrations of folate and vitamin B12 are significantly less likely to be infected with carcinogenic or high-risk (HR) types of human papillomaviruses (HPVs). *Int J Women Health* 2010;2:7-12
- *Sedjo et al: Human papillomavirus persistence and nutrients involved in the methylation pathway among a cohort of young women. *Cancer Epidemiol Biomarkers Prev* 2002 Apr;11(4):353-9

- Carrageenan is extracted from seaweed (Irish moss) for use in food preparation as a vegan alternative to gelatin. It is a potent inhibitor of the virus.

- *Buck et al: Carrageenan is a potent inhibitor of papillomavirus infection. *PLoS Pathog* 2006 Jul;2(7):e69
- *Roberts et al: Genital transmission of HPV in a mouse model is potentiated by nonoxynol-9 and inhibited by carrageenan. *Nat Med* 2007 Jul;13(7):857-61

- Colostrum (Lactoferrin) is a potent inhibitor of the HP virus.

- *Drobni et al: Lactoferrin inhibits human papillomavirus binding and uptake in vitro. *Antiviral Res* 2004 Oct;64(1):63-8

- Curcumin inhibits cervical cancer cells that are associated with HPV infection.

- *Divya & Pillai: Antitumor action of curcumin in human papillomavirus associated cells involves down-regulation of viral oncogenes, prevention of NFkB and AP-1 translocation, and modulation of apoptosis. *Mol Carcinog* 2006 May;45(5):320-32

*Maher et al: Curcumin suppresses human papillomavirus oncoproteins, restores p53, Rb, and PTPN13 proteins and inhibits benzo[a]pyrene-induced upregulation of HPV E7. *Mol Carcinog* 2011 Jan;50(1):47-57

*Prusty & Das: Constitutive activation of transcription factor AP-1 in cervical cancer and suppression of human papillomavirus (HPV) transcription and AP-1 activity in HeLa cells by curcumin. *Br J Nutr* 2007 Oct;98(4):720-6

- Dietary Supplements reduce the risk of contracting the virus and the resulting cervical cancer [PLEASE, do not go out and buy Centrum-type vitamins and think you are safe. Synthetics of any kind are toxins and do not help prevent anything].

*Hwang et al: Dietary supplements reduce the risk of cervical intraepithelial neoplasia. *Int J Gynecol Cancer* 2010 Apr;20(3):398-403

- Lycopene is a potent carotenoid that protects against the virus.

*Sedjo et al: Effect of plasma micronutrients on clearance of oncogenic human papillomavirus (HPV) infection (United States). *Cancer Causes Control* 2003 May;14(4):319-26

- Tea tree oil (melaleuca) is a safe and effective external treatment for HPV warts.

*Millar & Moore: Successful topical treatment of hand warts in a paediatric patient with tea tree oil (*Melaleuca alternifolia*). *Complement Ther Clin Pract* 2008 Nov;14(4):225-7

- Usnic acid (derived from several lichen species) and Zinc improve post surgical time for healing.

*Scirpa et al: A zinc sulfate and usnic acid preparation used as post-surgical adjuvant therapy in genital lesions by Human Papillomavirus. *Minerva Ginecol* 1999 Jun;51(6):255-60

- Vitamins A and E protect against the virus.

*Sedjo et al: Vitamin A, carotenoids, and risk of persistent oncogenic human papillomavirus infection. *Cancer Epidemiol Biomarkers Prev* 2002 Sep;11(9):876-84

*Siegel et al: Associations between serum carotenoids and tocopherols and type-specific HPV persistence: the Ludwig-McGill cohort study. *Int J Cancer* 2007 Feb 1;120(3):672-80

Japanese Plum inhibits the influenza A virus.

*Yingsakmongkon et al: In vitro inhibition of human influenza A virus infection by fruit-juice concentrate of Japanese plum (*Prunus mume* SIEB. et ZUCC). *Biol Pharm Bull* 2008 Mar;31(3):511-5

Kiwifruit is an antioxidant with anti-HIV properties.

*Collins et al: Kiwifruit protects against oxidative DNA damage in human cells and in vitro. *Nutr Cancer* 2001;39(1):148-53

*Motohashi et al: Cancer prevention and therapy with kiwifruit in Chinese folklore medicine: a study of kiwifruit extracts. *J Ethnopharmacol* 2002 Aug;81(3):357-64

Lecithin (a phospholipid) inhibits HIV-1 replication and works synergistically with anti-retroviral medications.

*Premanathan et al: Lecithinized superoxide dismutase: an inhibitor of human immunodeficiency virus replication. *AIDS Res Hum Retrovir* 1997 Mar 1;13(4):283-90

Licorice root is effective against several viruses.

*Cinatl et al: Glycyrrhizin, an active component of liquorice roots, and replication of SARS-associated coronavirus. *Lancet* 2003 Jun 14;361(9374):2045-6

*Michaelis et al: Glycyrrhizin exerts antioxidative effects in H5N1 influenza A virus-infected cells and inhibits virus replication and pro-inflammatory gene expression. *Phytother Res* 2008 Feb;22(2):141-8

Maitake mushrooms have antiviral activity.

- *Gu et al: Isolation, identification and function of a novel anti-HSV-1 protein from *Grifola frondosa*. *Antiviral Res* 2007 Sep;75(3):250-7
- *Obi et al: Inhibitory Effect of TNF-alpha Produced by Macrophages Stimulated with *Grifola frondosa* Extract (ME) on the Growth of Influenza A/Aichi/2/68 Virus in MDCK Cells. *Pharm Biol* 2010 Apr;48(4):469-81

Mango is a potent antiviral especially against influenza and herpes viruses.

- *Li et al: Mangiferin identified in a screening study guided by neuraminidase inhibitory activity. *Planta Med* 2007 Sep;73(11):1195-6
- *Zheng & Lu: Antiviral effect of mangiferin and isomangiferin on herpes simplex virus. *Chin Med J (Engl)* 1990 Feb;103(2):160-5

Mangosteen is a potent anti-viral fruit that generally protects all cells from toxic effects.

- *Chen et al: Active constituents against HIV-1 protease from *Garcinia mangostana*. *Planta Med* 1996 Aug;62(4):381-2
- *Ngawhirunpat et al: Antioxidant, free radical-scavenging activity and cytotoxicity of different solvent extracts and their phenolic constituents from the fruit hull of mangosteen (*Garcinia mangostana*). *Pharm Biol* 2010 Jan;48(1):55-62
- *Ryu et al: Xanthones with neuraminidase inhibitory activity from the seedcases of *Garcinia mangostana*. *Bioorg Med Chem* 2010 Sep 1;18(17):6258-64

Mangosteen and **Licorice** provide resistance to rotoviruses.

- *Shaneyfelt et al: Natural products that reduce rotavirus infectivity identified by a cell-based moderate-throughput screening assay. *Virology* 2006 Sep 1;3:68

Melissa (Lemonbalm) oil is effective for topically treating herpes simplex labialis and internally for inhibiting the HSV-2 virus.

- *Allahverdiyev et al: Antiviral activity of the volatile oils of *Melissa officinalis* L. against Herpes simplex virus type-2. *Phytomed* 2004 Nov;11(7-8):657-61
- *Koytchev et al: Balm mint extract (Lo-701) for topical treatment of recurring herpes labialis. *Phytomed* 1999 Oct;6(4):225-30
- *Mazzanti et al: Inhibitory activity of *Melissa officinalis* L. extract on Herpes simplex virus type 2 replication. *Nat Prod Res* 2008;22(16):1433-40
- *Schnitzler et al: *Melissa officinalis* oil affects infectivity of enveloped herpesviruses. *Phytomed* 2008 Sep;15(9):734-40

Melissa, Basil, Perilla, Selfheal and **Savory** have anti-HIV effects.

- *Yamasaki et al: Anti-HIV-1 activity of herbs in Labiatae. *Zh Mikrobiol Epidemiol Immunobiol* 1986 Jan;(1):62-5

Milk Thistle is an herb long-used to improve liver function but it also has strong anti-viral properties. It is effective in reducing iron levels in those with Hep C who do not respond to medications.

- *Bares et al: Silybin treatment is associated with reduction in serum ferritin in patients with chronic hepatitis C. *J Clin Gastroenterol* 2008 Sep;42(8):937-44
- *El-Kamary et al: A randomized controlled trial to assess the safety and efficacy of silymarin on symptoms, signs and biomarkers of acute hepatitis. *Phytomed* 2009 May;16(5):391-400
- *Ferenci et al: Silybinin is a potent antiviral agent in patients with chronic hepatitis C not responding to pegylated interferon/ribavirin therapy. *Gastroenterol* 2008 Nov;135(5):1561-7

Milk Thistle, vitamin E, and Phosphatidyl complexes improve Hep C conditions by reducing iron stores.

- *Bares et al: Silybin treatment is associated with reduction in serum ferritin in patients with chronic hepatitis C. *J Clin Gastroenterol* 2008 Sep;42(8):937-44
- *Falasca et al: Treatment with silybin-vitamin E-phospholipid complex in patients with hepatitis C infection. *J Med Virol* 2008 Nov;80(11):1900-6
- *Tel'nykh et al: The use of hepatoprotector LiverPro in combined therapy of chronic viral hepatitis C. *Klin Med (Mosk)* 2008;86(11):60-2

Mint plants exhibit strong antiviral properties.

- *Ben-Arye et al: Treatment of upper respiratory tract infections in primary care: a randomized study using aromatic herbs. *Evid Based Compl Alternat Med* 2011;2011:690346
- *Geuenich et al: Aqueous extracts from peppermint, sage and lemon balm leaves display potent anti-HIV-1 activity by increasing the virion density. *Retrovirology* 2008 Mar 20;5:27
- *Nolkemper et al: Antiviral effect of aqueous extracts from species of the Lamiaceae family against Herpes simplex virus type 1 and type 2 in vitro. *Planta Med* 2006 Dec;72(15):1378-82

Murill mushrooms normalize liver function in those with chronic Hep B.

- *Hsu et al: The mushroom *Agaricus blazei* Murill extract normalizes liver function in patients with chronic hepatitis B. *J Altern Complement Med* 2008 Apr;14(3):299-301

Neem has antiviral activity including HIV.

- *Mbah et al: Fractionated neem leaf extract is safe and increases CD4+ cell levels in HIV/AIDS patients. *Am J Ther* 2007 Jul-Aug;14(4):369-74
- *Tiwari et al: In vitro antiviral activity of neem (*Azadirachta indica* L.) bark extract against herpes simplex virus type-1 infection. *Phytother Res* 2009 Dec 29
- *Udeinya et al: An antimalarial extract from neem leaves is antiretroviral. *Toxicol In Vitro* 2009 Mar;23(2):251-8

Nettle may have a role in combatting HIV.

- *Balzarini et al: Carbohydrate-binding agents cause deletions of highly conserved glycosylation sites in HIV GP120: a new therapeutic concept to hit the achilles heel of HIV. *J Biol Chem* 2005 Dec 9;280(49):41005-14

Nightshade Family extracts (Solasodine rhamnosyl glycosides [SRGs]) are not only proving to kill various cancers but may have a similar effect on the HSV-1 virus. SRGs are found in such plants as Eggplant.

- *Thorne et al: The inactivation of herpes simplex virus by some Solanaceae glycoalkaloids. *Antiviral Res* 1985 Dec;5(6):335-43

Noni fruit inhibits the Epstein-Barr and HIV viruses.

- *Akihisa et al: Anti-inflammatory and potential cancer chemopreventive constituents of the fruits of *Morinda citrifolia* (Noni). *J Nat Prod* 2007 May;70(5):754-7
- *Kamata et al: Cell-based chemical genetic screen identifies damnacanthal as an inhibitor of HIV-1 Vpr induced cell death. *Biochem Biophys Res Commun* 2006 Sep 29;348(3):1101-6

Noni fruit and *Wrightia tinctoria* have antiviral activity against Hep C.

- *Selvam et al: Studies of Antiviral Activity and Cytotoxicity of *Wrightia tinctoria* and *Morinda citrifolia*. *Indian J Pharm Sci* 2009 Nov;71(6):670-2

Olive leaf extract has broad anti-viral activity including HIV.

- *Lee-Huang et al: Anti-HIV activity of olive leaf extract (OLE) and modulation of host cell gene expression by HIV-1 infection and OLE treatment. *Biochem Biophys Res Commun* 2003 Aug 8;307(4):1029-37

- *Lee-Huang et al: Discovery of small-molecule HIV-1 fusion and integrase inhibitors oleuropein and hydroxytyrosol inhibition. *Biochem Biophys Res Commun* 2007 Mar 23;354(4):872-8
- *Micol et al: The olive leaf extract exhibits antiviral activity against viral haemorrhagic septicaemia rhabdovirus (VHSV). *Antiviral Res* 2005 Jun;66(2-3):129-36
- *Pereira et al: Phenolic compounds and antimicrobial activity of olive (*Olea europaea* L. Cv. Cobrançosa) leaves. *Molecules* 2007 May 26;12(5):1153-62
- *Zhao et al: Antiviral efficacy against hepatitis B virus replication of oleuropein isolated from *Jasminum officinale* L. var. *grandiflorum*. *J Ethnopharmacol* 2009 Sep 7;125(2):265-8

Policosanol, a pine bark extract, is a potent antiviral.

- *Matsumori et al: French maritime pine bark extract inhibits viral replication and prevents development of viral myocarditis. *J Card Fail* 2007 Nov;13(9):785-91

Pomegranate has a broad range of antiviral activity and acts synergistically with some anti-viral medications.

- *Haidari et al: Pomegranate (*Punica granatum*) purified polyphenol extract inhibits influenza virus and has a synergistic effect with oseltamivir. *Phytomed* 2009 Jul 6
- *Kotwal: Genetic diversity-independent neutralization of pandemic viruses (e.g. HIV), potentially pandemic (e.g. H5N1 strain of influenza) and carcinogenic (e.g. HBV and HCV) viruses and possible agents of bioterrorism (variola) by enveloped virus neutralizing compounds (EVNCs). *Vaccine* 2008 Jun 6;26(24):3055-8
- *Su et al: Time-dependent effects of pomegranate juice and pomegranate polyphenols on foodborne viral reduction. *Foodborne Pathog Dis* 2011 Jul 21
- *Sundararajan et al: Influenza virus variation in susceptibility to inactivation by pomegranate polyphenols is determined by envelope glycoproteins. *Antiviral Res* 2010 Oct;88(1):1-9

Probiotics lower the number and severity of various viral infections, internally and externally.

- *Baron et al: A patented strain of *Bacillus coagulans* increased immune response to viral challenge. *Postgrad Med* 2009 Mar;121(2):114-8
- *Clancy et al: Reversal in fatigued athletes of a defect in interferon gamma secretion after administration of *Lactobacillus acidophilus*. *Br J Sports Med* 2006 Apr;40(4):351-4
- *Iovieno et al: Preliminary evidence of the efficacy of probiotic eye-drop treatment in patients with vernal keratoconjunctivitis. *Graefes Arch Clin Exp Ophthalmol* 2008 Mar;246(3):435-41
- *Kekkonen et al: The effect of probiotics on respiratory infections and gastrointestinal symptoms during training in marathon runners. *Int J Sport Nutr Exerc Metab* 2007 Aug;17(4):352-63
- *Leyer et al: Probiotic effects on cold and influenza-like symptom incidence and duration in children. *J Gerontol A Biol Sci Med Sci* 2011 Feb;66(2):179-82
- *Makino et al: Reducing the risk of infection in the elderly by dietary intake of yoghurt fermented with *Lactobacillus delbrueckii* ssp. *bulgaricus* OLL1073R-1. *Br J Nutr* 2010 Oct;104(7):998-1006
- *Pregliasco et al: A new chance of preventing winter diseases by the administration of synbiotic formulations. *Carcinogen* 2008 May;29(5):1049-56
- *Vrese et al: Probiotic bacteria reduced duration and severity but not the incidence of common cold episodes in a double blind, randomized, controlled trial. *Vaccine* 2006 Nov 10;24(44-46):6670-4
- *Winkler et al: Effect of a dietary supplement containing probiotic bacteria plus vitamins and minerals on common cold infections and cellular immune parameters. *Int J Clin Pharmacol Ther* 2005 Jul;43(7):318-26

Quassia is an herb family that exhibits antiviral properties against a wide variety of viruses.

- *Apers et al: Antiviral activity of simalikalactone D, a quassinoid from *Quassia africana*. *Planta Med* 2002 Jan;68(1):20-4

Reishi mushroom improves the recovery time of those with herpes genitalis and labialis; reduces the pain from postherpetic neuralgia caused by the varicella zoster virus; and inhibits HIV and Epstein-Barr.

- *Akihisa et al: Anti-inflammatory and anti-tumor-promoting effects of triterpene acids and sterols from the fungus *Ganoderma lucidum*. *Chem Biodivers* 2007 Feb;4(2):224-31
- *Hijikata et al: Herbal mixtures containing the mushroom *Ganoderma lucidum* improve recovery time in patients with herpes genitalis and labialis. *J Altern Complement Med* 2007 Nov;13(9):985-7
- *Hijikata & Yamada: Effect of *Ganoderma lucidum* on postherpetic neuralgia. *J Nutr* 2006 Mar;136(3 Suppl):816S-820S
- *Hijikata et al: Effect of an herbal formula containing *Ganoderma lucidum* on reduction of herpes zoster pain: a pilot clinical trial. *Am J Chin Med* 2005;33(4):517-23
- *Iwatsuki et al: Lucidenic acids P and Q, methyl lucidenate P, and other triterpenoids from the fungus *Ganoderma lucidum* and their inhibitory effects on Epstein-Barr virus activation. *J Nat Prod* 2003 Dec;66(12):1582-5
- *Min et al: Triterpenes from the spores of *Ganoderma lucidum* and their inhibitory activity against HIV-1 protease. *Chem Pharm Bull (Tokyo)* 1998 Oct;46(10):1607-12
- *Yuen et al: Telomerase-associated apoptotic events by mushroom *ganoderma lucidum* on premalignant human urothelial cells. *Nutr Cancer* 2008;60(1):109-19

Resveratrol is a potent antioxidant found in the skins of blueberries and red grapes. It has antiviral effects especially against the herpes viruses.

- *Campagna & Rivas: Antiviral activity of resveratrol. *Biochem Soc Trans* 2010 Feb;38(Pt 1):50-3
- *Evers et al: 3,4',5-Trihydroxy-trans-stilbene (resveratrol) inhibits human cytomegalovirus replication and virus-induced cellular signaling. *Antiviral Res* 2004 Aug;63(2):85-95
- *Pterostilbene Monograph. *Alt Med Rev* 2010;15(2):159-63

Rooibos Tea is native to South Africa and has numerous health benefits including that of anti-HIV properties. It is safe enough for babies to drink.

- *Kunishiro et al: Effects of rooibos tea extract on antigen-specific antibody production and cytokine generation in vitro and in vivo. *Biosci Biotechnol Biochem* 2001 Oct;65(10):2137-45
- *Nakano et al: Anti-human immunodeficiency virus activity of oligosaccharides from rooibos tea (*Aspalathus linearis*) extracts in vitro. *Leukemia* 1997 Apr;11 Suppl 3:128-30
- *Nakano et al: Polysaccharide from *Aspalathus linearis* with strong anti-HIV activity. *Biosci Biotechnol Biochem* 1997 Feb;61(2):267-71

Seaweeds have profound antiviral and antiretroviral effects.

- *Feldman et al: Antiviral properties of fucoidan fractions from *Leathesia difformis*. *Phytomed* 1999 Nov;6(5):335-40
- *Lee et al: Antiviral activities against HSV-1, HCMV, and HIV-1 of rhamnan sulfate from *Monostroma latissimum*. *Planta Med* 1999 Jun;65(5):439-41
- *Maeda et al: Seaweed carotenoid, fucoxanthin, as a multi-functional nutrient. *Immunopharmacol Immunotoxicol* 2009 Jun;31(2):314-9
- *Paskaleva et al: Sargassum fusiforme fraction is a potent and specific inhibitor of HIV-1 fusion and reverse transcriptase. *Virology* 2008;5:8
- *Paskaleva et al: Inhibition of highly productive HIV-1 infection in T cells, primary human macrophages, microglia, and astrocytes by *Sargassum fusiforme*. *AIDS Res Ther* 2006;3:15
- *Sekine et al: The inhibitory effect of the crude extract from a seaweed of *Dyegena simplex* C. Agardh on the in vitro cytopathic activity of HIV-1 and its antigen production. *Chem Pharm Bull (Tokyo)* 1995 Sep;43(9):1580-4
- *Trincherio et al: Antiretroviral activity of fucoidans extracted from the brown seaweed *Adenocystis utricularis*. *Mol Pharmacol* 2004 Dec;66(6):1643-51

Selenium deficiency is linked to a susceptibility to several viral infections including HIV.

- *Beck et al: Selenium deficiency and viral infection. *J Nutr* 2003;133(5):1463S-1467S
- *Beck et al: Rapid genomic evolution of a non-virulent coxsackievirus B3 in selenium-deficient mice results in selection of identical virulent isolates. *Nat Med* 1995;1:433-436
- *Djinhi et al: Selenium deficiency and oxidative stress in asymptomatic HIV1-infected patients in Côte d'Ivoire. *Bull Soc Pathol Exot* 2009 Feb;102(1):11-3
- *Hurwitz et al: Suppression of human immunodeficiency virus type 1 viral load with selenium supplementation: a randomized controlled trial. *Arch Intern Med* 2007 Jan 22;167(2):148-54
- *Liu et al: Effects of selenium supplement on acute lower respiratory tract infection caused by respiratory syncytial virus. *Zhonghua Yu Fang Yi Xue Za Zhi* 1997 Nov;31(6):358-61
- *Yu et al: Protection from H1N1 influenza virus infections in mice by supplementation with selenium: a comparison with selenium-deficient mice. *Chin J Integr Med* 2005 Sep;11(3):187-90

Selenium, Milk Thistle and Alpha lipoic acid is an effective treatment combination for Hep C patients.

- *Berkson: A conservative triple antioxidant approach to the treatment of hepatitis C. Combination of alpha lipoic acid (thioctic acid), silymarin, and selenium: three case histories. *Med Klin (Munich)* 1999 Oct 15;94 Suppl 3:84-9

Shiitake mushroom, alone or with Rice bran, inhibits HIV.

- *Dang et al: Betulinic acid derivatives as human immunodeficiency virus type 2 (HIV-2) inhibitors. *J Med Chem* 2009 Dec 10;52(23):7887-91
- *Ghoneum: Anti-HIV activity in vitro of MGN-3, an activated arabinoxylane from rice bran. *Biochem Biophys Res Commun* 1998 Feb 4;243(1):25-9
- *Ngai & Ng: Lentin, a novel and potent antifungal protein from shiitake mushroom with inhibitory effects on activity of human immunodeficiency virus-1 reverse transcriptase and proliferation of leukemia cells. *Life Sci* 2003 Nov 14;73(26):3363-74
- *Zhou et al: The shiitake mushroom-derived immuno-stimulant lentinan protects against murine malaria blood-stage infection by evoking adaptive immune-responses. *Int Immunopharmacol* 2009 Apr;9(4):455-62

Spirulina is a blue-green algae derived from aquatic cyanobacteria: *Arthrospira platensis* (Africa, Asia, South America), *Arthrospira pacifica* (Hawaiian Islands) or *Arthrospira maxima* (Central America). It has long been used for its many health benefits including its significant antiviral, anticancer, and antifungal activity.

- *Blinkova et al: Biological activity of Spirulina. *Zh Mikrobiol Epidemiol Immunobiol* 2001 Mar-Apr;(2):114-8
- *Hayashi et al: Calcium spirulan, an inhibitor of enveloped virus replication, from a blue-green alga *Spirulina platensis*. *J Nat Prod* 1996 Jan;59(1):83-7

St. John's Wort has antiviral activity especially against the herpes viruses.

- *Hudson et al: Antiviral activities of hypericin. *Antiviral Res* 1991 Feb;15(2):101-12

Stevia is an herb that is some 200 times sweeter than table sugar. It has anti-diabetic, antioxidant, antibacterial and antiviral effects.

- *Shukla et al: Antioxidant ability and total phenolic content of aqueous leaf extract of *Stevia rebaudiana* Bert. *Exp Toxicol Pathol* 2011 Mar 4
- *Takahashi et al: Analysis of anti-rotavirus activity of extract from *Stevia rebaudiana*. *Antiviral Res* 2001 Jan;49(1):15-24
- *Tomita et al: Bactericidal activity of a fermented hot-water extract from *Stevia rebaudiana* Bertoni towards enterohemorrhagic *Escherichia coli* O157:H7 and other food-borne pathogenic bacteria. *Microbiol Immunol* 1997;41(12):1005-9

Valerian root is often used to promote sleep but it also contains a compound that has anti-HIV activity.

*Murakami et al: New Rev-transport inhibitor with anti-HIV activity from Valerianae radix. Bioorg Med Chem Lett 2002 Oct 21;12(20):2807-10

Vitamins B and C inhibit various viruses and have therapeutic effects for Hep A patients.

*Komar & Vasil'ev: The use of water-soluble vitamins in viral hepatitis A. Klin Med (Mosk) 1992 Jan;70(1):73-5

*White et al: In vitro effect of ascorbic acid on infectivity of herpesviruses and paramyxoviruses. BMC Musculoskelet Disord 2008 Jun 11;9:85

Vitamin D deficiency increases risk of viral infections.

*Ginde et al: Association between serum 25-hydroxyvitamin D level and upper respiratory tract infection in the Third National Health and Nutrition Examination Survey. Arch Intern Med 2009 Feb 23;169(4):384-90

*Sabetta et al: Serum 25-hydroxyvitamin D and the incidence of acute viral respiratory tract infections in healthy adults. PLoS One 2010;5(6):e11088

Vitamin E decreases the effects of a viral infection including HIV.

*Wang et al: Modulation of immune function and cytokine production by various levels of vitamin E supplementation during murine AIDS. Immunopharma 1995 Apr;29(3):225-33

Zinc has antiviral effects against several viruses including the herpes viruses.

*Abdulhamid et al: Effect of zinc supplementation on respiratory tract infections in children with cystic fibrosis. Pediatr Pulmonol 2008 Mar;43(3):281-7

*Li et al: Observation on clinical efficacy of combined therapy of zinc supplement and jinye baidu granule in treating human cytomegalovirus infection. Zhongguo Zhong Xi Yi Jie He Za Zhi 2005 May;25(5):449-51

*Li et al: The correlation between prognosis of HCMV infection and zinc in mature women. J Huazhong Univ Sci Technolog Med Sci 2004;24(6):628-9

ANXIETY



COMMON EXAMPLES:

Benzodiazepines

- alprazolam** – Xanax
- chlordiazepoxide** – Librium, Libritabs
- clonazepam** – Klonopin
- clorazepate** – Tranxene
- diazepam** – Valium
- lorazepam** – Ativan
- oxazepam** – Serax
- ... and others**

DEplete:

B9, D, K, calcium, melatonin

SUGGESTED ALTERNATIVES:

Aromatherapy using **Essential oils** or **Bach flowers** reduce anxiety. Essential oils include Bergamont, Lavender, Rose, Rosemary and Ylang ylang.

- *Atsumi & Tonosaki: Smelling lavender and rosemary increases free radical scavenging activity and decreases cortisol level in saliva. *Psychiatry Res* 2007 Feb 28;150(1):89-96
- *Diego et al: Aromatherapy positively affects mood, EEG patterns of alertness and math computations. *Int J Neurosci* 1998 Dec;96(3-4):217-24
- *Hongratanaworakit: Relaxing effect of rose oil on humans. *Nat Prod Commun* 2009 Feb;4(2):291-6
- *Hongratanaworakit & Buchbauer: Relaxing effect of ylang ylang oil on humans after transdermal absorption. *Phytother Res* 2006 Sep;20(9):758-63
- *Hwang: The effects of the inhalation method using essential oils on blood pressure and stress responses of clients with essential hypertension. *Taehan Kanho Hakhoe Chi* 2006 Dec;36(7):1123-34
- *Lehrner et al: Ambient odors of orange and lavender reduce anxiety and improve mood in a dental office. *Physiol Behav* 2005 Sep 15;86(1-2):92-5
- *Lehrner et al: Ambient odor of orange in a dental office reduces anxiety and improves mood in female patients. *Physiol Behav* 2000 Oct 1-15;71(1-2):83-6
- *McCaffrey et al: The effects of lavender and rosemary essential oils on test-taking anxiety among graduate nursing students. *Holist Nurs Pract* 2009 Mar-Apr;23(2):88-93
- *Moss et al: Aromas of rosemary and lavender essential oils differentially affect cognition and mood in healthy adults. *Int J Neurosci* 2003 Jan;113(1):15-38
- *Segura: Emotional support and Bach Flower Therapy. *Rev Enferm* 2009 Oct;32(10):16-9

*Toda & Morimoto: Effect of lavender aroma on salivary endocrinological stress markers. Arch Oral Biol 2008 Oct;53(10):964-8

*Tsang & Ho: A systematic review on the anxiolytic effects of aromatherapy on rodents under experimentally induced anxiety models. Rev Neurosci 2010;21(2):141-52

*Walach et al: Efficacy of Bach-flower remedies in test anxiety: a double-blind, placebo-controlled, randomized trial with partial crossover. J Anxiety Disord 2001 Jul-Aug;15(4):359-66

Carob has anti-anxiety effects, acting similar to benzodiazepines. Carob has long been used as a chocolate substitute, although the taste is not similar but it does have numerous health benefits of its own, as does raw chocolate (cacao).

*Avallone et al: Extraction and purification from Ceratonia siliqua of compounds acting on central and peripheral benzodiazepine receptors. Fitoterapia 2002 Aug;73(5):390-6

Chamomile is an herb long-used for its calming effects and therefore valuable in reducing anxiety.

*Amsterdam et al: A randomized, double-blind, placebo-controlled trial of oral Matricaria recutita (chamomile) extract therapy for generalized anxiety disorder. J Clin Psychopharmacol 2009 Aug;29(4):378-82

Chamomile, Ginkgo biloba, and Kava kava function synergistically to overcome anxiety. Kava, however, is not allowed in Canada despite its numerous health benefits.

*Faustino et al: Medicinal plants for the treatment of generalized anxiety disorder: a review of controlled clinical studies. Rev Bras Psiquiatr 2010 Oct 15

Chinese Skullcap has anti-anxiety effects similar to benzodiazepines but without the side effects.

*Hui et al: Anxiolytic effect of wogonin, a benzodiazepine receptor ligand isolated from Scutellaria baicalensis Georgi. Biochem Pharmacol 2002 Nov 1;64(9):1415-24

*Liao et al: Anxiolytic-like effects of baicalein and baicalin in the Vogel conflict test in mice. Eur J Pharmacol 2003 Mar 19;464(2-3):141-6

Curcumin is the main active component of the cooking spice Turmeric. Curcumin has numerous health benefits including anti-anxiety properties.

*Gilhotra & Dhingra: GABAergic and nitriergic modulation by curcumin for its antianxiety-like activity in mice. Brain Res 2010 Sep 17;1352:167-75

Damiana is an herb that has traditional uses to relieve anxiety and now scientists are proving this effect.

*Kumar & Sharma: Anti-anxiety activity studies of various extracts of Turnera aphrodisiaca Ward. J Herb Pharmacother 2005;5(4):13-21

Echinacea has long been used as an immune-booster during the cold and flu season but it also has anti-anxiety properties.

*Haller et al: The effect of Echinacea preparations in three laboratory tests of anxiety: comparison with chlordiazepoxide. Phytother Res 2010 Nov;24(11):1605-13

GABA (gamma butyric acid) is a brain chemical that regulates the anti-anxiety part of the brain. Benzodiazepines target GABA receptors in the brain, making them effective for reducing anxiety. However, these drugs are addictive and discontinuing their use can be more difficult than withdrawing from heroin.

*Abdou et al: Relaxation and immunity enhancement effects of gamma-aminobutyric acid (GABA) administration in humans. Acupunct Med 2008 Mar;26(1):51-6

Gotu Kola is an herb long used to improve the memory but it also has value in treating anxiety disorders.

- *Bradwejn et al: A double-blind, placebo-controlled study on the effects of Gotu Kola (*Centella asiatica*) on acoustic startle response in healthy subjects. *J Clin Psychopharmacol* 2000 Dec;20(6):680-4
- *Gotu kola. U Maryland Medical Center online

Herbs are comparable to benzodiazepines for effect but without the dangerous side effects.

- *Mohan et al: Evaluation of the anxiolytic activity of NR-ANX-C (a polyherbal formulation) in ethanol withdrawal-induced anxiety behavior in rats. *Evid Based Complement Alternat Med* 2011;2011

Holy Basil is an herb often used to improve anxiety and mood.

- *Bhattacharyya et al: Controlled programmed trial of *Ocimum sanctum* leaf on generalized anxiety disorders. *Nepal Med Coll J* 2008 Sep;10(3):176-9

Homeopathic Gelsemium sempervirens improves anxious behaviour. Outcomes in areas of anxiety, depression, and irritable bowel proved to be more than 75% positive. Homeopathics can also help with primary insomnia.

- *Bellavite et al: Homeopathic doses of *Gelsemium sempervirens* improve the behavior of mice in response to novel environments. *Evid Based Complement Alternat Med* 2009 Sep 14
- *Davidson et al: Homeopathic treatment of depression and anxiety. *Alt Ther* 1997 Jan;3(1):46-49
- *Magnani et al: Dose-effect study of *Gelsemium sempervirens* in high dilutions on anxiety-related responses in mice. *Psychopharmacol (Berl)* 2010 Apr 20
- *Mathie & Robinson: Outcomes from homeopathic prescribing in medical practice: a prospective, research-targeted, pilot study. *Homeopathy* 2006;95:199-205
- *Naudé et al: Chronic primary insomnia: efficacy of homeopathic *simillimum*. *Homeopathy* 2010 Jan;99(1):63-8

Kava kava is an herb that is a safe and effective treatment for anxiety, even though it is not allowed in Canada.

- *Boerner et al: Kava-Kava extract LI 150 is as effective as opipramol and buspirone in generalised anxiety disorder--an 8-week randomized, double-blind multi-centre clinical trial in 129 out-patients. *Phytomed* 2003;10 Suppl 4:38-49
- *Boerner et al: Kava kava in the treatment of generalized anxiety disorder, simple phobia and specific social phobia. *Phytother Res* 2001 Nov;15(7):646-7
- *Cagnacci et al: Kava-Kava administration reduces anxiety in perimenopausal women. *Integr Cancer Ther* 2008 Dec;7(4):295-310
- *Clouatre et al: Kava kava: examining new reports of toxicity. *Toxicol Lett* 2004 Apr;150(1):85-96
- *Garrett et al: Extracts of kava (*Piper methysticum*) induce acute anxiolytic-like behavioral changes in mice. *Psychopharmacology (Berl)* 2003 Oct;170(1):33-41
- *Geier & Konstantinowicz: Kava treatment in patients with anxiety. *Phytother Res* 2004 Apr;18(4):297-300
- *Neuhaus et al: Treatment of perioperative anxiety in suspected breast carcinoma with a phytogetic tranquilizer. *Zentralbl Gynakol* 2000;122(11):561-5
- *Pittler & Ernst: Kava extract for treating anxiety. *Cochrane Database Syst Rev* 2002(2):CD003383
- *Pittler & Ernst: Efficacy of kava extract for treating anxiety: systematic review and meta-analysis. *J Clin Psychopharmacol* 2000 Feb;20(1):84-9
- *Rex et al: Anxiolytic-like effects of kava-kava in the elevated plus maze test--a comparison with diazepam. *Prog Neuropsychopharmacol Biol Psych* 2002 Jun;26(5):855-60
- *Sarris et al: Kava Anxiety Depression Spectrum Study (KADSS): a mixed methods RCT using an aqueous extract of *Piper methysticum*. *Complement Ther Med* 2009 Jun;17(3):176-8
- *Sarris et al: Kava: a comprehensive review of efficacy, safety, and psychopharmacology. *Aust N Z J Psych* 2011 Jan;45(1):27-35

- *Sarris et al: The ava Anxiety Depression Spectrum Study (KADSS): a randomized, placebo-controlled crossover trial using an aqueous extract of Piper methysticum. *Psychopharmacology (Berl)* 2009 Aug;205(3):399-407
- *Thompson et al: Enhanced cognitive performance and cheerful mood by standardized extracts of Piper methysticum (Kava-kava). *Hum Psychopharmacol* 2004 Jun;19(4):243-50
- *Witte et al: Meta-analysis of the efficacy of the acetonic kava-kava extract WS1490 in patients with non-psychotic anxiety disorders. *Phytother Res* 2005 Mar;19(3):183-8

Lemon balm reduces anxiety.

- *Raines et al: Investigation of the anxiolytic effects of luteolin, a lemon balm flavonoid in the male Sprague-Dawley rat. *AANA J* 2009 Feb;77(1):33-6

Melatonin and **Motherwort** (herb) help relieve anxiety while protecting the retina of the eye during anxiety attacks.

- *Ovanesov et al: Effects of melatonin and motherwort tincture on the emotional state and visual functions in anxious subjects. *Eksp Klin Farmakol* 2006 Nov-Dec;69(6):17-9
- *Shikov et al: Effect of Leonurus cardiaca oil extract in patients with arterial hypertension accompanied by anxiety and sleep disorders. *Phytother Res* 2011 Apr;25(4):Melissa officinalis 540-3

NAC (N-acetyl-cysteine) is an amino acid that is an effective treatment for nail-biting disorder.

- *Berk et al: Nail-biting stuff? The effect of N-acetyl cysteine on nail-biting. *CNS Spectr* 2009 Jul;14(7):357-60

Neem is an antimicrobial herb that also has other health benefits including being comparable to diazepam for reducing anxiety but safer.

- *Thaxter et al: An extract of neem leaves reduces anxiety without causing motor side effects in an experimental model. *West Indian Med J* 2010 Jun;59(3):245-8

Noni fruit reduces anxiety as a result of its natural relationship with the GABA receptors in the brain.

- *Deng et al: Noni as an anxiolytic and sedative: a mechanism involving its gamma-aminobutyric acidergic effects. *Phytomed* 2007 Aug;14(7-8):517-22

Passionflower is an herb that reduces anxiety without producing sedation.

- *Dhawan: Drug/substance reversal effects of a novel tri-substituted benzoflavone moiety (BZF) isolated from *Passiflora incarnata* Linn.--a brief perspective. *Addict Biol* 2003 Dec;8(4):379-86
- *Movafegh et al: Preoperative oral *Passiflora incarnata* reduces anxiety in ambulatory surgery patients: a double-blind, placebo-controlled study. *Anesth Analg* 2008 Jun;106(6):1728-32

Probiotics adjusts emotional behaviour by regulating the function of the body's second brain found in the gut.

- *Bravo et al: Ingestion of *Lactobacillus* strain regulates emotional behavior and central GABA receptor expression in a mouse via the vagus nerve. *Proc Natl Acad Sci USA* 2011 Sep 20;108(38):16050-5
- *Gershon: *The Second Brain : The Scientific Basis of Gut Instinct and a Groundbreaking New Understanding of Nervous Disorders of the Stomach and Intestines*. Harper Publishing, 1998
- *Hadzazy: Think Twice: How the Gut's "Second Brain" Influences Mood and Well-Being. *Sci Am* 2010 February 12

Relora is a combination of two herbs, *Magnolia* and *Phellodendron*. Both reduce symptoms of stress and anxiety and thereby, contribute to the reduction of belly fat, a known side effect of stress.

*Han et al: Anxiolytic-like effects of 4-O-methylhonokiol isolated from magnolia officinalis through enhancement of GABAergic transmission and chloride influx. *J Med Food* 2011 Apr 18

*Kalman et al: Effect of a proprietary Magnolia and Phellodendron extract on stress levels in healthy women: a pilot, double-blind, placebo-controlled clinical trial. *Cancer Epidemiol Biomarkers Prev* 2005 Sep;14(9):2098-105

Rhodiola rosea is an herb useful in addressing stress and which significantly decreases anxiety.

*Bystritsky et al: A pilot study of Rhodiola rosea (Rhodax) for generalized anxiety disorder (GAD). *J Altern Complement Med* 2008 Mar;14(2):175-80

Saffron is a common food spice that has anti-anxiety properties.

*Hosseinzadeh & Noraei: Anxiolytic and hypnotic effect of Crocus sativus aqueous extract and its constituents, crocin and safranal, in mice. *Phytother Res* 2009 Jun;23(6):768-74

Skullcap is a family of herbs that have similar actions as benzodiazepines but without the side-effects.

*Awad et al: Phytochemical and biological analysis of skullcap (*Scutellaria lateriflora* L.): a medicinal plant with anxiolytic properties. *Phytomed* 2003 Nov;10(8):640-9

*Hui et al: Anxiolytic effect of wogonin, a benzodiazepine receptor ligand isolated from *Scutellaria baicalensis* Georgi. *Biochem Pharmacol.* 2002 Nov 1;64(9):1415-24

*Wolfson & Hofmann: An investigation into the efficacy of *Scutellaria lateriflora* in healthy volunteers. *Altern Ther Health Med* 2003 Mar-Apr;9(2):74-8

Tart Cherry Juice can help overcome insomnia and improve sleep duration and quality.

*Howatson et al: Effect of tart cherry juice (*Prunus cerasus*) on melatonin levels and enhanced sleep quality. *Eur J Nutr* 2011 Oct 30

*Pigeon et al: Effects of a tart cherry juice beverage on the sleep of older adults with insomnia: a pilot study. *J Med Food* 2010 Jun;13(3):579-83

Theanine is a derivative of green tea that works well with midazolam in reducing anxiety.

*Heese et al: Anxiolytic effects of L-theanine--a component of green tea--when combined with midazolam, in the male Sprague-Dawley rat. *J Altern Complement Med* 2010 Aug;16(8):875-82

Valerian is an herb often used to promote sleep but it also helps relieve anxiety, with or without Lemon balm (*Melissa*).

*Benke et al: GABA A receptors as in vivo substrate for the anxiolytic action of valerianic acid, a major constituent of valerian root extracts. *Neuropharmacol* 2008 Jun 17

*Hattesoehl et al: Extracts of *Valeriana officinalis* L. s.l. show anxiolytic and antidepressant effects but neither sedative nor myorelaxant properties. *Phytomed* 2008 Jan;15(1-2):2-15

*Kennedy et al: Anxiolytic effects of a combination of *Melissa officinalis* and *Valeriana officinalis* during laboratory induced stress. *Phytother Res* 2006 Feb;20(2):96-102

*Murphy et al: *Valeriana officinalis* root extracts have potent anxiolytic effects in laboratory rats. *Phytomed* 2009 Dec 28



ANTI-ARRHYTHMICS/CARDIAC REGULATORS

(USED TO TREAT ABNORMAL HEART RHYTHMS)

COMMON EXAMPLES:

Group I

moricizine – Ethmozine and others

Group IA

disopyramide – Norpace and others

procainamide – Procan and others

quinidine – Quinalan and others

Group IB

lidocaine – Xylocaine and others

mexiletine – Mexitil

phenytoin – Dilantin and others

Group IC

flecainide – Tambocar

propafenone – Rhythmol

Group II

acebutolol – Sectral

esmolol – Brevibloc

propranolol – Inderal and others

Group III

amiodarone – Cordarone and others

bretylum – Bretylol

ibutilide - Corvert

Group IV

diltiazem – Cardizem and others

verapamil – Calan and others

Others

adenosine - Adenocard

atropine – Atro-Pen and others

digitalis – Foxglove

digoxin – Lanoxin
edrophonium – Reversol and others

DEplete:

A, B1, C, E, calcium, magnesium, phosphorus, potassium, CoQ10

⌘ **Do not take the following within 2 hours of these medications:** large amounts of aloe vera, licorice root, quinine (tonic water), or fiber (psyllium).

⌘ **Do not take the following herbs** at all if on any of these heart medications since they have the same effect: Foxglove, Hawthorn, and Siberian ginseng.

⌘ **Bisphosphonates** (Osteoporosis drugs) are linked to a significant increase in the risk of serious atrial fibrillation in postmenopausal women.

*Bhuriya et al: Bisphosphonate use in women and the risk of atrial fibrillation: a systematic review and meta-analysis. *Int J Cardiol* 2010 Jan 3

*Heckbert et al: Use of alendronate and risk of incident atrial fibrillation in women. *Arch Intern Med* 2008 Apr 28;168(8):826-31

*Loke et al: Bisphosphonates and atrial fibrillation: systematic review and meta-analysis. *Drug Saf* 2009;32(3):219-28

*Yan et al: Bisphenol A and 17 β -Estradiol promote arrhythmia in the female heart via alteration of calcium handling. *PLoS One* 2011 ;6(9):e25455

⌘ **Blood thinners** such as Warfarin are contraindicated because they increase the risk of stroke in those with atrial fibrillation.

*Gottlieb & Salem-Schatz: Anticoagulation in atrial fibrillation. Does efficacy in clinical trials translate into effectiveness in practice? *Arch Intern Med* 1994 Sep12;154(17):1945-53

*Lam et al: Alternatives to chronic warfarin therapy for the prevention of stroke in patients with atrial fibrillation. *Int J Cardiol* 2010 Nov 26

*Yang et al: Warfarin in haemodialysis patients with atrial fibrillation: what benefit? *Europace* 2010 Dec;12(12):1666-72

⌘ **Digoxin** may aggravate arrhythmias.

*Falk & Leavitt: Digoxin for atrial fibrillation: a drug whose time has gone? *Ann Intern Med* 1991 Apr1;114(7):573-5

⌘ **Ibuprofen use** may cause arrhythmias.

*Douglas: Palpitations following regular ibuprofen dosing in a 13-year-old girl: a case report. *J Med Case Reports* 2010;4:76

⌘ **Kidney function** affects heart rhythm.

*McManus et al: Relation of kidney function and albuminuria with atrial fibrillation (from the Heart and Soul Study). *Am J Cardiol* 2009 Dec 1;104(11):1551-5

⌘ **Low Cholesterol levels** are associated with an increased risk of arrhythmias.

*Annoura et al: Cholesterol paradox in patients with paroxysmal atrial fibrillation. *Cardiology* 1999;92(1):21-7

⌘ **Steroids** increase the risk of atrial fibrillation.

*Liu et al: Androgens and atrial fibrillation: friends or foes? *Int J Cardiol* 2010 Nov 19;145(2):365-7

*Sullivan et al: Atrial fibrillation and anabolic steroids. *J Emerg Med* 1999 Sep-Oct;17(5):851-7

*van der Hooft et al: Corticosteroids and the risk of atrial fibrillation. Arch Intern Med 2006 May 8;166(9):1016-20

☞ **Testosterone deficiency** is linked to atrial fibrillation in men.

*Lai et al: Reduced testosterone levels in males with lone atrial fibrillation. Clin Cardiol 2009 Jan;32(1):43-6

*Tsuneda et al: Deficiency of testosterone associates with the substrate of atrial fibrillation in the rat model. J Cardiovasc Electrophysiol 2009 Sep;20(9):1055-60

☞ **Vitamin E** reduces lung toxicity caused by Group III in particular.

SUGGESTED ALTERNATIVES:

Antioxidants (Spirulina, Mega-doses of B9, CoQ10, Alpha-lipoic acid, NAC, and Cocoa flavanols) improve cardiac remodeling and atrial fibrillation.

*McCarty: Practical prevention of cardiac remodeling and atrial fibrillation with full-spectrum antioxidant therapy and ancillary strategies. Med Hypotheses 2010 Jan 16

Astragalus significantly improves heart function, especially in those with CHF (congestive heart failure).

*Ma et al: Mechanisms of the therapeutic effect of astragalus membranaceus on sodium and water retention in experimental heart failure. Chin Med J (Engl) 1998 Jan;111(1):17-23

*Xi et al: The inhibitory effects of Radix Astragali on hypoxic pulmonary hypertension of rats. Nutr J 2008;7:11

*Zhang et al: Effect of Astragalus injection on plasma levels of apoptosis-related factors in aged patients with chronic heart failure. Chin J Integr Med 2005 Sep;11(3):187-90

*Zhou et al: Study on effect of Astragalus injection in treating congestive heart failure. Zhongguo Zhong Xi Yi Jie He Za Zhi 2001 Oct;21(10):747-9

Bacopa, Amla, Licorice, Indian mango, and Clove protect the heart and kidneys.

*Bafna & Balaraman: Antioxidant activity of DHC-1, an herbal formulation, in experimentally-induced cardiac and renal damage. Phytother Res 2005 Mar;19(3):216-21

Bee Propolis decreases the effects of digoxin toxicity.

*Park et al: Suppressive effects of ethanolic extracts from propolis and its main botanical origin on dioxin toxicity. J Agric Food Chem 2005 Dec 28;53(26):10306-9

Berberine-containing plants (Barberry, Goldenseal, Goldentthread, Oregon grape) improve the conditions of those with arrhythmias and/or heart failure.

*Lau et al: Cardiovascular actions of berberine. Cardiovasc Drug Rev 2001 Fall;19(3):234-44

Carnitine is an amino acid that has significant anti-arrhythmia activity.

*Palazzuoli et al: The evaluation of the antiarrhythmic activity of L-carnitine and propafenone in ischemic cardiopathy. Clin Ter 1993 Feb;142(2):155-9

Chili peppers contain capsaicin which strengthens the heart, regulates the beat, and improves its function.

*Ahuja et al: The effect of 4-week chilli supplementation on metabolic and arterial function in humans. Eur J Clin Nutr 2007 Mar;61(3):326-33

CoQ10 is a vital antioxidant needed by every cell in the body to make energy but it has a special leaning towards the heart muscle. The ubiquinol form has better absorption than the cheaper ubiquinone form.

- *Adarsh et al: Coenzyme Q10 (CoQ10) in isolated diastolic heart failure in hypertrophic cardiomyopathy (HCM). *Biofactors* 2008;32(1-4):145-9
- *Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure. CoQ10 Drug Surveillance Investigators. *Mol Aspects Med* 1994;15 Suppl:s287-94
- *Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure (interim analysis). The CoQ10 Drug Surveillance Investigators. *Forsch Komplementarmed Klass Naturheilkd* 2005 Apr;12(2):77-83
- *Kumar et al: Effect of carnitine Q-gel (ubiquinol and carnitine) on cytokines in patients with heart failure in the Tishcon study. *Acta Cardiol* 2007 Aug;62(4):349-54
- *Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9
- *Mortensen et al: Long-term coenzyme Q10 therapy: a major advance in the management of resistant myocardial failure. *Wien Klin Wochenschr* 2005 Aug;117(15-16):558-60
- *Okello et al: Combined statin/coenzyme Q10 as adjunctive treatment of chronic heart failure. *Med Hypotheses* 2009 Sep;73(3):306-8
- *Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17
- *Tiano et al: Effect of coenzyme Q10 administration on endothelial function and extracellular superoxide dismutase in patients with ischaemic heart disease: a double-blind, randomized controlled study. *Eur Heart J* 2007 Sep;28(18):2249-55

CoQ10, Carnitine, and Taurine is a combination found in a formula called **MyoVive** which proved to be an effective treatment for left ventricular dysfunction.

- *Jeejeebhoy et al: Nutritional supplementation with MyoVive repletes essential cardiac myocyte nutrients and reduces left ventricular size in patients with left ventricular dysfunction. *J Biol Regul Homeost Agents* 2009 Apr-Jun;23(2):119-24

Cordyceps mushrooms have anti-arrhythmic effects.

- *Mei et al: Antiarrhythmic effects of *Cordyceps sinensis* (Berk.) Sacc. *Zhongguo Zhong Yao Za Zhi* 1989 Oct;14(10):616-8, 640

Green Tea may be a beneficial treatment for atrial fibrillation.

- *Zeng et al: Green tea may be benefit to the therapy of atrial fibrillation. *J Cell Biochem* 2011 Mar 4

Diet rich in fruits and vegetables plays a significant role in preventing and reversing various cardiovascular disorders along with a benefit of reduced mortality from all causes.

- *Nagura et al: Fruit, vegetable and bean intake and mortality from cardiovascular disease among Japanese men and women: the JACC Study. *Br J Nutr* 2009 Jul;102(2):285-92
- *Pfister et al: Plasma vitamin C predicts incident heart failure in men and women in European Prospective Investigation into Cancer and Nutrition-Norfolk prospective study. *Am Heart J* 2011 Aug ;162(2):246-53

Hawthorn (alone or in combination) is an herb that is especially good for strengthening the heart.

- *Dengenring et al: A randomised double blind placebo controlled clinical trial of a standardised extract of fresh *Crataegus* berries (*Crataegisan*) in the treatment of patients with congestive heart failure NYHA II. *JAMA* 2007 Sep 26;298(12):1420-8
- *Garjani et al: Effects of extracts from flowering tops of *Crataegus meyeri* A. Pojark. on ischaemic arrhythmias in anaesthetized rats. *Helicobacter* 2005 Apr;10(2):139-45

- *Holubarsch et al: The efficacy and safety of Crataegus extract WS 1442 in patients with heart failure: the SPICE trial. *Eur J Heart Fail* 2008 Dec;10(12):1255-63
- *Hwang et al: Effects of hawthorn on the progression of heart failure in a rat model of aortic constriction. *Pharmacother* 2009 Jun;29(6):639-48
- *Pittler et al: Hawthorn extract for treating chronic heart failure: meta-analysis of randomized trials. *Am J Med* 2003 Jun 1;114(8):665-74
- *Pittler et al: Hawthorn extract for treating chronic heart failure. *Cochrane Database Syst Rev* 2008 Jan 23;(1):CD005312
- *Rietbrock et al: Actions of standardized extracts of Crataegus berries on exercise tolerance and quality of life in patients with congestive heart failure. *Arzneimittelforschung*. 2001 Oct;51(10):793-8

Honey (non-pasteurized) has some cardiac and nerve benefits.

- *Rakha et al: Cardioactive and vasoactive effects of natural wild honey against cardiac malperformance induced by hyperadrenergic activity. *J Med Food* 2008 Mar;11(1):91-8

Licorice root reduces risk of arrhythmias in hemodialysis patients.

- *Ferrari et al: Licorice: a sweet alternative to prevent hyperkalemia in dialysis patients? *Kidney Int* 2009 Oct;76(8):811-2

Magnesium helps prevent arrhythmias and is superior to verapamil in treating them. It also converts ibutilide into a safer and more effective agent.

- *Dabrowski et al: The efficiency of magnesium supplementation in patients undergoing cardiopulmonary bypass: changes in serum magnesium concentrations and atrial fibrillation episodes. *Magn Res* 2008 Dec;21(4):205-17
- *Gullestad et al: The effect of magnesium versus verapamil on supraventricular arrhythmias. *Clin Cardiol* 1993 May;16(5):429-34
- *Iseri: Magnesium and cardiac arrhythmias. *Magnesium* 1986;5(3-4):111-26
- *Kohno et al: Three-day magnesium administration prevents atrial fibrillation after coronary artery bypass grafting. *Ann Thorac Surg* 2005 Jan;79(1):117-26
- *Onalan et al: Meta-analysis of magnesium therapy for the acute management of rapid atrial fibrillation. *Am J Cardiol* 2007 Jun 15;99(12):1726-32
- *Patsilinos et al: Effect of high doses of magnesium on converting ibutilide to a safe and more effective agent. *Am J Cardiol* 2010 Sep 1;106(5):673-6
- *Sarisoy et al: Efficacy of magnesium sulfate for treatment of ventricular tachycardia in amitriptyline intoxication. *Pediatr Emerg Care* 2007 Sep;23(9):646-8
- *Teragawa et al: The preventive effect of magnesium on coronary spasm in patients with vasospastic angina. *Clin Cancer Res* 2008 Nov 1;14(21):6855-66

Motherwort is an herb with a traditional use for addressing women's issues but it also has anti-arrhythmic effects.

- *Ritter et al: Cardiac and electrophysiological effects of primary and refined extracts from *Leonurus cardiaca* L. (Ph.Eur.). *Planta Med* 2010 Apr;76(6):572-82

Omega-3 fatty acids prevent and reverse atrial fibrillation. Omega-3 fatty acids are found in abundance in fish and flaxseed oils and sacha inchi seeds.

- *Aarsetøy et al: Low levels of cellular omega-3 increase the risk of ventricular fibrillation during the acute ischaemic phase of a myocardial infarction. *Resuscitation* 2008 Sep;78(3):258-64
- *Calò et al: N-3 Fatty acids for the prevention of atrial fibrillation after coronary artery bypass surgery: a randomized, controlled trial. *J Am Coll Cardiol* 2005 May 17;45(10):1723-8
- *Gronroos & Alonso: Diet and risk of atrial fibrillation—epidemiologic and clinical evidence. *Circ J* 2010 Oct;74(10):2029-38

- *Heidt et al: Beneficial effects of intravenously administered N-3 fatty acids for the prevention of atrial fibrillation after coronary artery bypass surgery: a prospective randomized study. *Thorac Cardiovasc Surg* 2009 Aug;57(5):276-80
- *Kumar et al: Effects of chronic omega-3 polyunsaturated fatty acid supplementation on human atrial mechanical function after reversion of atrial arrhythmias to sinus rhythm: reversal of tachycardia-mediated atrial cardiomyopathy with fish oils. *Heart Rhythm* 2011 May;8(5):643-9
- *Li et al: Omega-3 polyunsaturated fatty acids inhibit transient outward and ultra-rapid delayed rectifier K⁺ currents and Na⁺ current in human atrial myocytes. *Cardiovasc Res* 2009 Feb 1;81(2):286-93
- *Macchia et al: Omega-3 fatty acid supplementation reduces one-year risk of atrial fibrillation in patients hospitalized with myocardial infarction. *Eur J Clin Pharmacol* 2008 Jun;64(6):627-34
- *Mariscalco et al: Preoperative n-3 polyunsaturated fatty acids are associated with a decrease in the incidence of early atrial fibrillation following cardiac surgery. *Angiology* 2010 Oct;61(7):643-50
- *Mayyas et al: Dietary Ω 3 fatty acids modulate the substrate for post-operative atrial fibrillation in a canine cardiac surgery model. *Cardiovasc Res* 2011 Mar 1;89(4):852-61
- *Metcalf et al: Effect of dietary n-3 polyunsaturated fatty acids on the inducibility of ventricular tachycardia in patients with ischemic cardiomyopathy. *Am J Cardiol* 2008 Mar 15;101(6):758-61
- *Patel et al: Omega-3 polyunsaturated fatty acid supplementation reduced atrial fibrillation recurrence after pulmonary vein antrum isolation. *J Invest Dermatol* 1989 Jun;92(6):842-7
- *Ramadeen et al: n-3 Polyunsaturated fatty acids alter expression of fibrotic and hypertrophic genes in a dog model of atrial cardiomyopathy. *Heart Rhythm* 2010 Apr;7(4):520-8
- *Virtanen et al: Serum long-chain n-3 polyunsaturated fatty acids and risk of hospital diagnosis of atrial fibrillation in men. *Circulation* 2009 Dec 8;120(23):2315-21
- *Zhang et al: n-3 polyunsaturated fatty acids prevents atrial fibrillation by inhibiting inflammation in a canine sterile pericarditis model. *Int J Cardiol* 2010 Sep 8

Pterocarpus (Kino tree) is an herb that has similar effects as digoxin.

- *Mohire et al: Cardiotoxic activity of aqueous extract of heartwood of *Pterocarpus marsupium*. *Indian J Exp Biol* 2007 Jun;45(6):532-7

Red Sage protects against sudden cardiac death caused by lethal arrhythmias.

- *Shan et al: Tanshinone IIA protects against sudden cardiac death induced by lethal arrhythmias via repression of microRNA-1. *Br J Pharmacol* 2009 Nov;158(5):1227-35

Resveratrol is a potent antioxidant that strengthens the heart thereby reducing the risk of arrhythmias

- *Xin et al: Favorable effects of resveratrol on sympathetic neural remodeling in rats following myocardial infarction. *Eur J Pharmacol* 2010 Dec 15;649(1-3):293-300
- *Zhang et al: Resveratrol, a natural ingredient of grape skin: antiarrhythmic efficacy and ionic mechanisms. *Biochem Biophys Res Commun* 2006 Feb 24;340(4):1192-9

Rhodiola is an herb that has significant cardioprotective and antiarrhythmic effects.

- *Lishmanov et al: The anti-arrhythmia effect of *Rhodiola rosea* and its possible mechanism. *Biull Eksp Biol Med* 1993 Aug;116(8):175-6
- *Maslov & Lishmanov: Cardioprotective and antiarrhythmic properties of *Rhodiola rosea* preparations. *Eksp Klin Farmakol* 2007 Sep-Oct;70(5):59-67
- *Song et al: Imbalance between pro- and anti-inflammatory cytokines, and between Th1 and Th2 cytokines in depressed patients: the effect of electroacupuncture or fluoxetine treatment. *Pharmacopsych* 2009 Sep;42(5):182-8

Strauss Heart Drops is an excellent combination of bilberry, cayenne, garlic, hawthorn, mistletoe, motherwort, and white willow. It has a long history of privately proven results for strengthening and regulating the heart as well as for removing arterial plaque.

- *Hornby: A one-year observational study to determine the efficacy and safety of Strauss Heartdrops® in reducing risk to coronary heart disease. Study Report online
- *Petrella et al: Effect of herbal Strauss Heartdrops in patients with chronic stable angina. Study Report, Oct 16, 2005

Vitamin C protects and strengthens the heart muscle.

- *Lee et al: Effect of high-dose vitamin C on oxygen free radical production and myocardial enzyme after tourniquet ischaemia-reperfusion injury during bilateral total knee replacement. *J Int Med Res* 2010 Jul-Aug;38(4):1519-29
- *Pfister et al: Plasma vitamin C predicts incident heart failure in men and women in European Prospective Investigation into Cancer and Nutrition-Norfolk prospective study. *Am Heart J* 2011 Aug;162(2):246-53

Vitamin D3 reduces the risk of adverse cardiovascular problems.

- *Giovannucci et al: 25-Hydroxyvitamin D and risk of myocardial infarction in men. A prospective study. *Arch Intern Med* 2008;168(11):1174-80

Zinc and **Copper** levels are low in those with congestive heart failure and atrial fibrillation which are reversed when these minerals are supplemented.

- *Ghaemian et al: Zinc and Copper levels in severe heart failure and the effects of atrial fibrillation on the zinc and copper status. *Int J Oncol* 2008 May;32(5):1085-90

BLOOD PRESSURE/ANTI-HYPERTENSIVES



(USED TO LOWER BLOOD PRESSURE)

COMMON EXAMPLES:

ACE Inhibitors (angiotensin converting enzyme – any of the **prils**)

benazepril – Lotensin
captopril – Capoten
enalapril – Vasotec
quinapril – Accupril
ramipril – Altace

... and others

Adrenergics

clonidine – Catapres
methyldopa – Aldomet, and others

Anti-adrenergics

doxazosin – Cardura
prazosin - Minipress

... and others

ARBs (angiotensin receptor blockers – any of the **sartans**)

losartan – Cozaar
valsartan – Diovan

... and others

Beta-adrenergic Blockers (any of the **olols**)

acebutolol - Monitan and others
atenolol – Tenormin
metoprolol - Lopressor
timolol - Timoptic drops

... and others

Calcium-channel Blockers

amlodipine – Norvasc
diltiazem – Cardizem and others
felodipine – Plendil
nifedipine – Aldalat, Procardia, and others
verapamil – Calan, Isoptin, and others

Vasodilators

diazoxide – Hyperstat, Proglycem

hydralazine – Apo-Hydralazine, Apresoline, Novo-Hylazin, Nu-Hydral

minoxidil – Apo-Gain, Minox and others

nitroprusside – Nipride, Nitropress

... and others

DEplete:

B1, B2, B3, B6, B9, B12, C, D, calcium, copper, iron, magnesium, potassium, selenium, sodium, zinc, CoQ10, DHEA, quercetin, melatonin

⚡ **Avoid salt substitutes** as they can increase blood potassium levels to potentially life-threatening levels.

*Ponce et al: Drug-induced hyperkalemia. Med 1985;64(6):357-70

*Ray et al: Severe hyperkalemia due to the concomitant use of salt substitutes and ACE inhibitors in hypertension : a potentially life threatening interaction. J Human Hyperten 1999;13(10):717-20

⚡ **Beta Blockers**, in particular, rapidly decrease CoQ10 levels (as do Statin drugs for Cholesterol) – which has been known for over 30 years. CoQ10 is needed to make energy in every cell in the body but the heart needs it the most. Therefore it is vital that CoQ10 supplementation take place if on medications.

*Kishi et al: Bioenergetics in clinical medicine XV. Inhibition of coenzyme Q10-enzymes by clinically used adrenergic blockers of beta-receptors. Res Commun Chem Pathol Pharmacol 1977 May;17(1):157-64

*Sarter: Coenzyme Q10 and cardiovascular disease: A review. J Cardio Nurs 2002 July;16(4):9-20

⚡ **Beta Blockers** affect exercise capacity and blood flow in the lungs in those with moderate to severe hypertension.

*Provencher et al: Deleterious effects of beta-blockers on exercise capacity and hemodynamics in patients with portopulmonary hypertension. Gastroenterol 2006 Jan;130(1):120-6

⚡ **Caffeine** increases blood pressure; therefore, do not take your blood pressure with, or just after, drinking a caffeinated beverage.

*Robertson et al: Effects of caffeine on plasma renin activity, catecholamines and blood pressure. New Eng J Med 1978;298(4):181-6

⚡ **Calcium channel blockers** increase the risk of heart failure and when used with **Diuretics**, increase the risk of heart attacks more than any other two medication-combinations.

*Boger-Megiddo et al: Myocardial infarction and stroke associated with diuretic based two drug antihypertensive regimens: population based case-control study. BMJ 2010;340:c103

*Shibata et al: Do calcium channel blockers increase the diagnosis of heart failure in patients with hypertension? Am J Cardiol 2010 Jul 15;106(2):228-35

⚡ **Fructose consumption** contributes to night-time hypertension, diabetes, and obesity. Scientists often use fructose to induce hypertension, diabetes, and increased cholesterol levels in animal models.

*Dai & McNeill: Fructose-induced hypertension in rats is concentration- and duration-dependent. J Pharmacol Toxicol Meth 1995 Apr;33(2):101-7

*Damiano et al: Impaired response to insulin associated with protein kinase c in chronic fructose-

induced hypertension. *Blood Press* 2002;11(6):345-51

*Farah et al: Nocturnal hypertension in mice consuming a high fructose diet. *Auton Neurosci* 2006 Dec 30;130(1-2):41-50

*Fiaschi et al: Fructose-induced hyperuricemia in essential hypertension. *Metabol* 1977 Nov;26(11):1219-23

*Hwang et al: Fructose-induced insulin resistance and hypertension in rats. *Hyperten* 1987;10:512-16

*Johnson et al: Potential role of sugar (fructose) in the epidemic of hypertension, obesity and the metabolic syndrome, diabetes, kidney disease, and cardiovascular disease. *Am J Clin Nutr* 2007 Oct;86(4):899-906

*Perez-Pozo et al: Excessive fructose intake induces the features of metabolic syndrome in healthy adult men: role of uric acid in the hypertensive response. *Int J Obes (Lond)* 2010 Mar;34(3):454-61

*Thorburn et al: Fructose-induced in vivo insulin resistance and elevated plasma triglyceride levels in rats. *Am J Clin Nutr* 1989 Jun;49(6):1155-63

*Vrána et al: Palmitate and glucose oxidation by diaphragm of rats with fructose-induced hypertriglyceridemia. *Metabol* 1978 Aug;27(8):885-8

☞ **Goldenseal** is an anti-microbial herb that contains a substance called hydrastine which can constrict blood vessels, thereby increasing blood pressure levels.

*Goldenseal. U Maryland Medical Center online

☞ **Metoprolol** is associated with an increased risk of diabetes in heart failure patients.

*Torp-Pedersen et al: Effects of metoprolol and carvedilol on pre-existing and new onset diabetes in patients with chronic heart failure: data from the Carvedilol Or Metoprolol European Trial (COMET). *Heart* 2007 Aug;93(8):968-73

☞ **Pesticides** (DDT, simazine, lindane and some of their active constituents) have long been associated with a significant increases in cancers as well as numerous other dangerous health conditions including hypertension and cardiovascular diseases.

*Goncharov et al: Blood pressure in relation to concentrations of PCB congeners and chlorinated pesticides. *Environ Health Perspect* 2011 Mar;119(3):319-25

*Ha et al: Association between serum concentrations of persistent organic pollutants and self-reported cardiovascular disease prevalence: results from the National Health and Nutrition Examination Survey, 1999-2002. *Environ Health Perspect* 2007 Aug;115(8):1204-9

SUGGESTED ALTERNATIVES:

Adzuki beans have compounds that help decrease blood pressure.

*Sato et al: Effect of polyphenol-containing azuki bean (*Vigna angularis*) extract on blood pressure elevation and macrophage infiltration in the heart and kidney of spontaneously hypertensive rats. *Clin Exp Pharmacol Physiol* 2008 Jan;35(1):43-9

Allspice has hypotensive effects.

*Suárez et al: Hypotensive action of an aqueous extract of *Pimenta dioica* (Myrtaceae) in rats. *Rev Biol Trop* 2000 Mar;48(1):53-8

Alpha-linolenic acid is a plant-based omega-3 fatty acid that helps lower blood pressure.

*Ogawa et al: Dietary alpha-linolenic acid inhibits angiotensin-converting enzyme activity and mRNA expression levels in the aorta of spontaneously hypertensive rats. *J Oleo Sci* 2009;58(7):355-60

Alpha-lipoic acid reduces blood pressure and increases insulin sensitivity.

*Thirunavukkarasu et al: Lipoic acid attenuates hypertension and improves insulin sensitivity, kallikrein activity and nitrite levels in high fructose-fed rats. *J Comp Physiol B* 2004 Nov;174(8):587-92

Amaranth is an ancient grain that has similar ACE-inhibiting action as pharmaceuticals but without the side effects.

*Vecchi & Añón: ACE inhibitory tetrapeptides from *Amaranthus hypochondriacus* 11S globulin. *Phytochem* 2009 May 12

Antioxidant deficiency contributes to hypertension and is associated with the likelihood of abdominal aneurysms.

*Hunter et al: Effects of hypertension on aortic antioxidant status in human abdominal aneurysmal and occlusive disease. *Proc Soc Exp Biol Med* 1991 Mar;196(3):273-9

Arginine (an amino acid) is comparable to Calcium Channel Blockers without the side effects, and safe to take during pregnancy.

*Altun et al: Effects of oral L-arginine supplementation on blood pressure and asymmetric dimethylarginine in stress-induced preeclamptic rats. *Cell Biochem Funct* 2008 Sep-Oct;26(5):648-53

*Ast et al: Evaluation of the antihypertensive effect of L-arginine supplementation in patients with mild hypertension assessed with ambulatory blood pressure monitoring. *Med Sci Monit* 2010 May;16(5):CR266-71

*Cavanal et al: The influence of L-arginine on blood pressure, vascular nitric oxide and renal morphology in the offspring from diabetic mothers. *Pediatr Res* 2007 Aug;62(2):145-50

*Lee et al: L-arginine supplementation reduces cardiac noradrenergic neurotransmission in spontaneously hypertensive rats. *J Mol Cell Cardiol* 2009 Jul;47(1):149-55

*Lekakis et al: Oral L-arginine improves endothelial dysfunction in patients with essential hypertension. *Int J Cardiol* 2002 Dec;86(2-3):317-23

*Li et al: Comparative effects of calcium channel blockers and L-arginine on chronic intermittent hypoxic pulmonary hypertension in rats. *Zhonghua Jie He He Hu Xi Za Zhi* 1994 Dec;17(6):372-4, 385

*Lucotti et al: Beneficial effects of a long-term oral L-arginine treatment added to a hypocaloric diet and exercise training program in obese, insulin-resistant type 2 diabetic patients. *Am J Physiol Endocrinol Metab* 2006 Nov;291(5):E906-12

*Martina et al: Long-term N-acetylcysteine and L-arginine administration reduces endothelial activation and systolic blood pressure in hypertensive patients with type 2 diabetes. *Diabetes Care* 2008 May;31(5):940-4

*Miller: The effects of sustained-release-L-arginine formulation on blood pressure and vascular compliance in 29 healthy individuals. *Altern Med Rev* 2006 Mar;11(1):23-9

*Neri et al: L-arginine supplementation in women with chronic hypertension: impact on blood pressure and maternal and neonatal complications. *J Matern Fetal Neonatal Med* 2010 Dec;23(12):1456-60

*Neri et al: Effect of L-arginine on blood pressure in pregnancy-induced hypertension: a randomized placebo-controlled trial. *J Matern Fetal Neonatal Med* 2006 May;19(5):277-81

*Neri et al: Effects of acute L-arginine infusion on non-stress test in hypertensive pregnant women. *J Matern Fetal Neonatal Med* 2004 Jul;16(1):23-6

*Orozco-Gutiérrez et al: Effect of L-arginine or L-citrulline oral supplementation on blood pressure and right ventricular function in heart failure patients with preserved ejection fraction. *Cardiol J* 2010;17(6):612-8

Arginine and **NAC** (N-acetylcysteine) are amino acids that can improve blood pressure.

*Martina et al: Long-term N-acetylcysteine and L-arginine administration reduces endothelial activation and systolic blood pressure in hypertensive patients with type 2 diabetes. *Diabetes Care* 2008 May;31(5):940-4

Astaxanthin is a powerful antioxidant that has significant health benefits including the improvement of arterial condition and blood pressure.

- *Hussein et al: Antihypertensive potential and mechanism of action of astaxanthin: III. Antioxidant and histopathological effects in spontaneously hypertensive rats. *Biol Pharm Bull* 2006 Apr;29(4):684-8 **and** 2005 Jun;28(6):967-71
- *Hussein et al: Antihypertensive and neuroprotective effects of astaxanthin in experimental animals. *Biol Pharm Bull* 2005 Jan;28(1):47-52
- *Preuss et al: High dose astaxanthin lowers blood pressure and increases insulin sensitivity in rats: are these effects interdependent? *Int J Med Sci* 2011;8(2):126-38
- *Sasaki et al: Astaxanthin inhibits thrombosis in cerebral vessels of stroke-prone spontaneously hypertensive rats. *Nutr Res* 2011 Oct;31(10):784-9

Astragalus and **Angelica** are herbs that improve conditions of those being treated with ACE inhibitors.

- *Wojcikowski et al: Effect of *Astragalus membranaceus* and *Angelica sinensis* combined with Enalapril in rats with obstructive uropathy. *Phytother Res* 2009 Dec 3

B vitamin (6,9,12) deficiency contributes to increased levels of **homocysteine** which lead to cardiovascular disease, bone fractures, and Alzheimer's. Supplementation of these nutrients (plus a total B-complex to avoid creating a deficiency in one or more of the family members) and **Betaine hydrochloric acid**, helps prevent such disorders.

- *Miller et al: Vitamin B-6 deficiency vs folate deficiency: comparison of responses to methionine loading in rats. *Am J Clin Nutr* 1994;59(5):1033-39
- *Spence et al: Understanding the complexity of homocysteine lowering with vitamins. *JAMA* 2011;306(23):2610-11
- *Stehouwer & van Guldener: Homocysteine-lowering treatment: an overview. *Expert Opinion on Pharmacoth* 2001;2(9):1449-60

B6 has a positive effect on systolic blood pressure.

- *Lal et al: The effect of vitamin B6 on the systolic blood pressure of rats in various animal models of hypertension. *J Hyperten* 1996 Mar;14(3):273

Bee Propolis has antihypertensive effects.

- *Maruyama et al: Antihypertensive effects of flavonoids isolated from Brazilian green propolis in spontaneously hypertensive rats. *Biol Pharm Bull* 2009 Jul;32(7):1244-50

Beetroot improves blood pressure and keeps the blood vessels healthy.

- *Webb et al: Acute blood pressure lowering, vasoprotective, and antiplatelet properties of dietary nitrate via bioconversion to nitrite. *Hyperten* 2008 Mar;51(3):784-90

Blueberries improve blood pressure.

- *Kalea et al: Dietary enrichment with wild blueberries (*Vaccinium angustifolium*) affects the vascular reactivity in the aorta of young spontaneously hypertensive rats. *J Nutr Biochem* 2010 Jan;21(1):14-22

Bromelain is an enzyme derived from pineapples that protects the heart.

- *Juhász et al: Bromelain induces cardioprotection against ischemia-reperfusion injury through Akt/FOXO pathway in rat myocardium. *Am J Physiol Heart Circ Physiol* 2008 Mar;294(3):H1365-70

Butterbur is an herb that has the same effect as Calcium-channel blockers.

- *Wang et al: Calcium-antagonizing activity of S-petasin, a hypotensive sesquiterpene from *Petasites formosanus*, on inotropic and chronotropic responses in isolated rat atria and cardiac myocytes. *Naunyn Schmiedeberg Arch Pharmacol* 2004 Mar;369(3):322-9

Calcium supplementation reduces pre-eclampsia.

*Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems. *Cochrane Database Syst Rev* 2010(8):CD001059

Capsaicin is a substance found in hot peppers that strengthens the cardiovascular system and ultimately reduces hypertension.

*Ahuja et al: The effect of 4-week chilli supplementation on metabolic and arterial function in humans. *Eur J Clin Nutr* 2007 Mar;61(3):326-33

*Lai et al: Capsaicin pretreatment attenuates chronic hypoxic pulmonary hypertension. *Respir Physiol* 1995 Feb;99(2):283-9

Cardamom seeds help lower blood pressure.

*Verma et al: Blood pressure lowering, fibrinolysis enhancing and antioxidant activities of cardamom (*Elettaria cardamomum*). *Indian J Biochem Biophys* 2009 Dec;46(6):503-6

Carvacrol, found in Oregano Oil, helps to lower blood pressure. Synthetic carvacrol is to be avoided as it is toxic and found in such products as Lysol, Pinesol, and Listerine.

*Aydin et al: Hypotensive effects of carvacrol on the blood pressure of normotensive rats. *Planta Med* 2007 Oct;73(13):1365-71

Chlorella is a marine algae that has significant health benefits including reducing the risk of strokes in hypertensive patients.

*Merchant et al: Nutritional supplementation with *Chlorella pyrenoidosa* for mild to moderate hypertension. *J Med Food* 2002 Fall;5(3):141-52

*Sansawa et al: Effect of chlorella and its fractions on blood pressure, cerebral stroke lesions, and life-span in stroke-prone spontaneously hypertensive rats. *J Nutr Sci Vitaminol (Tokyo)* 2006 Dec;52(6):457-66

*Shimada et al: Anti-hypertensive effect of gamma-aminobutyric acid (GABA)-rich *Chlorella* on high-normal blood pressure and borderline hypertension in placebo-controlled double blind study. *Clin Exp Hypertens* 2009 Jun;31(4):342-54

Cinnamon reduces blood pressure as well as blood sugar levels.

*Akilen et al: Glycated haemoglobin and blood pressure-lowering effect of cinnamon in multi-ethnic Type 2 diabetic patients in the UK: a randomized, placebo-controlled, double-blind clinical trial. *Photochem Photobiol* 2004 Nov-Dec;80(3):579-82

Citrulline, an amino acid, helps to lower blood pressure.

*Figuroa et al: Oral L-citrulline supplementation attenuates blood pressure response to cold pressor test in young men. *Am J Hypertens* 2010 Jan;23(1):12-6

Coconut has many proven health benefits including helping to reduce high blood pressure levels.

*Alleyne et al: The control of hypertension by use of coconut water and mauby: two tropical food drinks. *West Indian Med J* 2005 Jan;54(1):3-8

Concord grape juice reduces blood pressure.

*Park et al: Changes in antioxidant status, blood pressure, and lymphocyte DNA damage from grape juice supplementation. *Ann NY Acad Sci* 2009 Aug;1171:385-90

*Park et al: Concord grape juice supplementation reduces blood pressure in Korean hypertensive men: double-blind, placebo controlled intervention trial. *Cancer Res* 1984 Apr;44(4):1321-6

CoQ10 is a safe and effective treatment for hypertension, including pre-eclampsia in pregnancy. The ubiquinol form functions better than ubiquinone.

- *Burke et al: Randomized, double-blind, placebo-controlled trial of coenzyme Q10 in isolated systolic hypertension. *Appl Psychophysiol Biofeedback* 2009 Jun;34(2):71-91
- *Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9
- *Rosenfeldt et al: Coenzyme Q10 in the treatment of hypertension: a meta-analysis of the clinical trials. *J Hum Hypertens* 2007 Apr;21(4):297-306
- *Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17
- *Teran et al: Coenzyme Q10 supplementation during pregnancy reduces the risk of pre-eclampsia. *Int J Gynaecol Obstet* 2009 Apr;105(1):43-5

Cordyceps mushrooms effectively treat pulmonary and portal hypertension as well as having anti-stress, anti-fatigue, and anti-aging properties.

- *Gao et al: Cordyceps sinensis extract suppresses hypoxia-induced proliferation of rat pulmonary artery smooth muscle cells. *Saudi Med J* 2010 Sep;31(9):974-9
- *Ji et al: Antiaging effect of Cordyceps sinensis extract. *Phytother Res* 2009 Jan;23(1):1-5
- *Koh et al: Antifatigue and antistress effect of the hot-water fraction from mycelia of Cordyceps sinensis. *Biol Pharm Bull* 2003 May;26(5):691-4
- *Wang et al: Cordyceps mycelia extract decreases portal hypertension in rats with dimethylnitrosamine-induced liver cirrhosis: a study on its histological basis. *Zhong Xi Yi Jie He Xue Bao* 2008 Nov;6(11):1136-44

Coriander seeds have hypotensive effects.

- *Jabeen et al: Coriander fruit exhibits gut modulatory, blood pressure lowering and diuretic activities. *J Ethnopharmacol* 2009 Feb 25;122(1):123-30

Curcumin improves pulmonary hypertension.

- *Lin et al: Effect of curcumin on pulmonary hypertension and wall collagen of pulmonary arterioles of chronic hypoxic hypercapnic rats. *Zhongguo Ying Yong Sheng Li Xue Za Zhi* 2006 Aug;22(3):257-61

Eggplant inhibits key enzymes associated with the development of diabetes and hypertension.

- *Kwon et al: In vitro studies of eggplant (*Solanum melongena*) phenolics as inhibitors of key enzymes relevant for type 2 diabetes and hypertension. *Bioresour Technol* 2008 May;99(8):2981-8

Eugenol, found in the essential oils of Basil, Bay leaf, Cinnamon, Clove, and Nutmeg, has hypotensive effects.

- *Fátima & Interaminense: Enhanced hypotensive effects of the essential oil of *Ocimum gratissimum* leaves and its main constituent, eugenol, in DOCA-salt hypertensive conscious rats. *Planta Med* 2005 Apr;71(4):376-8

Fermented milk and **whey** help lower blood pressure.

- *Beaulieu et al: Regulatory function of a malleable protein matrix as a novel fermented whey product on features defining the metabolic syndrome. *J Med Food* 2010 Jun;13(3):509-19
- *Kawase et al: Effect of administration of fermented milk containing whey protein concentrate to rats and healthy men on serum lipids and blood pressure. *J Dairy Sci* 2000 Feb;83(2):255-63

Fiber-rich diet helps to lower blood pressure, including preeclampsia in pregnancy.

- *He et al: Effect of dietary fiber intake on blood pressure: a randomized, double-blind, placebo-controlled trial. *J Hypertens* 2004 Jan;22(1):73-80
- *Qui et al: Dietary fiber intake in early pregnancy and risk of subsequent preeclampsia. *Am J Hypertens* 2008 Aug;21(8):903-9

Flavanols (found in a variety of foods including dark, raw cacao) have hypotensive effects but sugared or sugar-free cocoa had no effect.

- *Allen et al: Daily consumption of a dark chocolate containing flavanols and added sterol esters affects cardiovascular risk factors in a normotensive population with elevated cholesterol. *J Med Food* 2007 Mar;10(1):134-42
- *Berry et al: Impact of cocoa flavanol consumption on blood pressure responsiveness to exercise. *Br J Nutr* 2010 May;103(10):1480-4
- *Desch et al: Effect of cocoa products on blood pressure: systematic review and meta-analysis. *Am J Hypertens* 2010 Jan;23(1):97-103
- *Desch et al: Low vs. higher-dose dark chocolate and blood pressure in cardiovascular high-risk patients. *Am J Hypertens* 2010 Jun;23(6):694-700
- *Erdman et al: Effects of cocoa flavanols on risk factors for cardiovascular disease. *Asia Pac J Clin Nutr* 2008;17 Suppl 1:284-7
- *Faridi et al: Acute dark chocolate and cocoa ingestion and endothelial function: a randomized controlled crossover trial. *Am J Clin Nutr* 2008 Jul;88(1):58-63
- *Grassi et al: Cocoa reduces blood pressure and insulin resistance and improves endothelium-dependent vasodilation in hypertensives. *Hypertension* 2005 Aug;46(2):398-405
- *McCullough et al: Hypertension, the Kuna, and the epidemiology of flavanols. *J Cardiovasc Pharmacol* 2006;47 Suppl 2:S103-9; discussion 119-21
- *Ried et al: Does chocolate reduce blood pressure? A meta-analysis. *BMC Med* 2010;8:39
- *Taubert et al: Effects of low habitual cocoa intake on blood pressure and bioactive nitric oxide: a randomized controlled trial. *JAMA* 2007 Jul 4;298(1):49-60

Flaxseed oil, which is high in omega-3 fatty acids, helps lower blood pressure.

- *Paschos et al: Dietary supplementation with flaxseed oil lowers blood pressure in dyslipidaemic patients. *Eur J Clin Nutr* 2007 Oct;61(10):1201-6

Folate (B9) in high doses for a short time helps lower blood pressure.

- *Cagnacci et al: High-dose short-term folate administration modifies ambulatory blood pressure in postmenopausal women. A placebo-controlled study. *Eur J Clin Nutr* 2009 Oct;63(10):1266-8

Folic acid (B9) and **D-ribose** help prevent right ventricular hypertrophy resulting from hypertension. Ribose is a non-sweet medicinal sugar important for ATP (energy) production.

- *Lamberts et al: Preservation of diastolic function in monocrotaline-induced right ventricular hypertrophy in rats. *Am J Physiol Heart Circ Physiol* 2007 Sep;293(3):H1869-76

Fruits and Vegetables improve blood flow and cardiovascular health.

- *John et al: Effects of fruit and vegetable consumption on plasma antioxidant concentrations and blood pressure: a randomised controlled trial. *Cancer Lett* 2004 May 28;208(2):163-70
- *McCall et al: Dietary intake of fruits and vegetables improves microvascular function in hypertensive subjects in a dose-dependent manner. *Circulation* 2009 Apr 28;119(16):2153-60

Goji berries/Wolfberry decrease blood pressure, strengthen the immune system, improve the eyesight, and generally offers a sense of well-being.

- *Amagase et al: Immunomodulatory effects of a standardized *Lycium barbarum* fruit juice in Chinese older healthy human subjects. *J Med Food* 2009 Oct;12(5):1159-65
- *Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12
- *Jia et al: The effect of *lycium barbarum* polysaccharide on vascular tension in two-kidney, one clip model of hypertension. *Sheng Li Xue Bao* 1998 Jun;50(3):309-14

*Potterat: Goji (*Lycium barbarum* and *L. chinense*): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19

Grapes and Apples help prevent atherosclerosis and reduce blood pressure, even in pregnant women (preeclampsia), but only use **organic** as both that are conventionally grown are high on the list of foods containing large numbers of pesticides.

*de Moura et al: Protective action of a hydroalcoholic extract of a vinifera grape skin on experimental preeclampsia in rats. *Hypertens Pregn* 2007;26(1):89-100

*No authors listed: Phenolics from purple grape, apple, purple grape juice and apple juice prevent early atherosclerosis induced by an atherogenic diet in hamsters. *Mol Nutr Food Res* 2008 Apr;52(4):400-7

*Park et al: Concord grape juice supplementation reduces blood pressure in Korean hypertensive men: Double-blind, placebo controlled intervention trial. *BioFact* 2004;22(1-4):145-147

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Grapefruit – the Upside – helps reduce blood pressure but it still cannot be eaten by those on any kind of medication including the one-a-day aspirin.

*Díaz-Juárez et al: Effect of *Citrus paradisi* extract and juice on arterial pressure both in vitro and in vivo. *Phytother Res* 2009 Jul;23(7):948-54

Green Coffee reduces blood pressure but not once it is roasted.

*Kozuma et al: Antihypertensive effect of green coffee bean extract on mildly hypertensive subjects. *Hypertens Res* 2005 Sep;28(9):711-8

*Watanabe et al: The blood pressure-lowering effect and safety of chlorogenic acid from green coffee bean extract in essential hypertension. *Clin Exp Hypertens* 2006 Jul;28(5):439-49

*Yamaguchi et al: Hydroxyhydroquinone-free coffee: a double-blind, randomized controlled dose-response study of blood pressure. *Nutr Metab Cardiovasc Dis* 2008 Jul;18(6):408-14

Hawthorn reduces blood pressure.

*Walker et al: Promising hypotensive effect of hawthorn extract: a randomized double-blind pilot study of mild, essential hypertension. *Phytother Res* 2002 Feb;16(1):48-54

Licorice helps prevent and reverse hypertension, diabetes and belly-fat.

*Mae et al: A licorice ethanolic extract with peroxisome proliferator-activated receptor-gamma ligand-binding activity affects diabetes in KK-Ay mice, abdominal obesity in diet-induced obese C57BL mice and hypertension in spontaneously hypertensive rats. *J Nutr* 2003 Nov;133(11):3369-77

Magnesium deficiency contributes to hypertension in particular and cardiovascular problems in general as well as diabetes.

*Adrian et al: A long-term moderate magnesium-deficient diet aggravates cardiovascular risks associated with aging and increases mortality in rats. *J Hypertens* 2008 Jan;26(1):44-52

*Adrian et al: A long-term moderate magnesium-deficient diet aggravates cardiovascular risks associated with aging and increases mortality in rats. *Cancer Biol Ther* 2011 Jan 15;11(2):229-35

*Fuentes et al: Acute and chronic oral magnesium supplementation: effects on endothelial function, exercise capacity, and quality of life in patients with symptomatic heart failure. *J Periodontol Res* 1996 Aug;31(6):408-13

*Guerrero-Romero & Rodríguez-Morán: The effect of lowering blood pressure by magnesium supplementation in diabetic hypertensive adults with low serum magnesium levels: a randomized, double-blind, placebo-controlled clinical trial. *J Hum Hypertens* 2009 Apr;23(4):245-51

*Inoue et al: Lipid metabolism and magnesium. *Clin Calcium* 2005 Nov;15(11):65-76

*Laurant et al: Effect of magnesium deficiency on blood pressure and mechanical properties of rat carotid artery. *Hyperten* 1999 May;33(5):1105-10

*Laurant et al: Dietary magnesium intake can affect mechanical properties of rat carotid artery. *Br J Nutr* 2000 Nov;84(5):757-64

- *Ma et al: Associations of serum and dietary magnesium with cardiovascular disease, hypertension, diabetes, insulin, and carotid arterial wall thickness: the ARIC study. *Atherosclerosis Risk in Communities Study. J Clin Epidemiol* 1995 Jul;48(7):927-40
- *Shechter et al: Effects of oral magnesium therapy on exercise tolerance, exercise-induced chest pain, and quality of life in patients with coronary artery disease. *Am J Cardiol* 2003 Mar1;91(5):517-21

Maitake mushrooms possess anti-hypertensive effects.

- *Talpur et al: Antihypertensive and metabolic effects of whole Maitake mushroom powder and its fractions in two rat strains. *Mol Cell Biochem* 2002 Aug;237(1-2):129-36

Mediterranean Diet improves overall cardiovascular health. The Mediterranean Diet is based on foods and drinks consumed by people in countries surrounding the Mediterranean Sea.

- *Estruch et al: Effects of a Mediterranean-style diet on cardiovascular risk factors: a randomized trial. *Ann Intern Med* 2006 Jul 4;145(1):1-11
- *Martínez-González et al: Mediterranean diet and reduction in the risk of a first acute myocardial infarction: an operational healthy dietary score. *Antiviral Res* 2005 Apr;66(1):9-12
- *Mediterranean diet: Choose this heart-healthy diet option. Mayo Clinic online
- *Zelman: The Mediterranean Diet; A total diet and lifestyle approach continues to be one of the best prescriptions for a long, healthy life. WebMD online

Melatonin alone or with **Pycnogenol** improves endothelial function. A dysfunction occurs through an imbalance of the cells lining blood vessels which leads to any number of disorders including cardiovascular. Melatonin is often used as a sleep aid while Pycnogenol, an extract from pine trees, is a potent antioxidant (see more below).

- *Cui et al: Effect and mechanism of melatonin's action on the proliferation of human umbilical vein endothelial cells. *J Pineal Res* 2006 Nov;41(4):358-62
- *Endemann & Schiffrin: Endothelial dysfunction. *J Am Soc Nephrol* 2004 Aug;15(8):1983-92
- *Forman et al: Beneficial effects of melatonin on cardiological alterations in a murine model of accelerated aging. *J Pineal Res* 2010 Oct;49(3):312-20
- *Rezzani et al: Effects of melatonin and Pycnogenol on small artery structure and function in spontaneously hypertensive rats. *Int J Mol Med* 2003 Aug;12(2):269-73

Niacin (B3) improves arterial health and lessens the symptoms of chronic kidney failure.

- *Cho et al: Niacin ameliorates oxidative stress, inflammation, proteinuria, and hypertension in rats with chronic renal failure. *Am J Physiol Renal Physiol* 2009 Jul;297(1):F106-13
- *Thoenes et al: The effects of extended-release niacin on carotid intimal media thickness, endothelial function and inflammatory markers in patients with the metabolic syndrome. *Int J Clin Pract* 2007 Nov;61(11):1942-8
- *Warnholtz et al: Effects of oral niacin on endothelial dysfunction in patients with coronary artery disease: results of the randomized, double-blind, placebo-controlled INEF study. *Atheroscler* 2009 May;204(1):216-21

Olive leaf and **Olive oil** help prevent hypertension and are just as effective as ACE inhibitors but without the dangerous side effects.

- *El & Karakaya: Olive tree (*Olea europaea*) leaves: potential beneficial effects on human health. *Nutr Rev* 2009 Nov;67(11):632-8
- *Perrinjaquet-Moccetti et al: Food supplementation with an olive (*Olea europaea* L.) leaf extract reduces blood pressure in borderline hypertensive monozygotic twins. *Phytother Res* 2008 Aug 27;22(9):1239-1242

*Scheffler et al: Olea europaea leaf extract exerts L-type Ca(2+) channel antagonistic effects. J Ethnopharmacol 2008 Nov 20;120(2):233-40

*Susalit et al: Olive (Olea europaea) leaf extract effective in patients with stage-1 hypertension: comparison with Captopril. Phytomed 2010 Oct 29

Olive oil and Onions improve blood pressure and other conditions.

*Kalus et al: Influence of the onion as an essential ingredient of the Mediterranean diet on arterial blood pressure and blood fluidity. Arzneimittelforschung 2000 Sep;50(9):795-801

Omega-3 fatty acids, found in such foods as fish and flaxseed oil and sacha inchi seeds, lower blood pressure and increase cardiovascular health.

*Duda et al: Fish oil, but not flaxseed oil, decreases inflammation and prevents pressure overload-induced cardiac dysfunction. Immunopharmacol Immunotoxicol 2009;31(2):209-13

*Grassi et al: Blood pressure is reduced and insulin sensitivity increased in glucose-intolerant, hypertensive subjects after 15 days of consuming high-polyphenol dark chocolate. J Nutr 2008 Sep;138(9):1671-6

*Huang et al: Amelioration of insulin resistance and hypertension in a fructose-fed rat model with fish oil supplementation. Metabolism 1997 Nov;46(11):1252-8

*Singh et al: Eicosapentaenoic acid-induced endothelium-dependent and -independent relaxation of sheep pulmonary artery. Eur J Pharmacol 2010 Jun 25;636(1-3):108-13

*Xun et al: Fish oil, selenium and mercury in relation to incidence of hypertension: a 20-year follow-up study. J Intern Med 2010 Dec 10

Orange and Black currant juices improve inflammation markers in those with peripheral arterial disease.

*Dalgård et al: Supplementation with orange and blackcurrant juice, but not vitamin E, improves inflammatory markers in patients with peripheral arterial disease. Br J Nutr 2009 Jan;101(2):263-9

*Ghanim et al: Orange juice neutralizes the proinflammatory effect of a high-fat, high-carbohydrate meal and prevents endotoxin increase and Toll-like receptor expression. Am J Clin Nutr 2010 Apr;91(4):940-9

Papaya reduces blood pressure more effectively than hydralazine. Papaya has antioxidant activity similar to vitamin E.

*Eno et al: Blood pressure depression by the fruit juice of Carica papaya (L.) in renal and DOCA-induced hypertension in the rat. Phytother Res 2000 Jun;14(4):235-9

*Mehdipour et al: Antioxidant potentials of Iranian Carica papaya juice in vitro and in vivo are comparable to alpha-tocopherol. Phytother Res 2006 Jul;20(7):591-4

Phellodendron and Citrus peel improve blood pressure, cholesterol and blood sugar levels.

*Oben et al: Phellodendron and Citrus extracts benefit cardiovascular health in osteoarthritis patients: a double-blind, placebo-controlled pilot study. Nutr J 2008;7:16

Pomegranates reduce blood pressure and LDL oxygenation and prevent the formation of arterial plaque.

*Aviram et al: Pomegranate juice consumption for 3 years by patients with carotid artery stenosis reduces common carotid intima-media thickness, blood pressure and LDL oxidation. Clin Nutr 2004 Jun;23(3):423-33

*de Nigris et al: Effects of a pomegranate fruit extract rich in punicalagin on oxidation-sensitive genes and eNOS activity at sites of perturbed shear stress and atherogenesis. Cardiovasc Res 2007 Jan 15;73(2):414-23

*Mohan et al: Effect of pomegranate juice on Angiotensin II-induced hypertension in diabetic Wistar rats. Phytother Res 2009 Dec 17

Pumpkin seed oil improves the effects of ACE-inhibitors and Calcium-Channel Blockers.

- *Zuhair et al: Pumpkin-seed oil modulates the effect of felodipine and captopril in spontaneously hypertensive rats. *Pharmacol Res* 2000 May;41(5):555-63

Pycnogenol improves diabetes and hypertension and prevents microcirculation damage from medications, often allowing the dosage to be reduced.

- *Belcaro et al: Jet-lag: prevention with Pycnogenol. Preliminary report: evaluation in healthy individuals and in hypertensive patients. *Minerva Cardioangiol* 2008 Oct;56(5 Suppl):3-9
- *Belcaro et al: Control of edema in hypertensive subjects treated with calcium antagonist (nifedipine) or angiotensin-converting enzyme inhibitors with Pycnogenol. *Clin Appl Thromb Hemost* 2006 Oct;12(4):440-4
- *Liu et al: Pycnogenol, French maritime pine bark extract, improves endothelial function of hypertensive patients. *Life Sci* 2004 Jan 2;74(7):855-62
- *Zibadi et al: Reduction of cardiovascular risk factors in subjects with type 2 diabetes by Pycnogenol supplementation. *Nutr Res* 2008 May;28(5):315-20

Quercetin is a citrus bioflavonoid that reduces blood pressure and cholesterol levels.

- *Edwards et al: Quercetin reduces blood pressure in hypertensive subjects. *J Nutr* 2007 Nov;137(11):2405-11
- *Egert et al: Quercetin reduces systolic blood pressure and plasma oxidised low-density lipoprotein concentrations in overweight subjects with a high-cardiovascular disease risk phenotype: a double-blinded, placebo-controlled cross-over study. *Br J Nutr* 2009 Oct;102(7):1065-74

Red Sage is as effective as benazepril in treating heart attacks.

- *He et al: Comparison of cardioprotective effects of salvianolic acid B and benazepril on large myocardial infarction in rats. *Pharmacol Rep* 2008 May-Jun;60(3):369-81
- *He et al: Comparison of cardioprotective effects using salvianolic acid B and benazepril for the treatment of chronic myocardial infarction in rats. *Naunyn Schmiedebergs Arch Pharmacol* 2008 Sep;378(3):311-22

Red Yeast Rice improves arterial health and reduces all-cause mortality. Red Yeast Rice is produced from fermented rice with an added yeast (*Monascus purpureus*), which gives it a reddish hue. RYR is also effective for lowering cholesterol levels since its action is the same as statins but much safer.

- *Li et al: Xuezhikang, an extract of cholestin, decreases plasma inflammatory markers and endothelin-1, improve exercise-induced ischemia and subjective feelings in patients with cardiac syndrome X. *Int J Cardiol* 2007 Oct 31;122(1):82-4
- *Lin et al: Cholestin (*Monascus purpureus* rice) inhibits homocysteine-induced reactive oxygen species generation, nuclear factor-kappaB activation, and vascular cell adhesion molecule-1 expression in human aortic endothelial cells. *Res Commun Mol Pathol Pharmacol* 2006;119(1-6):67-75
- *Wang et al: Effect of red mold rice on antifatigue and exercise-related changes in lipid peroxidation in endurance exercise. *Appl Microbiol Biotechnol* 2006 Mar;70(2):247-53
- *Ye et al: Effect of xuezhikang on cardiovascular events and mortality in elderly patients with a history of myocardial infarction: a subgroup analysis of elderly subjects from the China Coronary Secondary Prevention Study. *J Am Geriatr Soc* 2007 Jul;55(7):1015-22

Stevia, an herb that is 200 times sweeter than table sugar, is often used by diabetics and non-diabetics alike because of its health benefits and no calories. One of the health benefits is that it helps lower blood pressure.

- *Chan et al: A double-blind placebo-controlled study of the effectiveness and tolerability of oral stevioside in human hypertension. *Br J Clin Pharmacol* 2000 Sep;50(3):215-20

*Hsieh et al: Efficacy and tolerability of oral stevioside in patients with mild essential hypertension: a two-year, randomized, placebo-controlled study. *Clin Ther* 2003 Nov;25(11):2797-808

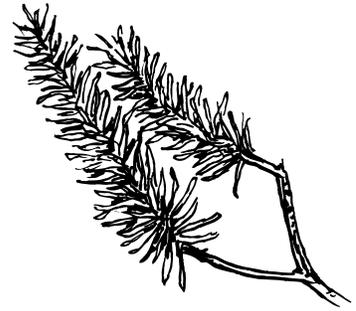
*Jeppesen et al: Antihyperglycemic and blood pressure-reducing effects of stevioside in the diabetic Goto-Kakizaki rat. *Metabol* 2003 Mar;52(3):372-8

Vitamin D3 deficiency contributes to hypertension.

*Pilz & Tomaschitz: Role of vitamin D in arterial hypertension. *Expert Rev Cardiovasc Ther* 2010 Nov;8(11):1599-608

Watermelon improves aortic blood pressure in those with prehypertension.

*Figuroa et al: Effects of watermelon supplementation on aortic blood pressure and wave reflection in individuals with prehypertension: a pilot study. *Am J Hypertens* 2011 Jan;24(1):40-4



BLOOD THINNERS/ ANTI-COAGULANTS/ANTI-PLATELETS

(USED TO PREVENT BLOOD CLOTS, THROMBOSIS, EMBOLISMS, AND STROKES)

COMMON EXAMPLES:

aspirin (see Analgesics for more Depletions)

dipyridamole – Persantine and others

heparin

warfarin – Coumadin and others

antiplatelets

abciximab – ReoPro

cilostazol - Pletal

thrombolytics

alteplase – Activase, Cathflo

DEplete:

K, iron, zinc, digestive enzymes, CoQ10

HERBS AND NUTRIENTS WITH BLOOD THINNING PROPERTIES:

Alfalfa

Aniseed

Arnica

Asafoetida

Cayenne

Chamomile

Clove

Feverfew

Garlic

Ginger

Ginkgo

Ginseng

Horse chestnut
Licorice root
Papain
Red clover
St John's wort
White willow bark (aspirin)

HERBS AND NUTRIENTS THAT THICKEN THE BLOOD (HEMOSTATIC):

Bayberry
Beet root
Blackberry
Burdock
Devil's claw
Horsetail
Mullein
Nettle
Quinine
Shepherd's Purse
Vitamins A, C, and K
Yarrow

- ☞ Even though blood thinners deplete vitamin K, a supplement should not be taken without your doctor's approval. That said, the following study does show that a vitamin K supplement improves anti-coagulant therapy and reduces its side effects.

*Rombouts et al: Daily vitamin K supplementation improves anticoagulant stability. *J Thromb Haemost* 2007 Oct;5(10):2043-8

- ☞ **Echinacea** can significantly reduce blood levels of warfarin without affecting warfarin's action, platelet aggregation or baseline clotting status in healthy subjects.

*Abdul et al: Pharmacokinetic and pharmacodynamic interactions of echinacea and policosanol with warfarin in healthy subjects. *J Ethnopharmacol* 2006 Jul 19;106(3):321-6

- ☞ **Goji berries (Wolfberry), Noni fruit, and Pomegranates** are nourishing fruits that provide numerous health benefits but they may interact with warfarin.

*Carrl et al: Coumadin resistance and the vitamin supplement "Noni". *Am J Hem* 2004 Sept;77(1):103

*Komperda: Potential interaction between pomegranate juice and warfarin. *Pharmacotherapy* 2009 Aug;29(8):1002-6

*Lam et al: Possible interaction between warfarin and Lycium barbarum L. *Ann Pharmacother* 2001 Oct;35(10):1199-1201

- ☞ **Statin drugs alter platelet function.**

*Puccetti et al: Time-dependent effect of statins on platelet function in hypercholesterolaemia. *Eur J Clin Invest* 2002 Dec;32(12):901-8

⌘ **Blood thinners** (Warfarin) should not be used for those with atrial fibrillation because they increase the risk of stroke.

*Gottlieb & Salem-Schatz: Anticoagulation in atrial fibrillation. Does efficacy in clinical trials translate into effectiveness in practice? *Arch Intern Med* 1994 Sep12;154(17):1945-53

*Lam et al: Alternatives to chronic warfarin therapy for the prevention of stroke in patients with atrial fibrillation. *Int J Cardiol* 2010 Nov 26

*Yang et al: Warfarin in haemodialysis patients with atrial fibrillation: what benefit? *Europace* 2010 Dec;12(12):1666-72

SUGGESTED ALTERNATIVES:

Apigenin, a flavonoid found in a variety of foods, has anti-platelet effects. When platelets clump together (aggregation), this action can restrict blood flow.

*Navarro-Núñez et al: Apigenin inhibits platelet adhesion and thrombus formation and synergizes with aspirin in the suppression of the arachidonic acid pathway. *J Agric Food Chem* 2008 May 14;56(9):2970-6

Arnica, a pain-relieving homeopathic remedy, is safe to use if on blood thinners.

*Baillargeon et al: The effects of Arnica Montana on blood coagulation. Randomized controlled trial. *Can Fam Physician* 1993 Nov;39:2362-7

Beetroot has anti-platelet activity.

*Webb et al: Acute blood pressure lowering, vasoprotective, and antiplatelet properties of dietary nitrate via bioconversion to nitrite. *Hyperten* 2008 Mar;51(3):784-90

Bromelain is an enzyme derived from Pineapple that has anti-inflammatory effects as well as anti-platelet properties.

*Gläser & Hilberg: The influence of bromelain on platelet count and platelet activity in vitro. *Platelets* 2006 Feb;17(1):37-41

*Metzig et al: Bromelain proteases reduce human platelet aggregation in vitro, adhesion to bovine endothelial cells and thrombus formation in rat vessels in vivo. *In Vivo* 1999 Jan-Feb;13(1):7-12

Carrot extract inhibits platelet aggregation (clumping).

*Yamamoto et al: The antithrombotic effects of carrot filtrates in rats and mice. *Blood Coagul Fibrinolysis* 2008 Dec;19(8):785-92

Cloves are safer and more effective than heparin or aspirin as a blood thinner.

*Lee et al: Purification and characterization of antithrombotics from *Syzygium aromaticum* (L.). *Biol Pharm Bull* 2001 Feb;24(2):181-7

*Srivastava: Antiplatelet principles from a food spice clove (*Syzygium aromaticum* L) [corrected]. *Prostaglandins Leukot Essent Fatty Acids* 1993 May;48(5):363-72

Coleus forskohlii is an Ayurvedic plant that has several health benefits including anti-platelet activity, especially on tumour-induced platelet aggregation.

*Agarwal & Parks: Forskolin: a potential antimetastatic agent. *Int J Cancer* 1983 Dec 15;32(6):801-4

Cordyceps mushrooms have anti-platelet activity.

*Cho et al: Cordycepin (3'-deoxyadenosine) inhibits human platelet aggregation induced by U46619, a TXA2 analogue. *J Pharm Pharmacol* 2006 Dec;58(12):1677-82

Cumin seed and Turmeric inhibit platelet aggregation

*Srivastava: Extracts from two frequently consumed spices--cumin (*Cuminum cyminum*) and turmeric (*Curcuma longa*)--inhibit platelet aggregation and alter eicosanoid biosynthesis in human blood platelets. *Prostaglandins Leukot Essent Fatty Acids* 1989 Jul;37(1):57-64

Dark Chocolate is a rich source of flavonoids that inhibits negative platelet activity.

*Bordeaux et al: Casual chocolate consumption and inhibition of platelet function. *Prev Cardiol* 2007;10(4):175-80

*Flammer et al: Dark chocolate improves coronary vasomotion and reduces platelet reactivity. *Circulation* 2007 Nov 20;116(21):2376-82

*Hamed et al: Dark chocolate effect on platelet activity, C-reactive protein and lipid profile: a pilot study. *Neurotoxicol Teratol* 1999 Jul-Aug;21(4):349-57

*Murphy et al: Dietary flavanols and procyanidin oligomers from cocoa (*Theobroma cacao*) inhibit platelet function. *Am J Clin Nutr* 2003 Jun;77(6):1466-73

Essential oils [Lavender, Fennel or a topical Wintergreen] reduce platelet aggregation.

*Ballabeni et al: Novel antiplatelet and antithrombotic activities of essential oil from *Lavandula hybrida* Reverchon "grosso". *Phytomed* 2004 Nov;11(7-8):596-601

*Tanen & Riffenburgh: Comparison of oral aspirin versus topical applied methyl salicylate for platelet inhibition. *Reprod Toxicol* 2002 May-Jun;16(3):237-43

*Tognolini et al: Protective effect of *Foeniculum vulgare* essential oil and anethole in an experimental model of thrombosis. *Pharmacol Res* 2007 Sep;56(3):254-60

Ginkgo biloba enhances the effects of cilostazol without it affecting bleeding time.

*Ryu et al: Ginkgo biloba extract enhances antiplatelet and antithrombotic effects of cilostazol without prolongation of bleeding time. *Nutr Cancer* 2005;51(1):52-8

Grapes have significant antioxidant content and effect, inhibiting platelet aggregation. Grape juice was proven to be significantly higher in a particular polyphenol than either red wine or non-alcoholic wine. Buy only **organically**-grown grapes as conventionally grown grapes are high on the list of foods that contain large numbers of pesticides.

*Bub et al: Malvidin-3-glucoside bioavailability in humans after ingestion of red wine, dealcoholized red wine and red grape juice. *Eur J Nutr* 40(3):113-120

*Demrow et al: Administration of wine and grape juice inhibits in vivo platelet activity and thrombosis in stenosed canine coronary arteries. *Circ* 1995;91:1182-1188

*Keevil et al: Grape juice, but not orange juice or grapefruit juice, inhibits human platelet aggregation. *J Nutr* 2000;130:53-56

*Meng et al: Urinary and plasma levels of resveratrol and quercetin in humans, mice, and rats after ingestion of pure compounds and grape juice. *J Agric Food Chem* 2004;52(4):935-942

*Osman et al: Grape juice but not orange or grapefruit juice inhibits platelet activity in dogs and monkeys (*Macaca fascicularis*). *J Nut* 1998, Dec;128(12):2307-2312

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Japanese Apricots improve blood flow without the need of blood thinners.

*Chuda et al: Mumefural, citric acid derivative improving blood fluidity from fruit-juice concentrate of Japanese apricot (*Prunus mume* Sieb. et Zucc. *J Agric Food Chem* 1999 Mar;47(3):828-31

Kiwifruit reduces platelet aggregation and blood triglycerides.

*Duttaroy & Jørgensen: Effects of kiwi fruit consumption on platelet aggregation and plasma lipids in healthy human volunteers. *J Altern Complement Med* 2010 May;16(5):555-60

Melatonin may be effective in treating severe bleeding associated with low platelets that occur for no apparent reason.

- *Todisco et al: Severe bleeding symptoms in refractory idiopathic thrombocytopenic purpura: a case successfully treated with melatonin. *Am J Ther* 2003 Mar-Apr;10(2):135-6
- *Todisco & Rossi: Melatonin for refractory idiopathic thrombocytopenic purpura: a report of 3 cases. *Am J Ther* 2002 Nov-Dec;9(6):524-6
- *Todisco & Rossi: Melatonin for refractory idiopathic thrombocytopenic purpura: a report of 3 cases. *Jpn J Pharmacol* 2001 Dec;87(4):327-32

Nattokinase is an enzyme that decreases blood levels of fibrinogen (which plays a central role in platelet aggregation).

- *Hsia et al: Nattokinase decreases plasma levels of fibrinogen, factor VII, and factor VIII in human subjects. *Andrologia* 2010 Jun;42(3):182-6
- *Hsia et al: Nattokinase decreases plasma levels of fibrinogen, factor VII, and factor VIII in human subjects. *Nutr Res* 2009 Mar;29(3):190-6
- *Suzuki et al: Dietary supplementation with fermented soybeans suppresses intimal thickening. *Nutrition* 2003 Mar;19(3):261-4

Olive leaf has anti-platelet activity.

- *Singh et al: The effects of polyphenols in olive leaves on platelet function. *Nutr Metab Cardiovasc Dis* 2008 Feb;18(2):127-32

Onions and **Olive oil** (in a Mediterranean diet) improve blood flow and general cardio health.

- *Kalus et al: Influence of the onion as an essential ingredient of the Mediterranean diet on arterial blood pressure and blood fluidity. *Arzneimittelforschung* 2000 Sep;50(9):795-801

Parsley may inhibit platelet aggregation (clumping together) but it also prolongs bleeding time, an important factor for those taking blood thinners.

- *Gadi et al: Parsley extract inhibits in vitro and ex vivo platelet aggregation and prolongs bleeding time in rats. *J Ethnopharmacol* 2009 May 23

Policosanol (20 mg) is as effective as 100 mg of aspirin a day. It is superior to Lipitor (for Cholesterol) for improving blood lipid profiles and inhibiting platelet aggregation.

- *Arruzazabala et al: Comparative study of policosanol, aspirin and the combination therapy policosanol-aspirin on platelet aggregation in healthy volunteers. *Pharmacol Res* 1997 Oct;36(4):293-7
- *Castaño et al: Comparison of the effects of policosanol and atorvastatin on lipid profile and platelet aggregation in patients with dyslipidaemia and type 2 diabetes mellitus. *Clin Drug Investig* 2003;23(10):639-50

Prickly Pear prevents platelets from clumping together.

- *Wolfram et al: Daily prickly pear consumption improves platelet function. *Prostaglandins Leukot Essent Fatty Acids* 2003 Jul;69(1):61-6

Probiotics protect the bowel from aspirin-induced injury.

- *Endo et al: Efficacy of *Lactobacillus casei* treatment on small bowel injury in chronic low-dose aspirin users: a pilot randomized controlled study. *J Gastroenterol* 2011 May 10

Pycnogenol (pine bark extract) reduces platelet aggregation as effectively as aspirin with far less prolonged bleeding time.

- *Nocun et al: French maritime pine bark extract Pycnogenol reduces thromboxane generation in blood from diabetic male rats. *Biomed Pharmacother* 2008 Mar;62(3):168-72
- *Pütter et al: Inhibition of smoking-induced platelet aggregation by aspirin and pycnogenol. *Thromb Res* 1999 Aug 15;95(4):155-61

Resveratrol is a potent antioxidant found in the skins of red grapes that has anti-platelet activity. Contrary to popular belief, there are only miniscule amounts of resveratrol in red wine.

- *Bertelli et al: Antiplatelet activity of cis-resveratrol. *Drugs Exp Clin Res* 1996;22(2):61-3
- *Lin et al: Mechanisms of resveratrol-induced platelet apoptosis. *Cardiovasc Res* 2009 Aug 1;83(3):575-85
- *Yang et al: Inhibitory effects of resveratrol on platelet activation induced by thromboxane a(2) receptor agonist in human platelets. *Am J Chin Med* 2011;39(1):145-59

Rutaecarpine, a substance found in the *Evodia rutaecarpa* herb, has anti-platelet action.

- *Sheu et al: Antithrombotic effect of rutaecarpine, an alkaloid isolated from *Evodia rutaecarpa*, on platelet plug formation in in vivo experiments. *Br J Haematol* 2000 Jul;110(1):110-5

Sea Buckthorn (noted for its rare Omega-7 content) has anti-platelet effects.

- *Johansson et al: Sea buckthorn berry oil inhibits platelet aggregation. *J Nutr Biochem* 2000 Oct;11(10):491-5

Sesame oil has anti-platelet activity.

- *Chang et al: Potent antiplatelet activity of sesamol in an in vitro and in vivo model: pivotal roles of cyclic AMP and p38 mitogen-activated protein kinase. *J Nutr Biochem* 2010 Dec ;21(12):1214-21

Shiitake mushrooms have anti-platelet effects.

- *Shimada et al: Inhibitory activity of shiitake flavor against platelet aggregation. *Biofactors* 2004;22(1-4):177-9

Spices (Tarragon, Savory, Marjoram) have anti-platelet activity.

- *Shahriyary & Yazdanparast: Inhibition of blood platelet adhesion, aggregation and secretion by *Artemisia dracunculus* leaves extracts. *J Ethnopharmacol* 2007 Nov 1;114(2):194-8
- *Yazdanparast & Shahriyary: Comparative effects of *Artemisia dracunculus*, *Satureja hortensis* and *Origanum majorana* on inhibition of blood platelet adhesion, aggregation and secretion. *Biochim Biophys Acta* 2007 Apr;1770(4):578-84

Wasabi root (cabbage family) inhibits platelet aggregation.

- *Morimitsu et al: Antiplatelet and anticancer isothiocyanates in Japanese domestic horseradish, wasabi. *Biofactors* 2000;13(1-4):271-6

Yucca is a flowering desert plant that has anti-platelet activity stronger than Resveratrol.

- *Olas et al: Anti-platelet effects of different phenolic compounds from *Yucca schidigera* Roezl. *Bark. Platelets* 2002 May;13(3):167-73
- *Olas et al: Inhibition of oxidative stress in blood platelets by different phenolics from *Yucca schidigera* Roezl. *Bark. Nutrition* 2003 Jul-Aug;19(7-8):633-40



BRONCHODILATORS

(USED TO TREAT ASTHMA OR COPD)

COMMON EXAMPLES:

- albuterol** – Asmol, Proventil, Ventolin, and others
- aminophylline** – Truphylline
- bitolterol** – Tornalate
- diphylline** – Lufyllin
- ephedrine**
- epinephrine** – Bronkaid, EpiPen, and others
- fluticasone** (steroid) – Flonase, Flovent
- ipratropium** – Apo-Ipravent, Atrovent, and others
- isoproterenol** – Isuprel
- levalbuterol** – Xopenex
- metaproterenol** – Alupent
- montelukast** – Singulair
- oxtriphylline** – Choledyl SA
- pirbuterol** – Maxair
- salmeterol** – Serevent
- terbutaline** – Brethine, Brethair and others
- theophylline** – Slobid, Theo-Dur, Theo24, Theolair, and others

DEplete:

B1, B6, B9, C, iodine, magnesium, potassium, selenium, and most other minerals

☞ **Antibiotics** have no effect on childhood bronchiolitis, a common upper respiratory illness caused by a virus. In fact, antibiotics end up severely disrupting the immune and digestive systems.

*Spurling et al: Antibiotics for bronchiolitis in children. Cochrane Database Syst Rev 2011(6):CD005189

☞ **Stimulants** should never be taken with bronchodilators or any other type of medication. The combination can increase the heart rate to dangerous levels. Stimulants include caffeinated herbs or beverages, cough and cold medications, ginsengs, licorice root, bitter orange, grilled meats, sugar, and alcohol.

*Cohen, 2011:43

SUGGESTED ALTERNATIVES:

Angelica and Rehmannia, a Chinese herbal formula, improves COPD (chronic obstructive pulmonary disease) symptoms.

*Cui et al: Intervention effect of tongfei mixture on nocturnal hypoxia in patients with chronic obstructive pulmonary disease. *Phytother Res* 2008 Aug 11

Antioxidants improve COPD and strengthen the lungs which help prevent pneumonia, especially in children.

*Cemek et al: Oxidative stress and enzymic-non-enzymic antioxidant responses in children with acute pneumonia. *Cell Biochem Funct* 2006 May-Jun;24(3):269-73

*Rahman: Antioxidant therapies in COPD. *Int J Chron Obstruct Pulmon Dis* 2006;1(1):15-29

*Theilla et al: A diet enriched in eicosapentanoic acid, gamma-linolenic acid and antioxidants in the prevention of new pressure ulcer formation in critically ill patients with acute lung injury: A randomized, prospective, controlled study. *Clin Nutr* 2007 Dec;26(6):752-7

*Valenca et al: Supplementation with vitamins C and E improves mouse lung repair. *J Nutr Biochem* 2008 Sep;19(9):604-11

Apigenin, a flavonoid found in leafy plants, protects against asthma.

*Choi et al: Apigenin protects ovalbumin-induced asthma through the regulation of GATA-3 gene. *Int Immunopharmacol* 2009 Jul;9(7-8):918-24

Arginine, an amino acid, helps prevent airway inflammation common in asthma.

*Mabalirajan et al: Beneficial effects of high dose of L-arginine on airway hyperresponsiveness and airway inflammation in a murine model of asthma. *J Allergy Clin Immunol* 2010 Mar;125(3):626-35

Asian Pear pectins suppresses allergic breathing reactions.

*Lee et al: Asian pear pectin administration during presensitization inhibits allergic response to ovalbumin in BALB/c mice. *J Altern Complement Med* 2004 Jun;10(3):527-34

Astragalus is an herb often used for adrenal support and its stress-reducing properties also inhibits hypoxic pulmonary hypertension.

*Xi et al: The inhibitory effects of Radix Astragali on hypoxic pulmonary hypertension of rats. *Nutr J* 2008;7:11

Bamboo extract reduces airway inflammation often seen in breathing problems.

*Ra et al: Bambusae Caulis in Taeniam extract reduces ovalbumin-induced airway inflammation and T helper 2 responses in mice. *J Ethnopharmacol* 2010 Mar 2;128(1):241-7

B6 significantly improves bronchial asthma in children. (see Appendix for a list of B vitamins according to name and number)

*Collipp et al: Pyridoxine treatment of childhood bronchial asthma. *Ann Allergy* 1975 Aug;35(2):93-7

Bayberry inhibits hypersensitive reactions.

*Patel et al: Evaluation of bronchodilator and anti-anaphylactic activity of Myrica sapida. *Iran Biomed J* 2008 Jul;12(3):191-6

Black Cumin seed extract proves superior to fluticasone in treating asthma.

*Boskabady et al: Antiasthmatic effect of Nigella sativa in airways of asthmatic patients. *Phytomed* 2010 Feb 8

*Boskabady et al: The possible prophylactic effect of Nigella sativa seed extract in asthmatic patients. *An Med Interna* 1995 Oct;12(10):501-2

*Keyhanmanesh et al: The effect of thymoquinone, the main constituent of *Nigella sativa* on tracheal responsiveness and white blood cell count in lung lavage of sensitized guinea pigs. *J Ethnopharmacol* 2009 Oct 29;126(1):102-7

*Mansour & Tornhamre: Inhibition of 5-lipoxygenase and leukotriene C4 synthase in human blood cells by thymoquinone. *J Enzyme Inhib Med Chem* 2004 Oct;19(5):431-6

Borage oil, known for its high GLA content, helps treat asthma.

*Ziboh et al: Suppression of leukotriene B4 generation by ex-vivo neutrophils isolated from asthma patients on dietary supplementation with gammalinolenic acid-containing borage oil: possible implication in asthma. *Clin Dev Immunol* 2004 Mar;11(1):13-21

Boswellia (Frankincense) significantly improves bronchial asthma.

*Ammon: Modulation of the immune system by *Boswellia serrata* extracts and boswellic acids. *Phytomed* 2010 Sep;17(11):862-7

*Gupta et al: Effects of *Boswellia serrata* gum resin in patients with bronchial asthma: results of a double-blind, placebo-controlled, 6-week clinical study. *Eur J Med Res* 1998 Nov 17;3(11):511-4

Bromelain decreases airway inflammation in asthmatics.

*Secor et al: Oral bromelain attenuates inflammation in an ovalbumin-induced murine model of asthma. *Evid Based Complement Alternat Med* 2008 Mar;5(1):61-9

*Secor et al: Bromelain exerts anti-inflammatory effects in an ovalbumin-induced murine model of allergic airway disease. *Cell Immunol* 2005 Sep;237(1):68-75

Brown Rice extract suppresses airway inflammation.

*Lee et al: Effect of *Oryza sativa* extract on the progression of airway inflammation and remodeling in an experimental animal model of asthma. *Planta Med* 2006 Apr;72(5):405-10

Butterbur is a safe and effective anti-inflammatory herb that helps treat asthma.

*Danesch: *Petasites hybridus* (Butterbur root) extract in the treatment of asthma--an open trial. *Altern Med Rev* 2004 Mar;9(1):54-62

*Lee et al: Butterbur, a herbal remedy, confers complementary anti-inflammatory activity in asthmatic patients receiving inhaled corticosteroids. *Clin Exp Allergy* 2004 Jan;34(1):110-4

*Lin et al: Bronchodilatory effects of S-isopetasin, an antimuscarinic sesquiterpene of *Petasites formosanus*, on obstructive airway hyperresponsiveness. *Neoplasma* 2006;53(5):402-9

Capsaicin (found in chili peppers) significantly reduces sinus polyps which can affect breathing ability.

*Baudoin et al: Capsaicin significantly reduces sinonasal polyps. *Acta Otolaryngol* 2000 Mar;120(2):307-11

Carotenoids have anti-pulmonary fibrosis effects.

*Zhou et al: Inhibitory effects of citrus extracts on the experimental pulmonary fibrosis. *J Ethnopharmacol* 2009 Oct 29;126(1):143-8

Catnip offers support to the airway as an antispasmodic and anti-inflammatory.

*Gilani et al: Chemical composition and mechanisms underlying the spasmolytic and bronchodilatory properties of the essential oil of *Nepeta cataria* L. *Neurosci Lett* 2011 Jan 3;487(1):70-2

Cat's Claw is an herb often used to support the immune system but it also helps reduce lung inflammation.

*Cisneros et al: An *Uncaria tomentosa* (cat's claw) extract protects mice against ozone-induced lung inflammation. *J Ethnopharmacol* 2005 Jan 15;96(3):355-64

Chinese Skullcap improves asthmatic conditions.

- *Huang et al: Primary study on mechanism of baicalin on the Th1/Th2 response in murine model of asthma. *Zhong Yao Cai* 2009 Sep;32(9):1407-10

Cordyceps mushrooms reduce airway inflammation and improve lung function even in such conditions as cystic fibrosis.

- *Lin et al: Effects of fermented Cordyceps powder on pulmonary function in sensitized guinea pigs and airway inflammation in sensitized rats. *Zhongguo Zhong Yao Za Zhi* 2001 Sep;26(9):622-5
- *Wang et al: Effect of dongchong xiacao capsule on airway inflammation of asthmatic patients. *J Hypertens* 2005 Sep;23(9):1699-706
- *Yue et al: Effects of Cordyceps sinensis, Cordyceps militaris and their isolated compounds on ion transport in Calu-3 human airway epithelial cells. *J Ethnopharmacol* 2008 Apr 17;117(1):92-101

Creatine is a supplement well known to body builders but it also has other qualities important to those with muscular diseases or neurotoxic disorders including Parkinson's or Huntington's. In addition, Creatine is proving to be a useful treatment for those with COPD and safely taken by diabetics and those on dialysis.

- *Fuld et al: Creatine supplementation during pulmonary rehabilitation in chronic obstructive pulmonary disease. *Thorax* 2005 Jul;60(7):531-7
- *Gualano et al: Creatine supplementation does not impair kidney function in type 2 diabetic patients: a randomized, double-blind, placebo-controlled, clinical trial. *Eur J Appl Physiol* 2010 Oct 26
- *Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40

Creatine, Carnitine, and Amino acids improve the conditions of those with COPD.

- *Villaga et al: New treatments for chronic obstructive pulmonary disease using ergogenic aids. *J Bras Pneumol* 2006 Jan-Feb;32(1):66-74

Curcumin (the active part of **Turmeric**) slows the development of inflammation and allergic reactions.

- *Chen et al: Effect of curcumin on the expression of collagen type I protein and transforming growth factor-beta1mRNA in pulmonary fibrosis rats. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi* 2008 May;26(5):257-61
- *Kobayashi et al: Curcumin inhibition of Dermatophagoides farinea-induced interleukin-5 (IL-5) and granulocyte macrophage-colony stimulating factor (GM-CSF) production by lymphocytes from bronchial asthmatics. *Biochem Pharmacol* 1997 Oct 1;54(7):819-24
- *Kurup & Barrios: Immunomodulatory effects of curcumin in allergy. *Mol Nutr Food Res* 2008 Sep;52(9):1031-9
- *Marwick et al: Oxidative stress and steroid resistance in asthma and COPD: pharmacological manipulation of HDAC-2 as a therapeutic strategy. *Expert Opin Ther Targets* 2007 Jun;11(6):745-55
- *Moon et al: Curcumin attenuates ovalbumin-induced airway inflammation by regulating nitric oxide. *Biochem Biophys Res Commun* 2008 Oct 17;375(2):275-9
- *Oh et al: Curcumin attenuates allergic airway inflammation and hyper-responsiveness in mice through NF-κB inhibition. *J Ethnopharmacol* 2010 Jul 17
- *Ram et al: Curcumin attenuates allergen-induced airway hyperresponsiveness in sensitized guinea pigs. *Biol Pharm Bull* 2003 Jul;26(7):1021-4
- *Venkatesan et al: Protection from acute and chronic lung diseases by curcumin. *Adv Exp Med Biol* 2007;595:379-405

Dandelion has lung-protective properties.

- *Liu et al: Taraxacum officinale protects against lipopolysaccharide-induced acute lung injury in mice. *J Ethnopharmacol* 2010 Jul 20;130(2):392-7

Diet plays a significant role in developing and reversing asthma and other breathing problems such as pulmonary fibrosis (lung scarring) and COPD. A diet rich in fruits, vegetables, and fiber is the key.

- *Hirayama et al: Do vegetables and fruits reduce the risk of chronic obstructive pulmonary disease? A case-control study in Japan. *Prev Med* 2009 Aug-Sep;49(2-3):184-9
- *Miyake et al: Vegetable, fruit, and cereal intake and risk of idiopathic pulmonary fibrosis in Japan. *Ann Nutr Metab* 2004 Nov-Dec;48(6):390-7
- *Romieu & Trenga: Diet and obstructive lung diseases. *Epidemiol Rev* 2001;23(2):268-87
- *Spector & Surette: Diet and asthma: has the role of dietary lipids been overlooked in the management of asthma. *Ann Allergy Asthma Immunol* 2003 Apr;90(4):371-7;quiz 377-8,421
- *Tabak et al: Chronic obstructive pulmonary disease and intake of catechins, flavonols, and flavones: the MORGEN Study. *Am J Respir Crit Care Med* 2001 Jul 1;164(1):61-4
- *Varraso et al: Prospective study of dietary fiber and risk of chronic obstructive pulmonary disease among US women and men. *Am J Epidemiol* 2010 Feb 19

Essential oils improve breathing and, as antimicrobials, also kill any virus or bacteria that may be the cause. Particularly effective are Eucalyptus, Peppermint, Pine, Rose, Spruce, Wintergreen, Raven, and RC.

- *Boskabady et al: Relaxant effects of Rosa damascena on guinea pig tracheal chains and its possible mechanism(s). *J Ethnopharmacol* 2006 Jul 19;106(3):377-82
- *Higley 2010:460-61

Fish oil (alone or with **Vitamin C** and **Zinc**) is as effective as montelukast in reducing the severity of airway constriction. The combination is especially beneficial to children.

- *Biltagi et al: Omega-3 fatty acids, vitamin C and Zn supplementation in asthmatic children: a randomized self-controlled study. *Acta Paediatr* 2009 Apr;98(4):737-42
- *Nagakura et al: Dietary supplementation with fish oil rich in omega-3 polyunsaturated fatty acids in children with bronchial asthma. *Eur Respir J* 2000 Nov;16(5):861-5
- *Tecklenburg-Lund et al: Randomized controlled trial of fish oil and montelukast and their combination on airway inflammation and hyperpnea-induced bronchoconstriction. *PLoS One* 2010;5(10):e13487

Genistein (a soy isoflavone) reduces airway inflammation.

- *Kalhan et al: A mechanism of benefit of soy genistein in asthma: inhibition of eosinophil p38-dependent leukotriene synthesis. *Clin Exp Allergy* 2008 Jan;38(1):103-12
- *Smith et al: Dietary intake of soy genistein is associated with lung function in patients with asthma. *J Asthma* 2004;41(8):833-43

Ginkgo, Vitamin C and **Astaxanthin** prove better than ibuprofen for reducing respiratory inflammation.

- *Haines et al: Summative interaction between astaxanthin, Ginkgo biloba extract (EGb761) and vitamin C in suppression of respiratory inflammation: a comparison with ibuprofen. *Phytother Res* 2011 Jan;25(1):128-36
- *No authors listed: In vitro effects of astaxanthin combined with ginkgolide B on T lymphocyte activation in peripheral blood mononuclear cells from asthmatic subjects. *J Pharmacol Sci* 2004 Feb;94(2):129-36
- *Tang et al: The effect of Ginkgo Biloba extract on the expression of PKC α in the inflammatory cells and the level of IL-5 in induced sputum of asthmatic patients. *J Huazhong Univ Sci Technolog Med Sci* 2007 Aug;27(4):375-80

Green mussel extract has anti-inflammatory effects that benefit asthmatics.

- *Emelyanov et al: Treatment of asthma with lipid extract of New Zealand green-lipped mussel: a randomised clinical trial. *Toxicol* 2010 Dec 21

*Halpern: Anti-inflammatory effects of a stabilized lipid extract of *Perna canaliculus* (Lyprinol). *Allerg Immunol (Paris)* 2000 Sep;32(7):272-8

Ivy leaf and Thyme are helpful in treating acute bronchitis.

*Kemmerich et al: Efficacy and tolerability of a fluid extract combination of thyme herb and ivy leaves and matched placebo in adults suffering from acute bronchitis with productive cough. A prospective, double-blind, placebo-controlled clinical trial. *Arzneimittelforschung* 2006;56(9):652-60

Kaempferol (a flavonoid found in a variety of foods) is a potent anti-inflammatory especially for reducing airway constriction.

*Medeiros et al: Preventive and curative glycoside kaempferol treatments attenuate the TH2-driven allergic airway disease. *Int Immunopharmacol* 2009 Sep 12

Kava kava is a potent anti-inflammatory but not available in Canada despite its beneficial health properties.

*Folmer et al: Inhibition of TNF α -induced activation of nuclear factor kappaB by kava (*Piper methysticum*) derivatives. *Biochem Pharmacol* 2006 Apr 14;71(8):1206-18

Loquat leaf extract improves chronic bronchitis.

*Ge et al: Anti-inflammatory effect of triterpenic Acids of *Eriobotrya japonica* (Thunb.) Lindl. leaf on rat model of chronic bronchitis. *Am J Chin Med* 2009;37(2):309-21

*Huang et al: Effect of triterpene acids of *Eriobotrya japonica* (Thunb.) Lindl. leaf on inflammatory cytokine and mediator induction from alveolar macrophages of chronic bronchitic rats. *Inflamm Res* 2007 Feb;56(2):76-82

*Huang et al: Effect of triterpene acids of *Eriobotrya japonica* (Thunb.) Lindl. leaf and MAPK signal transduction pathway on inducible nitric oxide synthase expression in alveolar macrophage of chronic bronchitis rats. *Am J Chin Med* 2009;37(6):1099-111

Lycopene is beneficial to asthmatics.

*Wood et al: Lycopene-rich treatments modify noneosinophilic airway inflammation in asthma: proof of concept. *Free Radic Res* 2008 Jan;42(1):94-102

Magnesium improves airway function during bronchial spasms in adults and children. Magnesium can also improve the function of such steroids as fluticasone, which, ironically, depletes this mineral.

*Alter et al: Intravenous magnesium as an adjuvant in acute bronchospasm: a meta-analysis. *Ann Emerg Med* 2000 Sep;36(3):191-7

*Ciarallo et al: Higher-dose intravenous magnesium therapy for children with moderate to severe acute asthma. *Arch Pediatr Adolesc Med* 2000 Oct;154(10):979-83

*Gontijo-Amaral et al: Oral magnesium supplementation in asthmatic children: a double-blind randomized placebo-controlled trial. *Eur J Clin Nutr* 2007 Jan;61(1):54-60

*Kazaks et al: Effect of oral magnesium supplementation on measures of airway resistance and subjective assessment of asthma control and quality of life in men and women with mild to moderate asthma: a randomized placebo controlled trial. *J Asthma* 2010 Feb;47(1):83-92

Moringa oleifera (The Miracle Tree) seed extract is effective in treating asthma.

*Mahajan et al: Effect of *Moringa oleifera* Lam. seed extract on toluene diisocyanate-induced immune-mediated inflammatory responses in rats. *Drugs* 2003;63(1):71-100

Mugwort is an herb long been used to treat upper respiratory conditions.

*Khan & Gilani: Antispasmodic and bronchodilator activities of *Artemisia vulgaris* are mediated through dual blockade of muscarinic receptors and calcium influx. *J Ethnopharmacol* 2009 Sep 12

Mullein has a long history of treating lung disorders.

- *Tatli et al: Anti-inflammatory and antinociceptive potential of major phenolics from *Verbascum thapsus* L. *Z Naturforsch [C]* 2008 Mar-Apr;63(3-4):196-202
- *Turker & Gurel: Common mullein (*Verbascum thapsus* L.): recent advances in research. *Phytother Res* 2005 Sep;19(9):733-9

Myrica sapida is used in Ayurvedic medicine as a bronchodilator.

- *Patel et al: Evaluation of bronchodilator and anti-anaphylactic activity of *Myrica sapida*. *Iran Biomed J* 2008 Jul;12(3):191-6
- *Patel et al: Evaluation of the effect of *Myrica sapida* on bronchoconstriction and bronchial hyperreactivity. *Pharmazie* 2008 Apr;63(4):312-6

Nasturtium and **Horseradish** are effective for treating upper respiratory conditions.

- *Goos et al: Efficacy and safety profile of a herbal drug containing nasturtium herb and horseradish root in acute sinusitis, acute bronchitis and acute urinary tract infection in comparison with other treatments in the daily practice/results of a prospective cohort study. *Arzneimittelforschung* 2006;56(3):249-57

Olive oil consumption during pregnancy is associated with decreased wheezing during the first year of an infant's life.

- *Castro-Rodriguez et al: Olive oil during pregnancy is associated with reduced wheezing during the first year of life of the offspring. *Pediatr Pulmonol* 2010 Apr;45(4):395-402

Osha root contains alkaloids that are beneficial to airway health.

- *Xiong et al: Effect and mechanism of ligustrazine on Th1/Th2 cytokines in a rat asthma model. *Am J Chin Med* 2007;35(6):1011-20

Palm (and Coconut) oil lowers rates of respiratory distress.

- *Okoh et al: Is the intake of palm oil (palmitic acid) in meals associated with the low incidence of respiratory distress syndrome in Nigeria? (author's transl). *Monatsschr Kinderheilkd* 1979 Nov;127(11):669-74

Passionflower has anti-asthmatic effects.

- *Dhawan et al: Antiasthmatic activity of the methanol extract of leaves of *Passiflora incarnata*. *Phytother Res* 2003 Aug;17(7):821-2

Passion fruit peel is a safe option for reducing symptoms of asthma.

- *Watson et al: Oral administration of the purple passion fruit peel extract reduces wheeze and cough and improves shortness of breath in adults with asthma. *Nutr Res* 2008 Mar;28(3):166-71

Perilla oil is a plant-based oil that has anti-asthmatic effects.

- *Deng et al: Anti-asthmatic effects of *Perilla* seed oil in the guinea pig in vitro and in vivo. *Planta Med* 2007 Jan;73(1):53-8

Probiotics help treat allergy symptoms, asthma, and a host of other conditions.

- *Choi et al: Anti-inflammatory activity of the ethanol extract of Chungkukjang, Korean fermented bean: 5-lipoxygenase inhibition. *J Med Food* 2008 Sep;11(3):539-43
- *Hong et al: Differential suppression of heat-killed lactobacilli isolated from kimchi, a Korean traditional food, on airway hyper-responsiveness in mice. *J Clin Immunol* 2010 May;30(3):449-58
- *Karimi et al: *Lactobacillus reuteri*-induced regulatory T cells protect against an allergic airway response in mice. *Am J Respir Crit Care Med* 2008 Nov 21

Purslane is a salad herb that is an effective bronchodilator.

*Malek et al: Bronchodilatory effect of *Portulaca oleracea* in airways of asthmatic patients. *J Ethnopharmacol* 2004 Jul;93(1):57-62

Pycnogenol (from pine bark) is a potent antioxidant that helps manage childhood asthma.

*Lau et al: Pycnogenol as an adjunct in the management of childhood asthma. *West J Med* 1998 Dec;169(6):356-63

Quercetin (a bioflavonoid that is a natural antihistamine) proves superior to a COPD-Asthma trial drug.

*Chan et al: Inhibitory effects of quercetin derivatives on phosphodiesterase isozymes and high-affinity [(3) H]-rolipram binding in guinea pig tissues. *Invest New Drugs*. 2008 Oct;26(5):417-24

*Park et al: Quercetin regulates Th1/Th2 balance in a murine model of asthma. *Int Immunopharmacol* 2009 Mar;9(3):261-7

Raw milk benefits asthmatics but “boiled” or pasteurized milk increases breathing difficulties.

*Loss et al: The protective effect of farm milk consumption on childhood asthma and atopy: The GABRIELA study. *J Allergy Clin Immunol* 2011 Aug 27

Resveratrol is superior to steroids for COPD.

*Knobloch et al: Resveratrol impairs the release of steroid-resistant inflammatory cytokines from human airway smooth muscle cells in chronic obstructive pulmonary disease. *J Pharmacol Exp Ther* 2010 Dec;335(3):788-98

Resveratrol and **Pterostilbene** (which is related to Resveratrol and found in blueberries and grapes) are potent antioxidants that decrease the risk of developing asthma.

*Daniells: Pterostilbene may protect against asthma. *Nutraingredients.com* June 20, 2011

Rooibos tea is effective in treating upper respiratory conditions.

*Khan & Gilani: Selective bronchodilatory effect of Rooibos tea (*Aspalathus linearis*) and its flavonoid, chrysoeriol. *Eur J Nutr* 2006 Dec;45(8):463-9

Selenium (alone or with **Inositol (B8)** and **vitamin E**) improves the effects of medication in those with chronic asthma. It also manages other upper respiratory conditions.

*Allam & Lucane: Selenium supplementation for asthma. *Cochrane Database Syst Rev* 2004;(2):CD003538

*Biniwale & Ehrenkranz: The role of nutrition in the prevention and management of bronchopulmonary dysplasia. *Int J Toxicol* 2010 Oct 19

Serrapeptase (an enzyme) is helpful in treating chronic breathing problems.

*Nakamura et al: Effect of the proteolytic enzyme serrapeptase in patients with chronic airway disease. *Respirol* 2003 Sept;8(3):316-20

Thyme helps improve upper respiratory conditions including asthma and COPD.

*Engelbertz et al: Thyme extract, but not thymol, inhibits endothelin-induced contractions of isolated rat trachea. *Zentralbl Gynakol* 2000;122(11):561-5

Umcka is a product that has long been used as an effective remedy for upper respiratory conditions in adults and children. The main ingredient in Umcka is identified in studies as *Pelargonium sidoides* (EPs 7630).

*Matthys & Heger: Treatment of acute bronchitis with a liquid herbal drug preparation from Pelargonium sidoides (EPs 7630): a randomised, double-blind, placebo-controlled, multicentre study. *Curr Med Res Opin* 2007 Feb;23(2):323-31

*Michaelis et al: Investigation of the influence of EPs® 7630, a herbal drug preparation from Pelargonium sidoides, on replication of a broad panel of respiratory viruses. *Phytomed* 2010 Oct 29

Valerian root helps calm the upper respiratory tract.

*Circosta et al: Biological and analytical characterization of two extracts from Valeriana officinalis. *J Ethnopharmacol* 2007 Jun 13;112(2):361-7

Vitamin D deficiency contributes to the development of bronchitis and childhood asthma. Supplementation improves these conditions and prevents the side effects of steroids that are often prescribed for breathing difficulties.

*Clifford & Knox: Vitamin D - a new treatment for airway remodelling in asthma? *Br J Pharmacol* 2009 Nov;158(6):1426-8

*Ehlayel & Bener: Is high prevalence of vitamin D deficiency evidence for asthma and allergy risks? *Eur Ann Allergy Clin Immunol* 2011 Jun;43(3):81-8

*Litonjua: Childhood asthma may be a consequence of vitamin D deficiency. *Curr Opin Allergy Clin Immunol* 2009 Jun;9(3):202-7

*Majak et al: The effect of oral steroids with and without vitamin D3 on early efficacy of immunotherapy in asthmatic children. *Clin Exp Allergy* 2009 Oct 7

*Matthys & Funk: EPs 7630 improves acute bronchitic symptoms and shortens time to remission. Results of a randomised, double-blind, placebo-controlled, multicentre trial. *Planta Med* 2008 May;74(6):686-92

*Michaelis et al: Investigation of the influence of EPs® 7630, a herbal drug preparation from Pelargonium sidoides, on replication of a broad panel of respiratory viruses. *Phytomed* 2010 Oct 29

*Zhao et al: Low concentrations of serum 25-hydroxyvitamin D associated with increased risk for chronic bronchitis among US adults. *Br J Nutr* 2011 Sep 8:1-7

Vitamin E is superior to pentoxifylline (used for Circulation) in preventing pulmonary fibrosis.

*Bese et al: Vitamin E protects against the development of radiation-induced pulmonary fibrosis in rats. *Clin Oncol (R Coll Radiol)* 2007 May;19(4):260-4

Wobenzym helps treat obstructive bronchitis in children.

*Lanchava et al: Wobenzym in treatment of recurrent obstructive bronchitis in children. *Georgian Med News* 2005 Oct;(127):50-3



CAFFEINE

COMMON EXAMPLES:

Prescription examples:

Aqua Ban, Apectol, butalbital compounds [**Barbiturates – dozens of them**], Cafegot, Esgic, Fiorinal, Migral, Milgralam, Norgesic, Permathene H2O Off, Soma and Darvon [propoxyphene] Compounds, Triaminacin with Codeine, and many others

Over-the-counter examples:

Anacin, Caffedrine, Dristan, Ephedra, Excedrin, No Doz, Midol, Pain Reliever, Triaminacin, Vanquish, Vivarin, and many others

Weight loss product examples:

Appredrine, Dexatrim, Dietrac, 4Ever Fit, WestPharm, Hydro-Lean, and many others

Chocolate, Coffee, Tea, Maté, Guarana, Ma huang (ephedra)

Soft drink examples:

Mello Yello, Mountain Dew, Sunkist Orange, Dr. Pepper, Pepsi, Diet Pepsi, Coke and many others

Energy drink examples:

Red Bull, 5150 Semi Sweet, and a whole host of others

DEplete:

B1, B2, B3, B5, B6, B7, B8, B9, B12, C, D, K, choline, chromium, calcium, iron, magnesium, potassium, zinc, calcitonin, PABA

- ☞ **PABA** is an important part of the B9 molecule.
- ☞ **Calcitonin**, a hormone secreted mainly by the thyroid gland, is necessary for calcium and phosphorus metabolism.
- ☞ **Caffeine** interferes with the absorption of minerals and increases their elimination, leaving a person mineral deficient. For instance, iron availability is often reduced by 50% leaving a person at high risk for iron-deficiency anemia.

*Bergman et al: Effects of dietary caffeine on renal handling of minerals in adult women. Life Sci1990;47(6):557-64

*Hurrell et al: Inhibition of non-heme iron absorption in man by polyphenolic-containing beverages. Bri J Nutr1999;91(4):289-95

*Hallberg & Rossander: Effect of different drinks on the absorption of non-heme iron from composite meals. Hum Nutr Appl Nutr 1982;36(2):116-23

- *Kynast-Gales & Massey: Effect of caffeine on circadian excretion of urinary calcium and magnesium. J Am Coll Nutr 1994;13(5):467-72
- *Morck et al: Inhibition of food iron absorption by coffee. Am J Clin Nutr 1983;37(3):416-20

☞ **Caffeine:**

- is a drug therefore, when it is stopped, causes withdrawal symptoms in everyone from a fetus to an adult.

- *Daly et al: Caffeine--an atypical drug of dependence. Drug Alcohol Depend 1998 June-July;51(1-2):199-206
- *Devoe et al: Maternal caffeine consumption and fetal behavior in normal third-trimester pregnancy. Am J Obstet Gynecol 1993;168(4):1105-11
- *Leviton et al: Behavioral correlates of caffeine consumption by children. Clin Ped 1992 Dec;31(12):742-50
- *McGowan et al: Neonatal withdrawal symptoms after chronic maternal ingestion of caffeine. South Med J 1988;81(9):1092-4
- *Martin et al: Neonatal withdrawal syndrome after chronic maternal drinking of mate. The Drug Monitor 2007;29(1)127-9
- *Oliveto et al: Caffeine drug discrimination in humans: acquisition, specificity and correlation with self-reports. JPET 1992 June;261(3):885-94

- has the same effect as amphetamines.

- *Koran et al: Double-blind study of dextroamphetamine versus caffeine augmentation for treatment-resistant obsessive-compulsive disorder. J Clin Psych 2009 Nov;70(11):1530-5

- contributes to mood disorders.

- *Livermore: Caffeine boosts eating disorders. Health 1991 Jun 16
- *Quinlan et al: The acute physiological and mood effects of tea and coffee: the role of caffeine level. Pharmacology, biochemistry, and behavior. 2000;66(1):19-28
- *Roca et al: Chronic caffeine or theophylline exposure reduces gamma-aminobutyric acid/benzodiazepine receptor site interactions. Mole Pharmacol May;33(5)481-85

- affects the brain.

- *Kaasinen et al: Dopaminergic effects of caffeine in the human striatum and thalamus. Neuroreport 2004 Feb 9;15(2):281-5

- increases blood pressure and heart arrhythmias.

- *James: Critical review of dietary caffeine and blood pressure: a relationship that should be taken more seriously. Psychosom Med 2004;66:63-71
- *Lane et al: Caffeine affects cardiovascular and neuroendocrine activation at work and home. Psychosom Med 2002;64(4):595-603
- *Lane et al: Caffeine effects on cardiovascular and neuroendocrine responses to acute psychosocial stress and their relationship to level of habitual caffeine consumption. Psychosom Med 1990;52(3):320-36
- *Myers & Reeves: The effect of caffeine on daytime ambulatory blood pressure. Am J Hyperten 1991;4(5Pt1):4231
- *Noordzij et al: Blood pressure response to chronic intake of coffee and caffeine: a meta-analysis of randomized controlled trials. J Hyperten 2005 May;23(5):921-28
- *Nurminen et al: Coffee, caffeine and blood pressure: a critical review. Eur J Clin Nutr 1999;53(11):831-9

- contributes to eating disorders.

- *Krahn et al: Caffeine consumption in patients with eating disorders. Hosp Comm Psych 1991;42(3)313-5

- reduces insulin sensitivity that leads to diabetes.

- *Kerr et al: Effect of caffeine on the recognition of and responses to hypoglycemia in humans. Ann Inter Med 1993;119(8):799-804
- *MacKenzie et al: Metabolic and hormonal effects of caffeine: randomized, double-blind, placebo-

controlled crossover trial. *Metabol* 2007 Dec;56(12):1694-8

- **worsens tics in Tourette syndrome.**

*Müller-Vahl et al: The influence of different food and drink on tics in Tourette syndrome. *Acta Paediatr* 2008 Apr;97(4):442-6

- **increases the production of toxic stress hormones.**

*Bjorntorp: Do stress reactions cause abdominal obesity and comorbidities? *Obesity Rev* 2001;2(2):73-86

*Lovallo et al: Caffeine stimulation of cortisol secretion across the waking hours in relation to caffeine intake levels. *Psychosom Med* 2005 Sep-Oct;67(5):734-9

- **increases infertility and the risk of miscarriages and stillbirths.**

*Cnattingius et al: Caffeine intake and the risk of first-trimester spontaneous abortion. *N Engl J Med* 2000 Dec 21;343(25):1839-45

*Dlugosz et al: Maternal caffeine consumption and spontaneous abortion: a prospective cohort study. *Epidemiol* 1996 May;7(3):250-5

*Fenster et al: Caffeine consumption during pregnancy and spontaneous abortion. *Epidemiol* 1991 May;2(3):168-74

*Greenwood et al: Caffeine intake during pregnancy, late miscarriage and stillbirth. *Eur J Epidemiol* Mar 21, 2010

*Jensen et al: Caffeine intake and fecundability: a follow-up study among 430 Danish couples planning their first pregnancy. *Reprod Toxicol* 1998;12(3):289-95

*Pollard et al: Effects of preconceptual caffeine exposure on pregnancy and progeny viability. *J Mat-Fet Med* 1999;8(5):220-4

*Weng et al: Maternal caffeine consumption during pregnancy and the risk of miscarriage: a prospective cohort study. *Am J Obstet Gynecol* 2008;198(3):279:e

*Wilcox et al: Caffeinated beverages and decreased fertility. *Lancet* 1998;2(8626-8627):1453-6

- **significantly increases the risk of cardiac arrhythmias.**

*Gowda et al: Cardiac arrhythmias in pregnancy: clinical and therapeutic considerations. *Internat J Cardiol* 2003;88(2-3):129-33

*Lochen & Rasmussen: Palpitations and lifestyle: impact of depression and self-rated health. The Nordland Health Study. *Scandin J Soc Med* 1996;24(2):140-4

*Rosmarin: Coffee and coronary heart disease: a review. *Progress in Cardiovas Dis* 1989;32(3):239-45

*Shirlow & Mathers: A study of caffeine consumption and symptoms; indigestion, palpitations, tremor, headache and insomnia. *Internat J Epidemiol* 1985;14(2):239-48

- **reduces bone mass, thereby increasing the risk of fractures.**

*Cooper et al: Is caffeine consumption a risk factor for osteoporosis? *J Bone Mineral Res* 1992 Apr;7(4):465-71

*Hansen et al: Association of fractures with caffeine and alcohol in postmenopausal women: the Iowa Women's Health Study. *Publ Health Nutr* 2000;3(3):253-61

*Hernandez-Avila et al: Caffeine, moderate alcohol intake, and risk of fractures of the hip and forearm in middle-aged women. *Am J Clin Nutr* 1991 July;54(1):157-63

*Kiel et al: Caffeine and the risk of hip fracture: the Framingham study. *Am J Epidemiol* 1990;132(4):675-84

☞ **On the upside, topical caffeine can prevent and reduce cellulite.**

*Bertin et al: A double-blind evaluation of the activity of an anti-cellulite product containing retinol, caffeine, and ruscogenine by a combination of several non-invasive methods. *J Cosmet Sci* 2001 Jul-Aug;52(4):199-210

*Pires-de-Campos et al: The effect of topical caffeine on the morphology of swine hypodermis as measured by ultrasound. *J Cosmet Dermatol* 2008 Sep;7(3):232-7

*Velasco et al: Effects of caffeine and siloxanetriol alginate caffeine, as anticellulite agents, on fatty tissue: histological evaluation. *J Cosmet Dermatol* 2008 Mar;7(1):23-9

*Vogelgesang et al: In vitro and in vivo efficacy of sulfo-carrabiose, a sugar-based cosmetic ingredient with anti-cellulite properties. *Int J Cosmet Sci* 2010 Aug 30

☞ **Caffeine intake during pregnancy** can take up to three times longer than usual to detoxify from the mother's body and can remain in the developing fetus up to a year after birth as well as in the mother's breast milk.

- *Aldridge et al: Caffeine metabolism in the newborn. *Clin Pharmacol Therapeut* 1979;25(4): 447-53
- *Cazeneuve et al: Biotransformation of caffeine in human liver microsomes from fetuses, neonates, infants and adults. *Bri J Clin Pharmacol* 1994;37:405-12
- *Karypidis et al: Association of cytochrome P450 1B1 polymorphism with first-trimester miscarriage. *Fert Ster* 2006;86(5):1498-503
- *Kuczowski et al: Social drug use in the parturient: implications for the management of obstetrical anesthesia. *Med J Malaysia* 2003;58:147-54
- *McKim et al: Caffeine and its effects on pregnancy and the neonate. *J Nurse Midwife* 1991;36(4):226-31
- *Nehlig & Debry: Consequences on the newborn of chronic maternal consumption of coffee during gestation and lactation: a review. *J Am Coll Nutr* 1994;13(1): 6-21
- *Ryu: Caffeine in human milk and in serum of breast-fed infants. *Developmental pharmacology and therapeutics*. 1985;8(6):329-37
- *Stavchansky et al: Pharmacokinetics of caffeine in breast milk and plasma after single oral administration of caffeine to lactating mothers. *Biopharma & Drug Dis* 1988;9(3):285-99

☞ **Caffeine, Nicotine, and Alcohol consumption** significantly increases the risk of pancreatic disease and ultimately, diabetes.

- *Braganza: Pancreatic disease: a casualty of hepatic "detoxification"? *Lancet* 1983 Oct 29;2(8357):1000-3
- *Kerr et al: Effect of caffeine on the recognition of and responses to hypoglycemia in humans. *Ann Intern Med* 1993 Oct 15;119(8):799-804
- *Tuomilehto et al: Coffee consumption as trigger for insulin dependent diabetes mellitus in childhood. *Br Med J* 1990;300(6725):642-3

☞ **Coffee** (caffeinated and non-caffeinated), **Alcohol**, and **Smoking** during pregnancy affects fetal breathing rates, movement, development, defects, and birth weight.

- *Balat et al: The effect of smoking and caffeine on the fetus and placenta in pregnancy. *Clin Exp Obstet Gynecol* 2003;30(1):57-9
- *Boylan et al: Maternal caffeine intake during pregnancy and risk of fetal growth restriction: a large prospective observational study. *Bri Med J* 2008;Nov3:337
- *CARE Study Group: Maternal caffeine intake during pregnancy and risk of fetal growth restriction: a large prospective observational study. *Br Med J* 2008 Nov 3;337:a2332
- *Florack et al: Cigarette smoking, alcohol consumption, and caffeine intake and fecundability. *Prevent Med* 1994;23(2):175-80
- *Groisser et al: Coffee consumption during pregnancy: subsequent behavioral abnormalities of the offspring. *J Nutr* 1982 Apr;112(4):829-32
- *McGowan et al: The effects of long- and short-term maternal caffeine ingestion on human fetal breathing and body movements in term gestations. *A J Obstetrics Gynecol* 1987;157(3):726-9
- *Salvado & Koos: Effects of regular and decaffeinated coffee on fetal breathing and heart rate. *Am J Obstetrics Gynecol* 1989;160(Pt1):1043-7
- *Schmidt et al: Maternal caffeine consumption and risk of neural tube defects. *Birth Defects Res A Clin Mol Teratol* 2009 Nov;85(11):879-89

☞ **Smoking** (Nicotine) increases the body's need for caffeine, which is why the two often go together.

- *Gasio et al: Caffeine potentiates the discriminative-stimulus effects of nicotine in rats. *Psychopharmacol* 2002 Aug;162(4):385-95
- *Kozlowski: Effects of caffeine consumption on nicotine consumption. *Psychopharmacol* 1976;47(2):165-168

- *Strassnig et al: Increased caffeine and nicotine consumption in community-dwelling patients with schizophrenia. *Schiz Res* 2006 Sept;86(1-3):269-75
- *Swanson et al: Caffeine and nicotine: A review of their joint use and possible interactive effects in tobacco withdrawal. *Add Beh* 1994 May-June;19(3):229-56

SUGGESTED ALTERNATIVES:

There are a large number of coffee and tea substitutes on the market today – many of them even taste good! I have listed only a few here but did not include any of the herb teas.

Carob is an excellent rehydration drink for adults or children, especially after bouts of diarrhea; it also has a calming effect and inhibits the growth of cancer cells.

- *Akşit et al: Carob bean juice: a powerful adjunct to oral rehydration solution treatment in diarrhoea. *Paediatr Perinat Epidemiol* 1998 Apr;12(2):176-81
- *Avallone et al: Extraction and purification from *Ceratonia siliqua* of compounds acting on central and peripheral benzodiazepine receptors. *Fitoterapia* 2002 Aug;73(5):390-6
- *Corsi et al: Antiproliferative effects of *Ceratonia siliqua* L. on mouse hepatocellular carcinoma cell line. *Fitoterapia* 2002 Dec;73(7-8):674-84
- *Klenow et al: Carob fibre compounds modulate parameters of cell growth differently in human HT29 colon adenocarcinoma cells than in LT97 colon adenoma cells. *Food Chem Toxicol* 2008 Apr;46(4):1389-97

Chicory has long been a favourite roasted drink that is often combined with dandelion or other roots. Chicory protects the liver and improves mineral absorption, unlike coffee which depletes minerals.

- *Ahmed et al: Anti-hepatotoxic activity of cichotyboside, a sesquiterpene glycoside from the seeds of *Cichorium intybus*. *J Asian Nat Prod Res* 2008 Mar-Apr;10(3-4):223-31
- *Roberfroid et al: Dietary chicory inulin increases whole-body bone mineral density in growing male rats. *J Nutr* 2002 Dec;132(12):3599–602
- *Zafar & Mujahid: Anti-hepatotoxic effects of root and root callus extracts of *Cichorium intybus*. *J Ethnopharmacol* 1998 Dec;63(3):227-31

Green tea has a little caffeine but it is a safer and healthier alternative to coffee. EGCG is an extract from Green Tea which acts as a proton-pump inhibitor (see Acid Blockers).

- *Assunção et al: Green tea averts age-dependent decline of hippocampal signaling systems related to antioxidant defenses and survival. *Free Radic Biol Med* 2010 Mar 15;48(6):831-838
- *Chiu et al: Double-blinded, placebo-controlled trial of green tea extracts in the clinical and histologic appearance of photoaging skin. *Dermatol Surg* 2005 Jul;31(7 Pt 2):855-60; discussion 860
- *Esfandiari & Kelly: The effects of tea polyphenolic compounds on hair loss among rodents. *J Natl Med Assoc* 2005 Aug;97(8):1165-9
- *Fu et al: Metabonomics study of the protective effects of green tea polyphenols on aging rats induced by d-galactose. *J Pharm Biomed Anal* 2011 Mar 26
- *Gupta et al: Green tea (*Camellia sinensis*) protects against selenite-induced oxidative stress in experimental cataractogenesis. *Ophthalmic Res* 2002 Jul-Aug;34(4):258-63
- *Hsu et al: Effect of green tea extract on obese women: a randomized, double-blind, placebo-controlled clinical trial. *Clin Nutr* 2008 Jun;27(3):363-70
- *Kishido et al: Decline in glutathione peroxidase activity is a reason for brain senescence: consumption of green tea catechin prevents the decline in its activity and protein oxidative damage in ageing mouse brain. *Biogerontol* 2007 Aug;8(4):423-30

- *Kitani et al: The effects of tetrahydrocurcumin and green tea polyphenol on the survival of male C57BL/6 mice. *Biogerontol* 2007 Oct;8(5):567-73
- *Kuriyama et al: Green tea consumption and mortality due to cardiovascular disease, cancer, and all causes in Japan: the Ohsaki study. *JAMA* 2006 Sep13;296(10):1255-65
- *Lee et al: Inhibitory effect of green tea extract on beta-amyloid-induced PC12 cell death by inhibition of the activation of NF-kappaB and ERK/p38 MAP kinase pathway through antioxidant mechanisms. *Brain Res Mol Brain Res* 2005 Oct 31;140(1-2):45-54
- *Murakami et al: Gastric H+, K(+)-ATPase inhibition by catechins. *J Pharm Pharmacol* 1992 Nov;44(11):926-8
- *Okamoto: Habitual green tea consumption and risk of an aneurysmal rupture subarachnoid hemorrhage: a case-control study in Nagoya, Japan. *Eur J Epidemiol* 2006;21(5):367-71
- *Rathore & Wang: Green tea catechin extract in intervention of chronic breast cell carcinogenesis induced by environmental carcinogens. *Mol Carcinog* 2011 Aug 31
- *Sachdeva et al: Epigallocatechin gallate ameliorates chronic fatigue syndrome in mice: behavioral and biochemical evidence. *Behav Brain Res* 2009 Jul 27
- *Unno et al: Daily consumption of green tea catechin delays memory regression in aged mice. *Biogerontol* 2007 Apr;8(2):89-95
- *Unno et al: Daily ingestion of green tea catechins from adulthood suppressed brain dysfunction in aged mice. *Biofact* 2008;34(4):263-71
- *Yamabe et al: Matcha, a powdered green tea, ameliorates the progression of renal and hepatic damage in type 2 diabetic OLETF rats. *J Med Food* 2009 Aug;12(4):714-21
- *Zeng et al: Green tea may be benefit to the therapy of atrial fibrillation. *J Cell Biochem* 2011 Mar 4
- *Zhang et al: Green tea and the prevention of breast cancer: a case-control study in Southeast China. *PLoS One* 2007 Nov 7;2(11):e1153
- *Zheng et al: Green tea intake lowers fasting serum total and LDL cholesterol in adults: a meta-analysis of 14 randomized controlled trials. *Am J Clin Nutr* 2011 Aug;94(2):601-10
- *Zhao et al: Long-term administration of green tea catechins prevents age-related spatial learning and memory decline in C57BL/6 J mice by regulating hippocampal cyclic amp-response element binding protein signaling cascade. *Neurosci* 2009 Apr 10;159(4):1208-15

Rooibos tea is a healthier beverage choice that is also safe for babies. The flavour is similar to black tea.

- *Fukasawa et al: Anti-oxidative effects of rooibos tea extract on autoxidation and thermal oxidation of lipids. *J Oleo Sci* 2009;58(6):275-83
- *Inanami et al: The suppression of age-related accumulation of lipid peroxides in rat brain by administration of Rooibos tea (*Aspalathus linearis*). *Neurosci Lett* 1995 Aug 18;196(1-2):85-8
- *Khan & Gilani: Selective bronchodilatory effect of Rooibos tea (*Aspalathus linearis*) and its flavonoid, chrysoeriol. *Eur J Nutr* 2006 Dec;45(8):463-9
- *Kawano et al: Hypoglycemic effect of aspalathin, a rooibos tea component from *Aspalathus linearis*, in type 2 diabetic model db/db mice. *Invest New Drugs* 2010 Dec;28(6):766-82
- *Kunishiro et al: Effects of rooibos tea extract on antigen-specific antibody production and cytokine generation in vitro and in vivo. *Biosci Biotechnol Biochem* 2001 Oct;65(10):2137-45
- *Lee & Jang: Antioxidant activity and protective effect on DNA strand scission of Rooibos tea (*Aspalathus linearis*). *J Altern Complement Med* 2010 Jul;16(7):807-9
- *Marnewick et al: Inhibition of tumour promotion in mouse skin by extracts of rooibos (*Aspalathus linearis*) and honeybush (*Cyclopia intermedia*), unique South African herbal teas. *Cancer Lett* 2005 Jun 28;224(2):193-202
- *Nakano et al: Anti-human immunodeficiency virus activity of oligosaccharides from rooibos tea (*Aspalathus linearis*) extracts in vitro. *Leukemia* 1997 Apr;11 Suppl 3:128-30
- *Nakano et al: Polysaccharide from *Aspalathus linearis* with strong anti-HIV activity. *Biosci Biotechnol Biochem* 1997 Feb;61(2):267-71
- *Simon et al: Antihemolytic effect of Rooibos tea (*Aspalathus linearis*) on red blood cells of Japanese quails. *Gynecol Oncol* 2000 Aug;78(2):181-6

*Ulicná et al: Does rooibos tea (*Aspalathus linearis*) support regeneration of rat liver after intoxication by carbon tetrachloride? *Gen Physiol Biophys* 2008 Sep;27(3):179-86

Teccino coffee and tea substitutes have excellent flavours that offer energy boosts from nutrients rather than stimulants.

*teccino.com/

CANCER



(USED TO INHIBIT VARIOUS TYPES OF CANCER CELLS)

COMMON EXAMPLES:

- actinomycin D** – Cosmegan
- aldesleukin** – Proleukin
- aminoglutethimide** – Cytadren
- anastrozole** – Arimidex
- cisplatin** – Platinol
- cyclophosphamide/cytophosphane** – Endoxan, Cytosan, Neosar, Procytox, Revimmune
- docetaxel** – Taxotere
- doxorubicin** – Adriamycin, Rubex
- epirubicin** – Ellence, Pharmorubicin RDF
- exemestane** – Aromasin
- fluorouracil** – Adrucil, 5-FU
- gemcitabine** – Gemzar
- methotrexate** – Folex, Maxtrex, and others
- mitomycin** – Mutamycin, Mytozytrex
- paclitaxel** – Taxol, Onxal
- procarbazine** – Matulane
- tamoxifen** – Nolvadex-D, Tamofen, and others
- trastuzumab** – Herceptin and others
- ... and many more**

DEplete:

A, B1, B2, B6, B9, B12, C, E, choline, calcium, magnesium, potassium, selenium, zinc, L-carnitine, L-glutamine, glutathione/NAC, melatonin, essential fatty acids, CoQ10

- ☞ Ironically, many of these nutrients are needed for reducing chemo side effects and for preventing cancer in the first place.
- ☞ **Artificial Sweeteners** significantly increase the risk of cancers in adults and children born to mothers consuming such products. These sweeteners

contribute to neurotoxicity which is common in various diseases including diabetes and cancer. Some commonly used artificial sweeteners include: **Aspartame** (NutraSweet, Equal); **Sucralose** (Splenda); **Saccharin** (Sweet'N Low); **Acesulfame-K** (Sunette, Sweet One); **Sugar Alcohols** (Glycerol, Mannitol, Methanol, Sorbitol, Xylitol). In packaged food, many will be listed as an "E" followed by a number.

- *Abou-Donia et al: Splenda alters gut microflora and increases intestinal p-glycoprotein and cytochrome p-450 in male rats. *J Toxicol Environ Health A* 2008;71(21):1415-29
- *Andreatta et al: Artificial sweetener consumption and urinary tract tumors in Cordoba, Argentina. *Prev Med* 2008 Jul;47(1):136-9
- *Bandyopadhyay et al: Genotoxicity testing of low-calorie sweeteners: aspartame, acesulfame-K, and saccharin. *Drug Chem Toxicol* 2008;31(4):447-57
- *Belpoggi et al: Results of long-term carcinogenicity bioassay on Sprague-Dawley rats exposed to aspartame administered in feed. *Ann N Y Acad Sci* 2006 Sep;1076:559-77
- *Gombos et al: The effect of aspartame administration on oncogene and suppressor gene expressions. *In Vivo* 2007 Jan-Feb;21(1):89-92
- *Huff & LaDou: Aspartame bioassay findings portend human cancer hazards. *Int J Occup Environ Health* 2007 Oct-Dec;13(4):446-8
- *Karstadt: Inadequate toxicity tests of food additive acesulfame. *Int J Occup Environ Health* 2010 Jan-Mar;16(1):89-96
- *Lau et al: Synergistic interactions between commonly used food additives in a developmental neurotoxicity test. *Toxicol Sci* 2006 Mar;90(1):178-87
- *Lin & Curhan: Associations of sugar and artificially sweetened soda with albuminuria and kidney function decline in women. *Clin J Am Soc Nephrol* 2010 Sep 30
- *Lin et al: Variability of albumin adducts of 1,4-benzoquinone, a toxic metabolite of benzene, in human volunteers. *Biomark* 2006 Jan-Feb;11(1):14-27
- *Mann et al: A combined chronic toxicity/carcinogenicity study of sucralose in Sprague-Dawley rats. *Food Chem Toxicol* 2000;38 Suppl 2:S71-89
- *Monte: Methanol: a chemical Trojan horse as the root of the inscrutable U. *Med Hypoth* 2010 Mar;74(3):493-6
- *Mukherjee & Chakrabarti: In vivo cytogenetic studies on mice exposed to acesulfame-K--a non-nutritive sweetener. *Food Chem Toxicol* 1997 Dec;35(12):1177-9
- *Nakao et al: Formaldehyde-induced shrinkage of rat thymocytes. *J Pharmacol Sci* 2003 Jan;91(1):83-6
- *Olney et al: Increasing brain tumor rates: is there a link to aspartame? *J Neuropathol Exp Neurol* 1996 Nov;55(11):1115-23
- *Oyama et al: Cytotoxic effects of methanol, formaldehyde, and formate on dissociated rat thymocytes: a possibility of aspartame toxicity. *Cell Biol Toxicol* 2002;18(1):43-50
- *Sasaki et al: The comet assay with 8 mouse organs: results with 39 currently used food additives. *Mutat Res* 2002 Aug 26;519(1-2):103-19
- *Simintzi et al: L-Cysteine and glutathione restore the modulation of rat frontal cortex Na⁺, K⁺ -ATPase activity induced by aspartame metabolites. *Food Chem Toxicol* 2008 Jun;46(6):2074-9
- *Simintzi et al: The effect of aspartame metabolites on the suckling rat frontal cortex acetylcholinesterase. An in vitro study. *Food Chem Toxicol* 2007 Dec;45(12):2397-401
- *Soffritti et al: Aspartame administered in feed, beginning prenatally through life span, induces cancers of the liver and lung in male Swiss mice. *Am J Ind Med* 2010 Sep 30
- *Soffritti et al: Life-span exposure to low doses of aspartame beginning during prenatal life increases cancer effects in rats. *Environ Health Perspect* 2007 Sep;115(9):1293-7
- *Soffritti et al: First experimental demonstration of the multipotential carcinogenic effects of aspartame administered in the feed to Sprague-Dawley rats. *Environ Health Perspect* 2006 Mar;114(3):379-85
- *Trocho et al: Formaldehyde derived from dietary aspartame binds to tissue components in vivo. *Life Sci* 1998;63(5):337-49

*Tsakiris et al: The effect of aspartame metabolites on human erythrocyte membrane acetylcholinesterase activity. *Pharmacol Res* 2006 Jan;53(1):1-5

*Wiklund et al: Sucralose - An ecotoxicological challenger? *Chemosphere* 2012 Jan ;86(1):50-5

☞ **Barley, Wheat, and Rye** help form carcinogens.

*Hoggan: Considering wheat, rye, and barley proteins as aids to carcinogens. *Med Hypotheses* 1997 Sep;49(3):285-8

☞ **Behavioural changes** (insomnia, depression, fatigue) are high in chemotherapy-treated breast cancer survivors.

*Bower et al: Inflammation and behavioral symptoms after breast cancer treatment: Do fatigue, depression, and sleep disturbance share a common underlying mechanism? *J Clin Oncol* 2011 Aug 8

☞ **Cow's milk consumption** increases the risk of cancers.

*Benson: Harvard study: Pasteurized milk from industrial dairies linked to cancer. *NaturalNews* 2012 Feb 27

*Davaasambuu & Sato: The possible role of female sex hormones in milk from pregnant cows in the development of breast, ovarian and corpus uteri cancers. *Med Hypoth* 2005;65(6):1028-37

*Lanou et al: Should dairy be recommended as part of a healthy vegetarian diet? *Counterpoint. Am J Clin Nutr* 2009 May;89(5):1638S-1642S

*Larsen: Milk and the Cancer Connection. *Intl Health News* 1998 Apr;76

*Qin et al: Low-fat milk promotes the development of 7,12-dimethylbenz(A)anthracene (DMBA)-induced mammary tumors in rats. *Intl J Canc* 2004 July;110(4):491-96

☞ **Cholesterol levels**, a little on the high side, actually protect against cancer, especially in older people, while low cholesterol levels increase mortality.

*Traissac et al: Significance of cholesterol levels in patients 75 years or older. *Presse Med* 2005 Nov 19;34(20 Pt 1):1525-32

*Trieu & Uckun: Low density lipoprotein (LDL)-mediated suppression of Lewis lung carcinoma in hypercholesterolemic LDL receptor-deficient mice. *Biochem Biophys Res Commun* 1999 Feb16;255(2):377-81

☞ **Chronic use of NSAIDS** (Analgesics) has been linked to a two-fold increased risk of blood cancers (leukemia, lymphoma, multiple myeloma).

*Walter et al: Long-term use of acetaminophen, aspirin, and other nonsteroidal anti-inflammatory drugs and risk of hematologic malignancies: results from the prospective vitamins and lifestyle (VITAL) study. *J Clin Oncol* 2011 May 9

☞ **Mammograms** appear to be causing more harm than good. Studies over the past 20 years confirm that the low-radiation of mammograms may actually increase the risk of cancer. Despite an increase in this screening, breast cancer has also increased accordingly. False positives are estimated to be more than 63%, which calls for more screening and ultimately one or two mastectomies “just to be sure”. According to one study,

“By attending screening with mammography some women will avoid dying from breast cancer or receive less aggressive treatment. But many more women will be overdiagnosed, receive needless treatment, have a false-positive result, or live more years as a patient with breast cancer. Systematic reviews of the randomized trials have shown that for every 2000 women invited for mammography screening throughout 10 years, only 1 will have her life prolonged.” (Brodersen 2010)

- *Anderson et al: Assessing the impact of screening mammography: Breast cancer incidence and mortality rates in Connecticut (1943-2002). *Breast Cancer Res Treat* 2006 Oct;99(3):333-40
- *Andrieu et al: Effect of chest X-rays on the risk of breast cancer among BRCA1/2 mutation carriers in the international BRCA1/2 carrier cohort study: a report from the EMBRACE, GENEPSO, GEO-HEBON, and IBCCS Collaborators' Group. *J Clin Oncol* 2006 Jul 20;24(21):3361-6
- *Autier et al: Breast cancer mortality in neighbouring European countries with different levels of screening but similar access to treatment: trend analysis of WHO mortality database. *BMJ* 2011;343:d4411
- *Brodersen et al: The benefits and harms of screening for cancer with a focus on breast screening. *Pol Arch Med Wewn* 2010 Mar;120(3):89-94
- *Colin & Foray: DNA damage induced by mammography in high family risk patients: Only one single view in screening. *Breast* 2011 Dec 31
- *Colin et al: DNA double-strand breaks induced by mammographic screening procedures in human mammary epithelial cells. *Int J Radiat Biol* 2011 Jul 29
- *de González & Reeves: Mammographic screening before age 50 years in the UK: comparison of the radiation risks with the mortality benefits. *Br J Cancer* 2005 Sep 5;93(5):590-6
- *Feeley et al: Digital mammography in a screening programme and its implications for pathology: a comparative study. *J Clin Pathol* 2011 Mar ;64(3):215-9
- *Fenton et al: Effectiveness of computer-aided detection in community mammography practice. *J Natl Cancer Inst* 2011 Jul 27
- *Frankenberg et al: Enhanced neoplastic transformation by mammography X rays relative to 200 kVp X rays: indication for a strong dependence on photon energy of the RBE(M) for various end points. *Radiat Res* 2002 Jan;157(1):99-105
- *Frankenberg-Schwager et al: Mutagenicity of low-filtered 30 kVp X-rays, mammography X-rays and conventional X-rays in cultured mammalian cells. *Int J Radiat Biol* 2002 Sep;78(9):781-9
- *Friedenson: Is mammography indicated for women with defective BRCA genes? Implications of recent scientific advances for the diagnosis, treatment, and prevention of hereditary breast cancer. *MedGenMed* 2000 Mar 9;2(1):E9
- *Goel et al: The association between the pre-diagnosis mammography screening interval and advanced breast cancer. *CMAJ* 2003 Jul 22;169(2):111-7
- *Gomolka et al: Measurement of the initial levels of DNA damage in human lymphocytes induced by 29 kV X rays (mammography X rays) relative to 220 kV X rays and gamma rays. *Radiat Res* 2005 May;163(5):510-9
- *Gøtzsche & Nielsen: Screening for breast cancer with mammography. *Cochrane Database Syst Rev* 2009(4):CD001877
- *Hakama et al: Implementation of screening as a public health policy: issues in design and evaluation. *J Med Screen* 1999;6(4):209-16
- *Heyes et al: Mammography-oncogenicity at low doses. *J Radiol Prot* 2009 Jun;29(2A):A123-32
- *Heyes & Mill: The neoplastic transformation potential of mammography X rays and atomic bomb spectrum radiation. *Radiat Res* 2004 Aug;162(2):120-7
- *Hogge et al: The mammographic spectrum of fat necrosis of the breast. *Radiograph* 1995 Nov;15(6):1347-56
- *Hubbard et al: Modelling the cumulative risk of a false-positive screening test. *Stat Methods Med Res* 2010 Mar 31
- *Jansen-van der Weide et al: Exposure to low-dose radiation and the risk of breast cancer among women with a familial or genetic predisposition: a meta-analysis. *Eur Radiol* 2010 Nov;20(11):2547-56
- *Jørgensen & Gøtzsche: Overdiagnosis in publicly organised mammography screening programmes: systematic review of incidence trends. *BMJ* 2009;339:b2587
- *Losch et al: Post-radiation atypical vascular proliferation mimicking angiosarcoma eight months following breast-conserving therapy for breast carcinoma. *J Clin Aesthet Dermatol* 2011 Apr;4(4):47-8
- *Mandelblatt et al: Effects of mammography screening under different screening schedules: model estimates of potential benefits and harms. *Ann Intern Med* 2009 Nov 17;151(10):738-47

- *Mestres et al: Induction of incomplete and complex chromosome aberrations by 30kVp X Rays. Rad Res 2010 Dec 8
- *Miller et al: Is mammography screening for breast cancer really not justifiable? Recent Results Cancer Res 2003;163:115-28; disc 264-6
- *Novak: Rupture of a cyst during compression at mammography. Report of a case. Acta Radiol 1989 May-Jun;30(3):257-8
- *Olsen et al: Estimating the benefits of mammography screening: the impact of study design. Zhonghua Zhong Liu Za Zhi 2005 Nov;27(11):667-71
- *Olsen & Gøtzsche: Screening for breast cancer with mammography. Urology 2004 May;63(5):900-4
- *Olsen & Gøtzsche: Cochrane review on screening for breast cancer with mammography. Lancet 2001 Oct 20;358(9290):1340-2
- *Pennes & Homer: Disappearing breast masses caused by compression during mammography. Radiology 1987 Nov;165(2):327-8
- *Raftery & Chorozoglou: Possible net harms of breast cancer screening: updated modelling of Forrest report. BMJ 2011;343:d7627
- *Schootman et al: The full potential of breast cancer screening use to reduce mortality has not yet been realized in the United States. Breast Cancer Res Treat 2004 Jun;85(3):219-22
- *Smith-Bindman et al: Comparing the performance of mammography screening in the USA and the UK. J Med Screen 2005;12(1):50-4
- *Stigers et al: Abnormalities of the breast caused by biopsy: spectrum of mammographic findings. AJR Am J Roentgenol 1991 Feb;156(2):287-91
- *Svendson et al: Breast cancer incidence after the introduction of mammography screening: what should be expected? Cancer 2006 May 1;106(9):1883-90
- *Trombetta et al: Mammary fat necrosis following radiotherapy in the conservative management of localized breast cancer: does it matter? Radiother Oncol 2010 Oct;97(1):92-4
- *Voogd et al: More breast cancer death in 2008: stepping up prevention. Ned Tijdschr Geneesk 2010;154(6):A1550
- *Watmough et al: Breast compression: a preliminary study. J Biomed Eng 1993 Mar;15(2):121-6
- *Zahl et al: Natural history of breast cancers detected in the Swedish mammography screening programme: a cohort study. Lancet Oncol 2011 Nov ;12(12):1118-24
- *Zahl et al: The natural history of invasive breast cancers detected by screening mammography. Arch Intern Med 2008 Nov 24;168(21):2311-6
- *Zhang et al: Low doses ionizing radiation enhances the invasiveness of breast cancer cells by inducing epithelial-mesenchymal transition. Biochem Biophys Res Commun 2011 Aug 19 ;412(1):188-92

☞ **Mineral oil** increases cancer risk, likely because it is a petroleum-based product.

- *Tolbert: Oils and cancer. Canc Causes Contr 1997 May;8(3):386-405

☞ **Over diagnosing cancers** is big business for many but it is a heart-wrenching ordeal for millions of people who are subjected to unnecessary treatments. This 2010 study revealed that 25% of all mammographies, 50% of lung cancer tests, and a whopping 60% of the PSA tests for prostate cancer were false.

- *Welch & Black: Overdiagnosis in cancer. J Natl Cancer Inst 2010 May 5;102(9):605-13

☞ **Parabens** are preservatives used in thousands of cosmetic, food and pharmaceutical products. These chemicals end up in breast tumors (which men can also develop) and influence fertility. According to one source, parabens are not as toxic as **estradiols (HRTs)**; “Concerning the biological activity, parabens are 8,000-900,000-fold less estrogenic than estradiol, the most estrogenic one being the aromatic compound benzylparaben.” (Bazin). Still, when you compare wolves to lions, it is reasonable to assume both should be avoided.

- *Bazin et al: Hydroxy benzoate preservatives (Parabens) in the environment: Data for Environmental Toxicity Assessment. *Xenobiotics in the Urban Water Cycle, Environmental Pollution*, 2010;16(Pt II):245-57
- *Byford et al: Oestrogenic activity of parabens in MCF7 human breast cancer cells. *J Steroid Biochem Mol Biol* 2002 Jan;80(1):49-60
- *Darbre & Charles: Oestrogenic activity of benzyl salicylate, benzyl benzoate and butylphenylmethylpropional (Lilial) in MCF7 human breast cancer cells in vitro. *J Appl Toxicol* 2009 July;29(5):422-34
- *Darbre: Environmental oestrogens, cosmetics and breast cancer. *Best Practice & Research Clin Endocrin Met* 2006 Mar;20(1):121-43
- *Darbre et al: Concentrations of parabens in human breast tumours. *J Appl Toxi* 2004 Jan-Feb;24(1):5-13
- *Harvey & Darbre: Endocrine disrupters and human health: could oestrogenic chemicals in body care cosmetics adversely affect breast cancer incidence in women? *J Appl Toxicol* 2004 May-Jun;24(3):167-76
- *Harvey: Parabens, oestrogenicity, underarm cosmetics and breast cancer: a perspective on a hypothesis. *J Appl Toxicol* 2003 Sep-Oct;23(5):285-88
- *Pugazhendhi et al: Oestrogenic activity of p-hydroxybenzoic acid (common metabolite of paraben esters) and methylparaben in human breast cancer cell lines. *J Appl Toxi* 2005 Jul-Aug;25(4):301-9
- *Tavaresa et al: Parabens in male infertility—Is there a mitochondrial connection? *Reprod Toxicol* 2009 Jan;27(1):1-7

☞ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of their active constituents) have long been associated with a significant increase in cancers as well as the risk for diabetes, thyroid diseases, hypertension, and reproductive problems.

- *Band et al: Prostate cancer risk and exposure to pesticides in British Columbia farmers. *Prostate* 2010 Aug 26
- *Burns et al: Cancer incidence of 2,4-D production workers. *Int J Environ Res Public Health* 2011 Sep;8(9):3579-90
- *Djordjevic et al: Assessment of chlorinated pesticides and polychlorinated biphenyls in adipose breast tissue using a supercritical fluid extraction method. *Carcinogen* 1994 Nov;15(11):2581-5
- *Donato & Zani: Chronic exposure to organochlorine compounds and health effects in adults: diabetes and thyroid diseases. *Ann Ig* 2010 May-Jun;22(3):185-98
- *Goncharov et al: Blood pressure in relation to concentrations of PCB congeners and chlorinated pesticides. *Environ Health Perspect* 2011 Mar;119(3):319-25
- *Ito et al: Histopathologic studies on liver tumorigenesis induced in mice by technical polychlorinated biphenyls and its promoting effect on liver tumors induced by benzene hexachloride. *J Natl Cancer Inst* 1973 Nov;51(5):1637-46
- *Kroll et al: Effect of lindane and phenobarbital on cyclooxygenase-2 expression and prostanoid synthesis by Kupffer cells. *Carcinogen* 1999;20(8):1411-16
- *Kumar et al: CYP 1A1 polymorphism and organochlorine pesticides levels in the etiology of prostate cancer. *Chemosphere* 2010 Sep;81(4):464-8
- *Landsman: The legalized killing of every person on earth (with pesticides). *NaturalNews* 2012 Mar 8
- *Multigner et al: Chlordecone exposure and risk of prostate cancer. *J Clin Oncol* 2010 Jul 20;28(21):3457-62
- *Parent et al: Does exposure to agricultural chemicals increase the risk of prostate cancer among farmers? *McGill J Med* 2009 Jan;12(1):70-7
- *Porpora et al: Endometriosis and organochlorinated environmental pollutants: a case-control study on Italian women of reproductive age. *Environ Health Perspect* 2009 Jul;117(7):1070-5
- *Reuber: Carcinogenicity of lindane. *Environ Res* 1979 Aug;19(2):460-81
- *Wolfe et al: Tumorigenic responses to lindane in mice: potentiation by a dominant mutation. *Carcinogen* 1987;8(12):1889-97
- *Wolff et al: Blood levels of organochlorine residues and risk of breast cancer. *J Natl Cancer Inst* 1993 Apr 21;85(8):648-52

- *Woolcott et al: Organochlorines and breast cancer risk by receptor status, tumor size, and grade (Canada). *Cancer Causes Control* 2001 Jun;12(5):395-404
- *Xu et al: Associations of serum concentrations of organochlorine pesticides with breast cancer and prostate cancer in U.S. adults. *Environ Health Perspect* 2010 Jan;118(1):60-6
- *Zhao et al: Exposure to organochlorine pesticides is an independent risk factor of hepatocellular carcinoma: A case-control study. *J Expo Sci Environ Epidemiol* 2011 Sep 14

⌘ **Retroviral vaccines** may contribute to infections in prostate cancer.

- *Miyazawa et al: Endogenous retroviruses as potential hazards for vaccines. *Biologic* 2010 May;38(3):371-6

⌘ **Smoking** not only causes a myriad of diseases but can render chemotherapy drugs ineffective.

- *Shen et al: Nicotine induces resistance to chemotherapy in nasal epithelial cancer. *Am J Rhinol Allergy* 2010 Mar;24(2):e73-7
- *Zhang et al: Nicotine induces resistance to chemotherapy by modulating mitochondrial signaling in lung cancer. *Am J Respir Cell Mol Biol* 2009 Feb;40(2):135-46

⌘ **Teriparatide**, a drug used to treat osteoporosis, causes an increase in bone cancer especially those treated for the disease or at a high risk for developing it.

- *Subbiah et al: Of mice and men: divergent risks of teriparatide-induced osteosarcoma. *Osteoporos Int* 2009 Jul 14
- *Teriparatide. *MedicineNet* online
- *Vahle et al: Bone neoplasms in F344 rats given teriparatide [rhPTH(1-34)] are dependent on duration of treatment and dose. *Toxicol Pathol* 2004 Jul-Aug;32(4):426-38
- *Vahle et al: Skeletal changes in rats given daily subcutaneous injections of recombinant human parathyroid hormone (1-34) for 2 years and relevance to human safety. *Toxicol Pathol* 2002 May-Jun;30(3):312-21

⌘ **Watch out for the media.** They often give misleading information, especially regarding nutrition. For example, take note of this headline: “Vitamin E Tied to Prostate Cancer Risk, Finds Study”, published on Fox News (and other media) October 12, 2011. The actual study states quite clearly that “There were statistically nonsignificant increased risks of prostate cancer in the vitamin E group”. See more studies listed below under Vitamin E that show vitamin E does **prevent** prostate cancer.

- *Lippman et al: Effect of Selenium and Vitamin E on Risk of Prostate Cancer and Other Cancers. The Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2009 Dec;301(1):39-51

SUGGESTED ALTERNATIVES:

Aloe vera kills cancer cells and increases the effects of chemotherapy drugs. Aloe also protects against possible organ damage from petroleum products. It may, however, **decrease** the effect of cisplatin.

- *Chen et al: Aloe-emodin-induced apoptosis in human gastric carcinoma cells. *Food Chem Toxicol* 2007 Nov;45(11):2296-303
- *Chiu et al: Aloe-emodin induces cell death through S-phase arrest and caspase-dependent pathways in human tongue squamous cancer SCC-4 cells. *Anticancer Res* 2009 Nov;29(11):4503-11
- *Chou & Liang: The molecular effects of aloe-emodin (AE)/liposome-AE on human nonmelanoma skin cancer cells and skin permeation. *Chem Res Toxicol* 2009 Dec;22(12):2017-28

- *El-Shemy et al: Antitumor properties and modulation of antioxidant enzymes' activity by Aloe vera leaf active principles isolated via supercritical carbon dioxide extraction. *Curr Med Chem* 2009 Nov 24
- *Esmat et al: Cytotoxicity of a natural anthraquinone (Aloin) against human breast cancer cell lines with and without ErbB-2: topoisomerase IIalpha coamplification. *Cancer Biol Ther* 2006 Jan;5(1):97-103
- *Gbadegesin et al: Comparative hepatotoxicity and clastogenicity of sodium arsenite and three petroleum products in experimental Swiss Albino Mice: the modulatory effects of Aloe vera gel. *Food Chem Toxicol* 2009 Oct;47(10):2454-7
- *Guo et al: Suppression of C-myc expression associates with anti-proliferation of aloe-emodin on gastric cancer cells. *Cancer Invest* 2008 May;26(4):369-74
- *Guo et al: Anticancer effect of aloe-emodin on cervical cancer cells involves G2/M arrest and induction of differentiation. *Acta Pharmacol Sin* 2007 Dec;28(12):1991-5
- *Lai et al: Chaperones are the target in aloe-emodin-induced human lung nonsmall carcinoma H460 cell apoptosis. *Eur J Pharmacol* 2007 Nov 14;573(1-3):1-10
- *Lee et al: Induction of apoptosis in human leukaemic cell lines K562, HL60 and U937 by diethylhexyl-phthalate isolated from Aloe vera Linne. *J Pharm Pharmacol* 2000 Aug;52(8):1037-41
- *Lin et al: Aloe-emodin induces apoptosis of human nasopharyngeal carcinoma cells via caspase-8-mediated activation of the mitochondrial death pathway. *Cancer Lett* 2009 Nov 24
- *Lissoni et al: A randomized study of chemotherapy versus biochemotherapy with chemotherapy plus Aloe arborescens in patients with metastatic cancer. *In Vivo* 2009 Jan-Feb;23(1):171-5
- *Mijatovic et al: Aloe emodin decreases the ERK-dependent anticancer activity of cisplatin. *Cell Mol Life Sci* 2005 Jun ;62(11):1275-82
- *Tabolacci et al: Antitumor properties of aloe-emodin and induction of transglutaminase 2 activity in B16-F10 melanoma cells. *Life Sci* 2010 Aug 28;87(9-10):316-24

Aloe and Honey kill cancer cells. It is advisable to use only non-pasteurized honey as there are no healing properties to be found in grocery store honey.

- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7
- *Tomasin et al: Oral administration of Aloe vera and honey reduces Walker tumour growth by decreasing cell proliferation and increasing apoptosis in tumour tissue. *Phytother Res* 2010 Sep 13

Andrographis (an herb from India known as the “king of bitters”) is more effective than doxorubicin for lymphoma.

- *Verma and Vinayak: Antioxidant action of *Andrographis paniculata* on lymphoma. *Mol Biol Rep.* 2008 Dec;35(4):535-40

Angelica sinensis (Dong quai) inhibits various cancer cells including cervical, colon, and brain – BUT, it still should not be taken by those with breast cancer. It also protects against radiation-induced pulmonary fibrosis and promotes blood cell formation if taken with *Astragalus*.

- *Cao et al: A novel polysaccharide, isolated from *Angelica sinensis* (Oliv.) Diels induces the apoptosis of cervical cancer HeLa cells through an intrinsic apoptotic pathway. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 1997 Apr;17(4):207-9
- *Chenga et al: Acetone extract of *Angelica sinensis* inhibits proliferation of human cancer cells via inducing cell cycle arrest and apoptosis. *Life Sc* 2004 Aug 13;75(13):1579-94
- *Gu et al: The effect of *Angelica sinensis* on adhesion, invasion, migration and metastasis of melanoma cells. *Zhong Yao Cai* 2007 Mar;30(3):302-5
- *Han et al: *Angelica sinensis* down-regulates hydroxyproline and Tgfb1 and provides protection in mice with radiation-induced pulmonary fibrosis. *Radiat Res* 2006 May;165(5):546-52
- *Kan et al: Study of the anti-proliferative effects and synergy of phthalides from *Angelica sinensis* on colon cancer cells. *J Ethnopharmacol* 2008 Jul 30
- *Tsa et al: The antitumor effects of *Angelica sinensis* on malignant brain tumors in vitro and in vivo. *Clin Cancer Res* 2005 May 1;11;3475

- *Tsai et al: The natural compound n-butylidenephthalide derived from *Angelica sinensis* inhibits malignant brain tumor growth in vitro and in vivo. *J Nutr* 2007 Sep;137(9):2068-73
- *Yang et al: An herbal decoction of *Radix astragali* and *Radix angelicae sinensis* promotes hematopoiesis and thrombopoiesis. *J Ethnopharmacol* 2009 Jul 6;124(1):87-97
- *Yim et al: A novel anticancer agent, decursin, induces G1 arrest and apoptosis in human prostate carcinoma cells. *Cancer Res* 2005 Feb 1;65(3):1035-44
- *Zhong et al: Protection of *Angelica sinensis* against radiation-induced pulmonary fibrosis in mice. *Zhonghua Yu Fang Yi Xue Za Zhi* 2007 Mar;41(2):105-9

Antioxidant deficiencies increase the risk of breast cancer and abnormal cervical cells. An added benefit is that antioxidants significantly decrease chemotherapy side effects.

- *Nicolson & Conklin: Reversing mitochondrial dysfunction, fatigue and the adverse effects of chemotherapy of metastatic disease by molecular replacement therapy. *Clin Exp Metastasis* 2008;25(2):161-9
- *Shen et al: Telomere length, oxidative damage, antioxidants and breast cancer risk. *Int J Cancer* 2009 Apr 1;124(7):1637-43
- *Siegel et al: Dietary consumption of antioxidant nutrients and risk of incident cervical intraepithelial neoplasia. *Gynecol Oncol* 2010 Sep;118(3):289-94

Anthocyanins, substances found in Grape skins, Red Rice and Black raspberries, have anti-tumor properties.

- *Koide et al: Antitumor effect of hydrolyzed anthocyanin from grape rinds and red rice. *Biol Pharm Bull* 2009 Mar;32(3):468-74
- *Wang et al: Anthocyanins in black raspberries prevent esophageal tumors in rats. *Cancer Prev Res (Phila Pa)* 2009 Jan;2(1):84-93

Apigenin and **Luteolin** are antioxidant flavonoids found together in a variety of fresh vegetables, which have anti-cancer properties. Apigenin also enhances the effects of the drug gemcitabine.

- *Chen et al: Inhibition of proteasome activity by the dietary flavonoid apigenin is associated with growth inhibition in cultured breast cancer cells and xenografts. *J Clin Sleep Med* 2009 Aug 15;5(4):377-83
- *Kaur et al: Plant flavonoid apigenin inactivates Akt to trigger apoptosis in human prostate cancer: an in vitro and in vivo study. *Carcinogen* 2008 Nov;29(11):2210-7
- *Lee et al: Enhanced anti-tumor effect of combination therapy with gemcitabine and apigenin in pancreatic cancer. *Cancer Lett* 2008 Jan 18;259(1):39-49
- *Zhou et al: Luteolin inhibits invasion of prostate cancer PC3 cells through E-cadherin. *Mol Cancer Ther* 2009 Jun;8(6):1684-91

Apple, Apple Cider Vinegar, and Apple pectin have antitumor effects against various cancer cells. But do yourself a bigger favour and use only **organically** grown apples as the chemicals used to grow conventional ones significantly increase cancer risks. Apples are #1 on the pesticide list.

- *Abe et al: Generation of antitumor active neutral medium-sized alpha-glycan in apple vinegar fermentation. *Biosci Biotechnol Biochem* 2007 Sep;71(9):2124-9
- *Apples worst for pesticides on produce list. *CBC News*, Jun 14, 2011
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. *WebMD Health News* June 13, 2011
- *Gallus et al: Does an apple a day keep the oncologist away? *Ann Oncol* 2005 Nov;16(11):1841-4
- *Gerhauser: Cancer chemopreventive potential of apples, apple juice, and apple components. *J Endocrinol* 2011 Mar;208(3):273-83
- *Gerhauser: Cancer chemopreventive potential of apples, apple juice, and apple components. *Planta Med* 2008;74(13):1608-24

- *Kubo et al: Antitumor agents from the cashew (*Anacardium occidentale*) apple juice. *J Agric Food Chem* 1993;41(6):1012-15
- *He & Liu: Phytochemicals of apple peels: isolation, structure elucidation, and their antiproliferative and antioxidant activities. *J Agric Food Chem* 2008 Nov 12;56(21):9905-10
- *Hibasami et al: Induction of apoptosis by three types of procyanidin isolated from apple (*Rosaceae Malus pumila*) in human stomach cancer KATO III cells. *Int J Mol Med* 2004 Jun;13(6):795-9
- *Jedrychowski et al: Case-control study on beneficial effect of regular consumption of apples on colorectal cancer risk in a population with relatively low intake of fruits and vegetables. *Basic Clin Pharmacol Toxicol* 2009 Mar;104(3):262-71
- *Jedrychowski & Maugeri: An apple a day may hold colorectal cancer at bay: recent evidence from a case-control study. *Rev Environ Health* 2009 Jan-Mar;24(1):59-74
- *Liu et al: Apples prevent mammary tumors in rats. *J Altern Complement Med* 2010 Sep;16(9):973-8
- *Liu et al: Fresh apples suppress mammary carcinogenesis and proliferative activity and induce apoptosis in mammary tumors of the Sprague-Dawley rat. *J Agric Food Chem* 2009 Jan 14;57(1):297-304
- *Maldonado-Cellis et al: Apple procyanidins activate apoptotic signaling pathway in human colon adenocarcinoma cells by a lipid-raft independent mechanism. *Biochem Biophys Res Commun* 2009 Oct 16;388(2):372-6
- *No authors listed. Induction of apoptosis in HT-29 colon cancer cells by phloretin. *Methods* 2007 Aug;42(4):339-48
- *Pierini et al: Procyanidin effects on oesophageal adenocarcinoma cells strongly depend on flavan-3-ol degree of polymerization. *Mol Nutr Food Res* 2008 Dec;52(12):1399-407
- *Shabecoff: 100 Chemicals for Apples Add Up to Enigma on Safety. *NY Times* Feb 5, 1989
- *Soyalan et al: Apple juice intervention modulates expression of ARE-dependent genes in rat colon and liver. *Carcinogen* 2000 Aug;21(8):1461-7
- *Sun & Liu: Apple phytochemical extracts inhibit proliferation of estrogen-dependent and estrogen-independent human breast cancer cells through cell cycle modulation. *J Agric Food Chem* 2008 Dec 24;56(24):11661-7
- *Tazawa et al: Dietary fiber inhibits the incidence of hepatic metastasis with the anti-oxidant activity and portal scavenging functions. *Hum Cell*. 1999 Dec;12(4):189-96
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/
- *Veeriah et al: Apple polyphenols modulate expression of selected genes related to toxicological defence and stress response in human colon adenoma cells. *Int J Cancer* 2008 Jun 15;122(12):2647-55
- *Waldecker et al: Histone-deacetylase inhibition and butyrate formation: Fecal slurry incubations with apple pectin and apple juice extracts. *Nutr* 2008 Apr;24(4):366-74
- *Wolfe et al: Antioxidant activity of apple peels. *J Agric Food Chem* 2003 Jan 29;51(3):609-14
- *Wu et al: In vitro and in vivo study of phloretin-induced apoptosis in human liver cancer cells involving inhibition of type II glucose transporter. *Int J Cancer* 2009 May 1;124(9):2210-9
- *Yang et al: Apple polyphenol phloretin potentiates the anticancer actions of paclitaxel through induction of apoptosis in human hep G2 cells. *Mol Carcinog* 2009 May;48(5):420-31

Apples and Curcumin inhibit breast cancer cell processes that are resistant to chemotherapy. Curcumin is the active part of the food spice, Turmeric.

- *Yoon & Liu: Effect of selected phytochemicals and apple extracts on NF-kappaB activation in human breast cancer MCF-7 cells. *J Agric Food Chem* 2007 Apr 18;55(8):3167-73

Apricots protect the male testes from low-dose radiation.

- *Ugras et al: *Prunus armeniaca* L (apricot) protects rat testes from detrimental effects of low-dose x-rays. *Nutr Res* 2010 Mar;30(3):200-8

Apricots and Beta carotene have a potent protective effect against methotrexate-induced intestinal damage.

- *Vardi et al: Potent protective effect of apricot and beta-carotene on methotrexate-induced intestinal oxidative damage in rats. *Food Chem Toxicol* 2008 Sep;46(9):3015-22

Arnica is a homeopathic pain remedy that also exhibits anti-cancer activity.

- *Woerdenbag et al: Cytotoxicity of flavonoids and sesquiterpene lactones from Arnica species against the GLC4 and the COLO 320 cell lines. *Planta Med* 1994 Oct;60(5):434-7

Artemisinin (found in such herbs as wormwood) inhibits tumor formation.

- *Buommino et al: Artemisinin reduces human melanoma cell migration by down-regulating alpha V beta 3 integrin and reducing metalloproteinase 2 production. *Invest New Drugs* 2009 Oct;27(5):412-8
- *Chen et al: Growth inhibitory effects of dihydroartemisinin on pancreatic cancer cells: involvement of cell cycle arrest and inactivation of nuclear factor-kappaB. *J Cancer Res Clin Oncol* 2009 Nov 26
- *Du et al: Artesunate induces oncosis-like cell death in vitro and has antitumor activity against pancreatic cancer xenografts in vivo. *Cancer Chemother Pharmacol* 2010 Apr;65(5):895-902
- *Jiao et al: Dihydroartemisinin is an inhibitor of ovarian cancer cell growth. *Acta Pharmacol Sin* 2007 Jul;28(7):1045-56
- *Kim et al: Differential involvement of protein kinase C in human promyelocytic leukemia cell differentiation enhanced by artemisinin. *Eur J Pharmacol* 2003 Dec 15;482(1-3):67-76
- *Lu et al: Dihydroartemisinin induces apoptosis in HL-60 leukemia cells dependent of iron and p38 mitogen-activated protein kinase activation but independent of reactive oxygen species. *Cancer Biol Ther* 2008 Jul;7(7):1017-23
- *Nam et al: Effects of artemisinin and its derivatives on growth inhibition and apoptosis of oral cancer cells. *Head Neck* 2007 Apr;29(4):335-40
- *Wang et al: Artemisinin inhibits tumor lymphangiogenesis by suppression of vascular endothelial growth factor C. *Pharmacol* 2008;82(2):148-55

Asparagus contains a steroidal phytochemical which kills various cancer cells.

- *Huang et al: Steroids from the roots of *Asparagus officinalis* and their cytotoxic activity. *J Integr Plant Biol* 2008 Jun;50(6):717-22

Astragalus is an herb that protects the body from the effects of stress. It also helps manage cancer-related anorexia, chronic fatigue and proves to be a beneficial complementary treatment, even in children with leukemia.

- *Astragalus. U Maryland Medical Center online
- *Cho et al: Myelophil, an extract mix of *Astragali Radix* and *Salviae Radix*, ameliorates chronic fatigue: a randomised, double-blind, controlled pilot study. *Complement Ther Med* 2009 Jun;17(3):141-6
- *Dong et al: Effects of large dose of *Astragalus membranaceus* on the dendritic cell induction of peripheral mononuclear cell and antigen presenting ability of dendritic cells in children with acute leukemia. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2005 Oct;25(10):872-5
- *Duan & Wang: Clinical study on effect of *Astragalus* in efficacy enhancing and toxicity reducing of chemotherapy in patients of malignant tumor. *Food Chem Toxicol* 2008 Mar;46(3):1089-96
- *Lee & Lee: A phase II study of an herbal decoction that includes *Astragali radix* for cancer-associated anorexia in patients with advanced cancer. *Integr Cancer Ther* 2010 Feb 11
- *Lv et al: Study on effect of *Astragalus membranaceus* injection on hematopoiesis in anemic mice with myelosuppression. *Zhong Yao Cai* 2005 Sep;28(9):791-3
- *Zou & Liu: Effect of astragalus injection combined with chemotherapy on quality of life in patients with advanced non-small cell lung cancer. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2003 Oct;23(10):733-5

Avocado has anti-cancer properties.

- *D'Ambrosio et al: Aliphatic acetogenin constituents of avocado fruits inhibit human oral cancer cell proliferation by targeting the EGFR/RAS/RAF/MEK/ERK1/2 pathway. *Biochem Biophys Res Commun* 2011 Jun 10 ;409(3):465-9
- *Ding et al: Selective induction of apoptosis of human oral cancer cell lines by avocado extracts via a ROS-mediated mechanism. *Nutr Canc* 2009;61(3):348-56
- *Ding et al: Chemopreventive characteristics of avocado fruit. *Semin Cancer Biol* 2007 Oct;17(5):386-94

*Lu et al: Inhibition of prostate cancer cell growth by an avocado extract: role of lipid-soluble bioactive substances. *J Nutr Biochem* 2005 Jan;16(1):23-30

Bananas regulate the immune system and inhibit HIV virus and cancer cells.

*Cheung et al: *Musa acuminata* (Del Monte banana) lectin is a fructose-binding lectin with cytokine-inducing activity. *Phytomed* 2009 Jun;16(6-7):594-600

B vitamins significantly lower the risk of cancers while a deficiency increases the risk. Folic acid (**B9**) protects against methotrexate side effects and Inositol (**B8**) stimulates natural killer cells. (see Appendix for a list of B vitamins according to name and number)

*Ames: Prevention of mutation, cancer, and other age-associated diseases by optimizing micronutrient intake. *J Nucleic Acids* 2010 Sep 22;2010

*Baten et al: Inositol-phosphate-induced enhancement of natural killer cell activity correlates with tumor suppression. *Carcinogen* 1989 Sep;10(9):1595-8

*Brunaud et al: Effects of vitamin B12 and folate deficiencies on DNA methylation and carcinogenesis in rat liver. *Clin Chem Lab Med* 2003 Aug;41(8):1012-9

*Giovannucci: Epidemiologic studies of folate and colorectal neoplasia: a review. *J Nutr* 2002;132(Suppl):S2350-S2355

*Johansson et al: Serum B vitamin levels and risk of lung cancer. *JAMA* 2010 Jun 16;303(23):2377-85

*Kerr & Colucci: Inositol phospholipid signaling and the biology of natural killer cells. *J Innate Immun* 2011;3(3):249-57

*Larsson et al: Vitamin B6 and risk of colorectal cancer: a meta-analysis of prospective studies. *JAMA* 2010;303:1077-83

*Ortiz et al: Folic acid and folinic acid for reducing side effects in patients receiving methotrexate for rheumatoid arthritis. *Cochrane Database Syst Rev* 2000;(2):CD000951

*Raina et al: Chemopreventive efficacy of inositol hexaphosphate against prostate tumor growth and progression in TRAMP mice. *Clin Cancer Res* 2008 May 15;14(10):3177-84

*Singh et al: In vivo suppression of hormone-refractory prostate cancer growth by inositol hexaphosphate: induction of insulin-like growth factor binding protein-3 and inhibition of vascular endothelial growth factor. *Clin Cancer Res* 2004 Jan 1;10(1Pt1):244-50

*Xu & Chen: One-carbon metabolism and breast cancer: an epidemiological perspective. *J Genet Genomics* 2009;36:203-214

Bee Propolis kills various cancer cells.

*Chen et al: Propolin C from propolis induces apoptosis through activating caspases, Bid and cytochrome c release in human melanoma cells. *Biochem Pharmacol* 2004 Jan 1;67(1):53-66

*Eroglu et al: Anticarcinogenic and antimitotic effects of Turkish propolis and mitomycin-C on tissue cultures of bladder cancer. *Nat Prod Res* 2008;22(12):1060-6

*Ishihara et al: Growth inhibitory activity of ethanol extracts of Chinese and Brazilian propolis in four human colon carcinoma cell lines. *Oncol Rep* 2009 Aug;22(2):349-54

*Popolo et al: Antiproliferative activity of brown Cuban propolis extract on human breast cancer cells. *Nat Prod Commun* 2009 Dec;4(12):1711-6

*Pratsinis et al: Antiproliferative activity of Greek propolis. *J Med Food* 2010 Feb 4

*Szliszka et al: Ethanolic extract of propolis augments TRAIL-induced apoptotic death in prostate cancer cells. *Evid Based Complement Alternat Med* 2009 Nov 5

*Wu et al: Caffeic acid phenethyl ester (CAPE), derived from a honeybee product propolis, exhibits a diversity of anti-tumor effects in pre-clinical models of human breast cancer. *Cancer Lett* 2011 Sep 1;308(1):43-53

Beetroot significantly reduces tumor formation.

*Bobek et al: The effect of red beet (*Beta vulgaris* var. *rubra*) fiber on alimentary hypercholesterolemia and chemically induced colon carcinogenesis in rats. *Nahrung* 2000 Jun;44(3):184-7

- *Kapadia et al: Chemoprevention of lung and skin cancer by Beta vulgaris (beet) root extract. *Cancer Lett* 2008 Jan 18;259(1):39-49

Berberine, a compound found in such plants as Barberry, Goldenseal, Goldentthread, and Oregon grape, has anti-cancer effects.

- *Hamsa & Kuttan: Berberine inhibits pulmonary metastasis through down-regulation of MMP in metastatic B16F-10 melanoma cells. *Phytother Res* 2011 Sep 26
- *Liu et al: Berberine induces p53-dependent cell cycle arrest and apoptosis of human osteosarcoma cells by inflicting DNA damage. *Mutat Res* 2009 Mar 9;662(1-2):75-83
- *Mantena et al: Berberine inhibits growth, induces G1 arrest and apoptosis in human epidermoid carcinoma A431 cells by regulating Cdk1-Cdk-cyclin cascade, disruption of mitochondrial membrane potential and cleavage of caspase 3 and PARP. *Carcinogen* 2006 Oct;27(10):2018-27
- *Serafim et al: Different concentrations of berberine result in distinct cellular localization patterns and cell cycle effects in a melanoma cell line. *Canc Chemother Pharmacol* 2008 May;61(6):1007-18

Berries contain ellagic acid which inhibits estrogen growth and protects against the formation of various cancers and non-cancerous cells such as hemangioma.

- *Aiyer & Gupta: Berries and ellagic acid prevent estrogen-induced mammary tumorigenesis by modulating enzymes of estrogen metabolism. *Canc Prev Res (Phila Pa)* 2010 Jun;3(6):727-37
- *Atalay et al: Anti-angiogenic property of edible berry in a model of hemangioma. *J Pharm Pharmacol* 1992 Nov;44(11):926-8
- *Bagchi et al: Anti-angiogenic, antioxidant, and anti-carcinogenic properties of a novel anthocyanin-rich berry extract formula. *Biochem (Mosc)* 2004 Jan;69(1):74-80
- *Stoner et al: Protection against esophageal cancer in rodents with lyophilized berries: potential mechanisms. *Nutr Canc* 2006;54(1):33-46

Beta glucans are polysaccharides derived from oats, mushrooms, or yeasts. Beta glucans are safe and effectively used to inhibit various cancer cells, enhance bone marrow formation, prevent chemo-induced hair loss, prolong longevity, reduce the toxic effects of cancer medications, and generally improve the quality of life.

- *Akramiene et al: Effects of beta-glucans on the immune system. *Medicina (Kaunas)* 2007;43(8):597-606
- *Burikhanov et al: Suppressive effect of active hexose correlated compound (AHCC) on thymic apoptosis induced by dexamethasone in the rat. *Geburtshilfe Frauenheilkd* 1996 May;56(5):221-5
- *Chan et al: The effects of beta-glucan on human immune and cancer cells. *J Hematol Oncol* 2009 Jun 10;2:25
- *Cowawintaweewat et al: Prognostic improvement of patients with advanced liver cancer after active hexose correlated compound (AHCC) treatment. *Asian Pac J Allergy Immunol* 2006 Mar;24(1):33-45
- *Cramer et al: Mobilization of hematopoietic progenitor cells by yeast-derived beta-glucan requires activation of matrix metalloproteinase-9. *Proc Natl Acad Sci USA* 2008 Sep 23;105(38):14551-4
- *Dang et al: Betulinic acid derivatives as human immunodeficiency virus type 2 (HIV-2) inhibitors. *J Med Chem* 2009 Dec 10;52(23):7887-91
- *Fullerton et al: Induction of apoptosis in human prostatic cancer cells with beta-glucan (Maitake mushroom polysaccharide). *Boll Soc Ital Biol Sper* 2000 Jan-Feb;76(1-2):1-4
- *Gao et al: Active hexose correlated compound enhances tumor surveillance through regulating both innate and adaptive immune responses. *Cancer Immunol Immunother* 2006 Oct;55(10):1258-66
- *Gu et al: Enhancement of radioprotection and anti-tumor immunity by yeast-derived beta-glucan in mice. *J Med Food* 2005 Summer;8(2):154-8
- *Gu & Belury: Selective induction of apoptosis in murine skin carcinoma cells (CH72) by an ethanol extract of *Lentinula edodes*. *Cancer Lett* 2005 Mar 18;220(1):21-8
- *Hazama et al: Efficacy of orally administered superfine dispersed lentinan (beta-1,3-glucan) for the treatment of advanced colorectal cancer. *Anticancer Res* 2009 Jul;29(7):2611-7

- *Hirose et al: The influence of active hexose correlated compound (AHCC) on cisplatin-evoked chemotherapeutic and side effects in tumor-bearing mice. *Toxicol Appl Pharmacol* 2007 Jul 15;222(2):152-8
- *Isoda et al: Clinical efficacy of superfine dispersed lentinan (beta-1,3-glucan) in patients with hepatocellular carcinoma. *Hepatogastroenterol* 2009 Mar-Apr;56(90):437-41
- *Ito et al: Maitake beta-glucan enhances granulopoiesis and mobilization of granulocytes by increasing G-CSF production and modulating CXCR4/SDF-1 expression. *Int Immunopharmacol* 2009 Jun 30
- *Kobayashi et al: Suppressing effects of daily oral supplementation of beta-glucan extracted from *Agaricus blazei* Murill on spontaneous and peritoneal disseminated metastasis in mouse model. *J Cancer Res Clin Oncol* 2005 Aug;131(8):527-38
- *Kodama et al: Effect of Maitake (*Grifola frondosa*) D-Fraction on the activation of NK cells in cancer patients. *J Med Food* 2003;6(4):371-7
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Diet rich in fruits and vegetables is important in preventing many types of cancers while a diet rich in starchy foods, dairy products, meat, and oils (other than olive) increases the risk. β -ionone, a precursor for carotenoids, found in a wide variety of fruits and vegetables, inhibits the metastasis of liver cancer cells. Fruit and vegetables also reduce AGEs (advanced glycation end products) which lead to various age-related diseases including cardiovascular, cataracts, diabetes, and Alzheimer's.

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Essiac Tea has long been used as an alternative cancer treatment which is attributed to its potent antioxidant content and DNA-protective action. It contains 4 herbs:

Burdock root (*Arctium lappa*)

Slippery elm inner bark (*Ulmus fulva*)

Sheep Sorrel (*Rumex acetosella*)

Indian Rhubarb Root (*Rheum officinale*)

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Fennel has anti-tumor and antioxidant effects.

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Fermented Papaya decreases toxic and oxidative damage of cells that could develop into cancer.

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Fermented Wheat Germ, Fermented Soy (isoflavones) and **Miso** (another fermented food) have anti-cancer properties. Do not use **non-fermented or GMO soy** as these do not have the protective effects but rather can be hormone-disrupting at the very least.

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- *Ohuchi et al: Decrease in size of azoxymethane induced colon carcinoma in F344 rats by 180-day fermented miso. *Oncol Rep* 2005 Dec;14(6):1559-64

Flaxseed contains **lignans** that have anti-cancer properties, especially for breast and prostate. It also protects the lungs against radiation-induced damage. Flaxseed can be safely taken with tamoxifen to reduce breast tumours and when taken with soy isoflavones, reduces the tumor-stimulating effects of non-fermented soy. ‘Secoisolariciresinol diglucoside’ is an antioxidant substance in flax as well as sunflower, pumpkin, and sesame seeds.

- *Ansenberger et al: Decreased severity of ovarian cancer and increased survival in hens fed a flaxseed-enriched diet for 1 year. *Gynecol Oncol* 2010 Feb 12
- *Bommareddy et al: Effects of dietary flaxseed on intestinal tumorigenesis in Apc(Min) mouse. *Nutr Cancer* 2009;61(2):276-83
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French beans have antitumor, antifungal, and anti-HIV effects.

*Lam & Ng: Isolation and characterization of a French bean hemagglutinin with antitumor, antifungal, and anti-HIV-1 reverse transcriptase activities and an exceptionally high yield. *Phytomed* 2009 Sep 7

GLA (gamma-linolenic acid is the “good” part of omega-6 fatty acids) suppresses bone cancer cell growth. GLA is found in such oils as borage, evening primrose, and black currant seeds.

*Booyens et al: The effect of gamma-linolenic acid on the growth of human osteogenic sarcoma and oesophageal carcinoma cells in culture. *S Afr Med J* 1984 Feb 18;65(7):240-2

Garlic has significant health properties including anti-cancer effects.

*Zhang et al: A proteomic study on a human osteosarcoma cell line Saos-2 treated with diallyl trisulfide. *Anticanc Drugs* 2009 Sep;20(8):702-12

German New Medicine links *Five Biological Laws* to preventing and reversing all cancers

*learninggnm.com/

Ginger induces cancer cell death.

*Nigam et al: Gingerol induces reactive oxygen species regulated mitochondrial cell death pathway in human epidermoid carcinoma A431 cells. *Chem Biol Interact* 2009 Sep 14;181(1):77-84

Ginkgo biloba (alone or with UV light and antioxidants) helps prevent cancer and protects the kidneys against damage from medications.

*Eli & Fasciano: An adjunctive preventive treatment for cancer: ultraviolet light and ginkgo biloba, together with other antioxidants, are a safe and powerful, but largely ignored, treatment option for the prevention of cancer. *Med Hypotheses* 2006;66(6):1152-6

*Ye et al: Ginkgo biloba and ovarian cancer prevention: epidemiological and biological evidence. *Canc Lett* 2007 Jun 18;251(1):43-52

Goji berries/Wolfberry inhibit the growth of various cancers; increase platelets and white blood cells after radiation or chemotherapy; and generally boost the sense of wellbeing.

*Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12

*Chao et al: Hot water-extracted *Lycium barbarum* and *Rehmannia glutinosa* inhibit proliferation and induce apoptosis of hepatocellular carcinoma cells. *Diabet Med* 2007 Jul;24(7):759-63

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*Li et al: *Lycium barbarum* inhibits growth of estrogen receptor positive human breast cancer cells by favorably altering estradiol metabolism. *Nutr Canc* 2009;61(3):408-14

*Luo et al: *Lycium barbarum* polysaccharides induce apoptosis in human prostate cancer cells and inhibits prostate cancer growth in a xenograft mouse model of human prostate cancer. *J Med Food* 2009 Aug;12(4):695-703

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- *Reeve et al: Mice drinking goji berry juice (*Lycium barbarum*) are protected from UV radiation-induced skin damage via antioxidant pathways. *Photochem Photobiol Sci* 2010 Apr 31;9(4):601-607

Grapes program the deaths of various cancer cells. Buy only **organic** grapes as they are #7 on the list of foods that are highest in pesticides which are known carcinogens.

- *Hudson et al: Inhibition of prostate cancer growth by muscadine grape skin extract and resveratrol through distinct mechanisms. *Cancer Res* 2007 Sep 1;67(17):8396-405
- *Mertens-Talcott et al: Induction of cell death in Caco-2 human colon carcinoma cells by ellagic acid rich fractions from muscadine grapes (*Vitis rotundifolia*). *J Agric Food Chem* 2006 Jul 26;54(15):5336-43
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/
- *Quiney et al: Flavones and polyphenols inhibit the NO pathway during apoptosis of leukemia B-cells. *Leuk Res* 2004 Aug;28(8):851-61
- *Yi et al: Study of anticancer activities of muscadine grape phenolics in vitro. *J Agric Food Chem* 2005 Nov 2;53(22):8804-12

Grapefruit – the Upside – inhibits various cancers and protects against radiation-induced bone marrow instability. However, it still cannot be eaten by anyone on medication – even a one-a-day aspirin.

- *Jagetia & Reddy: The grapefruit flavanone naringin protects against the radiation-induced genomic instability in the mice bone marrow: a micronucleus study. *Mutat Res* 2002 Aug 26;519(1-2):37-48
- *Miller et al: Inhibition of oral carcinogenesis by citrus flavonoids. *Nutr Cancer* 2008;60(1):69-74
- *Vanamala et al: Suppression of colon carcinogenesis by bioactive compounds in grapefruit. *Carcinogen* 2006 Jun;27(6):1257-65

Grapeseed, Blackseed, and Curcumin inhibit tumor growth and decrease liver damage caused by tamoxifen.

- *El-Beshbishy et al: Grapeseed extract, black seed extract and curcumin ameliorate tamoxifen-induced liver injury. *Hepatogastro* 2007 Jan-Feb;54(73):320-4
- *Singh et al: Grape seed extract inhibits advanced human prostate tumor growth and angiogenesis and upregulates insulin-like growth factor binding protein-3. *Int J Cancer* 2004 Feb 20;108(5):733-40
- *Velmurugan et al: Dietary feeding of grape seed extract prevents intestinal tumorigenesis in APCmin/+ mice. *Neoplasia* 2010 Jan;12(1):95-102

Graviola is a plant native to the Amazon forest and proves to be 10,000 times more effective than doxorubicin as an anti-cancer agent.

- *Reiser et al: Five novel mono-tetrahydrofuran ring acetogenins from the seeds of *Annona muricata*. *J Nat Prod* 1996 Feb;59(2):100-8

Greek Raisins prevent gastric cancers.

- *Kaliora et al: Effect of Greek raisins (*Vitis vinifera* L.) from different origins on gastric cancer cell growth. *Nutr Cancer* 2008;60(6):792-9

Green Tea helps prevent cancer while caffeinated drinks increase the risk.

- *Baliga et al: Growth inhibitory and antimetastatic effect of green tea polyphenols on metastasis-specific mouse mammary carcinoma 4T1 cells in vitro and in vivo systems. *Clin Cancer Res* 2005 Mar 1;11(5):1918-27
- *Kuriyama et al: Green tea consumption and mortality due to cardiovascular disease, cancer, and all causes in Japan: the Ohsaki study. *JAMA* 2006 Sep 13;296(10):1255-65
- *Rathore & Wang: Green tea catechin extract in intervention of chronic breast cell carcinogenesis induced by environmental carcinogens. *Mol Carcinog* 2011 Aug 31

*Song et al: Coffee, tea, colas, and risk of epithelial ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 2008 Mar;17(3):712-6

*Thangapazham et al: Green tea polyphenols and its constituent epigallocatechin gallate inhibits proliferation of human breast cancer cells in vitro and in vivo. *Cancer Lett* 2007 Jan 8;245(1-2):232-41

*Zhang et al: Green tea extract inhibits proliferation of uterine leiomyoma cells in vitro and in nude mice. *Am J Obstet Gynecol* 2010 Jan 12

*Zhang et al: Green tea and the prevention of breast cancer: a case-control study in Southeast China. *PLoS One* 2007 Nov 7;2(11):e1153

Green Tea and Medicinal mushrooms reduce the risk of breast cancer.

*Zhang et al: Dietary intakes of mushrooms and green tea combine to reduce the risk of breast cancer in Chinese women. *Int J Cancer* 2009 Mar 15;124(6):1404-8

Greens contain chlorophyll which enhances overall health and play a significant role in cancer prevention. Greens include various grass juices (alfalfa, barley, wheat etc), chlorella, kelp and other sea vegetables.

*Chernomorsky et al: Effect of dietary chlorophyll derivatives on mutagenesis and tumor cell growth. *Teratog Carcinog Mutagen* 1999;19:313-22

Grifola umbellata mushroom proves superior to mitomycin in preventing postoperative bladder cancer.

*Yang et al: Prevention of postoperative recurrence of bladder cancer: a clinical study. *J Agric Food Chem* 2007 Sep 5;55(18):7609-14

Guggul is an herb often recommended for cholesterol but it also has anti-tumor effects especially for bone cancer.

*Ichikawa & Aggarwal: Guggulsterone inhibits osteoclastogenesis induced by receptor activator of nuclear factor-kappaB ligand and by tumor cells by suppressing nuclear factor-kappaB activation. *Clin Cancer Res* 2006 Jan 15;12(2):662-8

Haplamine, extracted from the plant *Haplophyllum perforatum*, is more potent than gemcitabine for treating pancreatic cancers.

*Ea et al: Cytotoxic effects of haplamine and its major metabolites on human cancer cell lines. *Planta Med* 2008 Aug;74(10):1265-8

Hazelnuts prevent cataract formation caused by doxorubicin.

*Bayer et al: Doxorubicin-induced cataract formation in rats and the inhibitory effects of hazelnut, a natural antioxidant: a histopathological study. *Med Sci Monit* 2005 Aug;11(8):BR300-4

Herbal combinations (Maral root, Rhodiola, Siberian ginseng and Schisandra) and (Geranium, mushroom, ginseng, and Dong quai) improve overall conditions of patients during chemo/radiation therapy.

*Kormosh et al: Effect of a combination of extract from several plants on cell-mediated and humoral immunity of patients with advanced ovarian cancer. *Zhong Xi Yi Jie He Xue Bao* 2007 Jan;5(1):50-5

*Zhuang et al: Effect of citronellol and the Chinese medical herb complex on cellular immunity of cancer patients receiving chemotherapy/radiotherapy. *Phytother Res* 2009 Jun;23(6):785-90

Herbs versus Drugs – Herbs prove safer, better tolerated, and just as effective as the drugs. In this study, the herbal combination was Channel Flow by Health Concerns. The drugs that Channel Flow was compared to were estradiol (HRT), medroxyprogesterone (HRT), sulindac (Analgesic), and actinomycin D (Cancer).

*Wieser et al: A botanical extract from channel flow inhibits cell proliferation, induces apoptosis, and suppresses CCL5 in human endometriotic stromal cells. *Biol Reprod* 2009 Aug;81(2):371-7

Hibiscus is another herb that induces leukemia cell deaths.

- *Chang et al: Hibiscus anthocyanins rich extract-induced apoptotic cell death in human promyelocytic leukemia cells. *Toxicol Appl Pharmacol* 2005 Jun 15;205(3):201-12

Homeopathics are safe and effectively used in treating various cancers, chemotherapy-induced conditions, and menopausal symptoms in breast cancer survivors.

- *Banerjee et al: Chelidonium majus 30C and 200C in induced hepato-toxicity in rats. *Homeopathy* 2010 Jul;99(3):167-76
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- *Jacobs et al: Homeopathy for menopausal symptoms in breast cancer survivors: a preliminary randomized controlled trial. *J Altern Complement Med* 2005 Feb;11(1):21-7
- *Jonas et al: Can homeopathic treatment slow prostate cancer growth? *Integr Cancer Ther* 2006;5(4):343-9
- *Kassab et al: Homeopathic medicines for adverse effects of cancer treatments. *Cochrane Database Syst Rev* 2009(2):CD004845
- *Pathak et al: Protective potentials of a potentized homeopathic drug, Lycopodium-30, in ameliorating azo dye induced hepatocarcinogenesis in mice. *Mol Cell Biochem* 2006 Apr;285(1-2):121-31
- *Rostock et al: Classical homeopathy in the treatment of cancer patients--a prospective observational study of two independent cohorts. *BMC Cancer* 2011 Jan 17;11(1):19

Honey is rich in flavonoids (raw, non-pasteurized or Manuka) which act as chemosensitizers in multi-drug resistant cancers as well as preventing chemo-induced neutropenia. Do not depend on grocery-store honey for medicinal help as these do not contain the health benefits.

- *Ghashm et al: Antiproliferative effect of Tualang honey on oral squamous cell carcinoma and osteosarcoma cell lines. *BMC Complement Altern Med* 2010;10:49
- *Jaganathan: Can flavonoids from honey alter multidrug resistance? *Med Hypotheses* 2011 Jan 17
- *Schneider: Tests Show Most Store Honey Isn't Honey: Ultra-filtering Removes Pollen, Hides Honey Origins. *Food Safety News* 2011 Nov 7
- *Zidan et al: Prevention of chemotherapy-induced neutropenia by special honey intake. *Med Oncol* 2006;23(4):549-52

Hops is a familiar calming herb used in the brewing industry but it also has the ability to induce the deaths of cancer cells and prohibit the growth and migration of liver cancer cells.

- *Delmulle et al: Anti-proliferative properties of prenylated flavonoids from hops (*Humulus lupulus* L.) in human prostate cancer cell lines. *Phytomed* 2006 Nov;13(9-10):732-4
- *Diller et al: Synthesis of demethylxanthohumol, a new potent apoptosis-inducing agent from hops. *Chem Biodivers* 2005 Oct;2(10):1331-7
- *Dorn et al: Xanthohumol, a prenylated chalcone derived from hops, inhibits proliferation, migration and interleukin-8 expression of hepatocellular carcinoma cells. *Int J Oncol* 2010 Feb;36(2):435-41
- *Lust et al: Xanthohumol activates the proapoptotic arm of the unfolded protein response in chronic lymphocytic leukemia. *Anticancer Res* 2009 Oct;29(10):3797-805

I-3 C (Indole-3 carbinol) regulates estrogen levels and reverses multidrug-resistant melanoma.

- *Auborn et al: Indole-3-carbinol is a negative regulator of estrogen. *J Nutr* 2003 Jul;133(7 Suppl):2470S-2475S
- *Christensen & LeBlanc: Reversal of multidrug resistance in vivo by dietary administration of the phytochemical indole-3-carbinol. *Cancer Res* 1996 Feb 1;56(3):574-81

Integrated Cancer Clinics are highly recommended as they offer the best of all worlds – conventional and alternative. Find one in your area.

Isoliquiritigenin (a flavonoid found in such foods as licorice and soybeans) has anti-tumor effects against prostate cancer.

- *Lee et al: Induction of cell cycle arrest in prostate cancer cells by the dietary compound isoliquiritigenin. *J Med Food* 2009 Feb;12(1):8-14

Japanese apricots inhibit growth of various cancer cells.

- *Jeong et al: Isolation and characterization of a new compound from *Prunus mume* fruit that inhibits cancer cells. *J Agric Food Chem* 2006 Mar 22;54(6):2123-8
- *Mori et al: New anti-proliferative agent, MK615, from Japanese apricot "*Prunus mume*" induces striking autophagy in colon cancer cells in vitro. *World J Gastroenterol* 2007 Dec 28;13(48):6512-7
- *Nakagawa et al: New antineoplastic agent, MK615, from UME (a Variety of) Japanese apricot inhibits growth of breast cancer cells in vitro. *Breast J* 2007 Jan-Feb;13(1):44-9
- *Okada et al: MK615 inhibits pancreatic cancer cell growth by dual inhibition of Aurora A and B kinases. *World J Gastroenterol* 2008 Mar 7;14(9):1378-82
- *Okada et al: A novel anti-cancer substance, MK615, from ume, a variety of Japanese apricot, inhibits growth of hepatocellular carcinoma cells by suppressing Aurora A kinase activity. *Hepatogastroenterol* 2007 Sep;54(78):1770-4

Kaempferol is a flavonoid found in certain fruits and vegetables which are known fighters of various types of cancer. When it was combined with **Quercetin**, another bioflavonoid known for its natural antihistamine effects, success rates increased even further.

- *Calderón-Montañó et al: A review on the dietary flavonoid kaempferol. *Mini Rev Med Chem* 2011 Apr;11(4):298-344
- *de Vrie et al: Consumption of quercetin and kaempferol in free-living subjects eating a variety of diets. *Canc Lett* 1997 Mar;114(1-2):141-44
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- *Huang et al: Kaempferol induced apoptosis via endoplasmic reticulum stress and mitochondria-dependent pathway in human osteosarcoma U-2 OS cells. *Mol Nutr Food Res* 2010 Nov;54(11):1585-95
- *Middleton et al: The Effects of Plant Flavonoids on Mammalian Cells: Implications for Inflammation, Heart Disease, and Cancer. *Pharmacol Rev* 2000 Dec;52(4):673-751
- *Nakamura et al: Augmentation of differentiation and gap junction function by kaempferol in partially differentiated colon cancer cells. *J Cell Physiol* 2003 Oct;197(1):110-21
- *Nguyen et al: Kaempferol-induced growth inhibition and apoptosis in A549 lung cancer cells is mediated by activation of MEK-MAPK. *J Cell Physiol* 2003 Oct;197(1):110-21
- *Yoshida et al: Kaempferol sensitizes colon cancer cells to TRAIL-induced apoptosis. *Biochem Biophys Res Comm* 2008 Oct 10;375(1):129-33
- *Zhang et al: Ginkgo biloba extract kaempferol inhibits cell proliferation and induces apoptosis in pancreatic cancer cells. *J Surg Res* 2008 Jul;148(1):17-23

King trumpet mushroom induces the death of leukemia cells.

- *Bae et al: Apoptotic cell death of human leukaemia U937 cells by ubiquinone-9 purified from *Pleurotus eryngii*. *Nat Prod Res* 2009;23(12):1112-9

Kiwifruit has antioxidant properties that specifically prohibits the growth of cancer cells.

- *Collins et al: Kiwifruit protects against oxidative DNA damage in human cells and in vitro. *Nutr Cancer* 2001;39(1):148-53
- *Deters et al: Kiwi fruit (*Actinidia chinensis* L.) polysaccharides exert stimulating effects on cell proliferation via enhanced growth factor receptors, energy production, and collagen synthesis of human keratinocytes, fibroblasts, and skin equivalents. *Cell Biol Toxicol* 2010 Aug 1
- *Motohashi et al: Cancer prevention and therapy with kiwifruit in Chinese folklore medicine: a study of kiwifruit extracts. *J Ethnopharmacol* 2002 Aug;81(3):357-64

Licorice root is 10 times more potent than aminoglutethimide.

- *Paoletta et al: Screening of herbal constituents for aromatase inhibitory activity. *Bioorg Med Chem* 2008 Sep 15;16(18):8466-70

Lion's Mane mushroom not only stimulates nerve regeneration but has anti-cancer properties as well.

- *Wang et al: Antimutagenicity of extracts of *Hericium erinaceus*. *Kaohsiung J Med Sci* 2001 May;17(5):230-8

Liv52 (an Ayurvedic herbal combination) reduces radiation-induced bone marrow damage.

- *Jagetia & Ganapathi: Treatment of mice with a herbal preparation (Liv. 52) reduces the frequency of radiation-induced chromosome damage in bone marrow. *Mutat Res.* 1991 Oct;253(2):123-6. PMID: 1922138

Lycopene from tomatoes decreases the risk of pancreatic cancer. Watermelon juice increases blood concentrations of lycopene and beta-carotene.

- *Bowen et al: Tomato sauce supplementation and prostate cancer: lycopene accumulation and modulation of biomarkers of carcinogenesis. *Exp Biol Med (Maywood)* 2002 Nov;227(10):886-93
- *Edwards et al: Consumption of watermelon juice increases plasma concentrations of lycopene and beta-carotene in humans. *J Nutr* 2003 Apr;133(4):1043-50
- *Jian et al: Do dietary lycopene and other carotenoids protect against prostate cancer? *Int J Cancer* 2005 Mar 1;113(6):1010-4
- *Nkondjock et al: Dietary intake of lycopene is associated with reduced pancreatic cancer risk. *J Nutr* 2005 Mar;135(3):592-7

Maitake and **Murill mushrooms** stimulate natural killer cell activity and improve the quality of life in those undergoing chemotherapy. Maitake also reduces immunosuppression by mitomycin-C.

- *Ahn et al: Natural killer cell activity and quality of life were improved by consumption of a mushroom extract, *Agaricus blazei* Murill Kyowa, in gynecological cancer patients undergoing chemotherapy. *Int J Gynecol Cancer* 2004 Jul-Aug;14(4):589-94
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- *Inoue et al: Effect of maitake (*Grifola frondosa*) D-fraction on the control of the T lymph node Th-1/Th-2 proportion. *Biol Pharm Bull* 2002 Apr;25(4):536-40
- *Jumes et al: Effects of *Agaricus brasiliensis* mushroom in Walker-256 tumor-bearing rats. *J Agric Food Chem* 2007 Apr 18;55(8):2816-23

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- *Konno: Potential growth inhibitory effect of maitake D-fraction on canine cancer cells. *Vet Ther* 2004;5(4):263-71
- *Louie et al: Synergistic potentiation of interferon activity with maitake mushroom d-fraction on bladder cancer cells. *BJU Int* 2009 Sep 4
- *Masuda et al: Inhibitory effect of MD-Fraction on tumor metastasis: involvement of NK cell activation and suppression of intercellular adhesion molecule (ICAM)-1 expression in lung vascular endothelial cells. *Biol Pharm Bull* 2008 Jun;31(6):1104-8
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- *Shomori et al: Antitumor effects of a water-soluble extract from Maitake (*Grifola frondosa*) on human gastric cancer cell lines. *Oncol Rep* 2009 Sep;22(3):615-20

Mango contains compounds that program the cell deaths of prostate and lymph node carcinomas.

- *Prasad et al: Induction of apoptosis by lupeol and mango extract in mouse prostate and LNCaP cells. *Nutr Cancer* 2008;60(1):120-30

Mangosteen fruit has potent antioxidant properties that protect against cisplatin-induced kidney toxicity and cancer cell proliferation as well as preventing aromatase activity. Aromatase is an enzyme involved in the synthesis of estrogen.

- *Akao et al: Anti-cancer effects of xanthenes from pericarps of mangosteen. *Int J Mol Sci* 2008;9:355-370
- *Balunas et al: Xanthenes from the botanical dietary supplement mangosteen (*Garcinia mangostana*) with aromatase inhibitory activity. *J Nat Prod* 2008 Jul;71(7):1161-6
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- *Walker: HPLC analysis of selected xanthenes in mangosteen fruit. *J Sep Sc* 2007;30:1229-34

Medicinal mushrooms (Crimini, Maitake, Oyster, Portabella, White button) prevent breast cancer proliferation.

- *Martin & Brophy: Commonly consumed and specialty dietary mushrooms reduce cellular proliferation in MCF-7 human breast cancer cells. *Exp Biol Med (Maywood)* 2010 Nov;235(11):1306-14

Melatonin inhibits various cancer cells (breast, cervical, colorectal, endometrial, leukemia, liver, pituitary, prostate, pancreatic, vaginal); decreases toxicity while increasing the effects of chemotherapy; protects against radiation-induced cataract formation; and reduces the risk of death due to cancer. **Vitamin B6** increases melatonin production.

- *Anisimov et al: Inhibitory effect of melatonin on 7, 12-dimethylbenz[a]anthracene-induced carcinogenesis of the uterine cervix and vagina in mice and mutagenesis in vitro. *Cancer Lett* 2000 Aug 11;156(2):199-205
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- *Sánchez-Barceló et al: Melatonin and mammary cancer: a short review. *Endocr Relat Cancer* 2003 Jun;10(2):153-9
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- *Yang et al: Inhibitory effects of melatonin on the growth of pituitary prolactin-secreting tumor in rats. *J Pineal Res* 2006 Apr;40(3):230-5

Melatonin and Vitamins C and E protect the kidneys against insecticide damage that often leads to cancer.

- *Gultekin et al: In vivo changes in antioxidant systems and protective role of melatonin and a combination of vitamin C and vitamin E on oxidative damage in erythrocytes induced by chlorpyrifos-ethyl in rats. *Arch Toxicol* 2001 Apr;75(2):88-96
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Milk Thistle is a well-known herb used to strengthen the liver but it has other health benefits including preventing the formation of lung cancer cells.

- *Tyagi et al: Silibinin modulates TNF-α and IFN-γ mediated signaling to regulate COX2 and iNOS expression in tumorigenic mouse lung epithelial LM2 cells. *Wiley Online Lib* 31 AUG 2011; *Mol Carcinog* 2011 Aug 31

Mistletoe extract is superior to gemcitabine in advanced pancreatic cancer and it prolongs the survival of ovarian cancer patients.

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Murill mushrooms inhibit the growth of various cancer cells.

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- *Yu et al: Inhibitory mechanisms of *Agaricus blazei* Murrill on the growth of prostate cancer in vitro and in vivo. *J Nutr Biochem* 2009 Oct;20(10):753-64

NAC (N-acetylcysteine) and **Inositol (B8)** inhibit cancer cells. NAC is an amino acid with antioxidant properties.

- *Kassie et al: Combinations of N-Acetyl-S-(N-2-Phenethylthiocarbamoyl)-L-Cysteine and myo-inositol inhibit tobacco carcinogen-induced lung adenocarcinoma in mice. *Cancer Prev Res (Phila Pa)* 2008 Sep;1(4):285-97
- *Raina et al: Chemopreventive efficacy of inositol hexaphosphate against prostate tumor growth and progression in TRAMP mice. *Clin Cancer Res* 2008 May 15;14(10):3177-84

Natural Substances have proven to prevent various kinds of cancers. There are some 568 listed on GreenMedInfo.com with studies backing each one. Some are included in this section on cancer but for more, take a look and see why we should be looking at natural alternatives first rather than drugs.

- *www.greenmedinfo.com/disease/cancers-all

Neem has anti-cancer compounds against several types of cancer. It also prevents tumor formation from such carcinogens as benzopyrenes (found in cigarette and wood smoke and in such burned foods as coffee). In addition, Neem enhances the effects of cyclophosphamide.

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- *Ghosh et al: Pretreatment with neem (*Azadirachta indica*) leaf preparation in Swiss mice diminishes leukopenia and enhances the antitumor activity of cyclophosphamide. *Phytother Res* 2006 Sep;20(9):814-8
- *Kumar et al: Nimbolide a limonoid from *Azadirachta indica* inhibits proliferation and induces apoptosis of human choriocarcinoma (BeWo) cells. *Invest New Drugs* 2009 Jun;27(3):246-52
- *Kumar et al: Anticancer effects of ethanolic neem leaf extract on prostate cancer cell line (PC-3). *J Ethnopharmacol* 2006 Apr 21;105(1-2):246-50
- *Priyadarsini et al: The neem limonoids azadirachtin and nimbolide induce cell cycle arrest and mitochondria-mediated apoptosis in human cervical cancer (HeLa) cells. *Free Radic Res* 2010 Jun;44(6):624-34
- *Subapriya et al: Modulation of xenobiotic-metabolizing enzymes by ethanolic neem leaf extract during hamster buccal pouch carcinogenesis. *J Exp Clin Cancer Res* 2005 Jun;24(2):223-30

Nettle has a positive effect on prostate cancer.

- *Durak et al: Aqueous extract of *Urtica dioica* makes significant inhibition on adenosine deaminase activity in prostate tissue from patients with prostate cancer. *Vaccine* 2007 Feb 26;25(10):1838-40
- *Konrad et al: Antiproliferative effect on human prostate cancer cells by a stinging nettle root (*Urtica dioica*) extract. *Planta Med* 2000 Feb;66(1):44-7

Niacin (B3), in high doses (along with a B-complex to avoid creating a deficiency of one or more of the other B-family members), decreases chromosome translocation frequency which plays a key role in the development of cancers. Niacin is also

vital for DNA repair, immune system function and decreasing the side effects of chemotherapy.

*Kirkland: Niacin and Carcinogenesis . Nut Canc 2003;46(2):110–18

*Yong & Petersen: High dietary niacin intake is associated with decreased chromosome translocation frequency in airline pilots. Br J Nutr 2010 Oct 8:1-9

Nightshade Family extracts called Solasodine rhamnosyl glycosides (SRGs) significantly improve skin cancers, which researchers are calling them a “safe therapy for basal cell carcinoma”. They also appear to kill other cancer cells including breast, liver, lung, and leukemia while improving the effects of conventional cancer-drugs and may have a similar effect on the HSV-1 virus.

*Cham: Topical solasodine rhamnosyl glycosides derived from the eggplant treats large skin cancers: two case reports. Intern J Clin Med 2011 Sept;2(4):473-77

*Cham: Cancer intralesion chemotherapy with solasodine rhamnosyl glycosides. Res J Biol Sci 2008;3(9):1008-17

*Cham: Solasodine rhamnosyl glycosides specifically bind cancer cell receptors and induce apoptosis and necrosis. Treatment for skin cancer and hope for internal cancers. Res J Biol Sci 2007;2(4):503-14

*Cham: Solasodine rhamnosyl glycosides in a cream formulation is effective for treating large and troublesome skin cancers. Res J Biol Sci 2007;2(7):749-61

*Cham et al: Antitumour effects of glycoalkaloids isolated from Solanum sodomaeum L. Planta Med 1987;53(1):34-36

*Cham et al: Topical treatment of malignant and premalignant skin cancers by very low concentrations of a standard mixture of solasodine glycosides. Canc Lett 1991;59(3):183-92

*Cham & Daunter: Solasodine glycosides. Selective cytotoxicity for cancer cells and inhibition of cytotoxicity by rhamnose in Mice with sarcoma 180. Canc Lett 1990;55(3):221-25

*Cham & Meares: Glycoalkaloids from solanum sodomaeum L. are effective in the treatment of skin cancers in man. Canc Lett 1987;36(2):111-18

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*Kuo et al: Anticancer activity evaluation of the solanum glycoalkaloid solamargine. Triggering apoptosis in human hepatoma cells,” Biochem Pharmacol 2000;60(12):1865-73

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*Millward et al: Results of phase I clinical trials of Coramsine in patients with advanced solid tumours. J Clin Oncol 2006;24(18S):2070

*Punjabi et al: Solasodine Glycoalkaloids: A novel topical therapy for basal cell carcinoma. A double-blind, randomized, placebo-controlled, parallel group, multicentre study. Intern J Derma 2008;47(1):78-82

*Shiu et al: Solamargine induces apoptosis and sensitizes breast cancer cells to cisplatin. Food Chem Tox 2007;45(11):2155-64

*Shiu et al: Downregulation of HER2/neu receptor by solamargine enhances anticancer drug-mediated cytotoxicity in breast cancer cells with high-expressing HER2/neu. Cell Bio Tox 2008;24(1):1-10

*Stunning New Way to Flush Away Skin Cancer. Mercola online, Dec 10, 2011

*Sun et al: Solamargine, a steroidal alkaloid glycoside induces oncosis in human K562 leukemia and squamous cell carcinoma KB cells. Canc Chemother Pharmacol 2010;65(4):1125-30

*Thorne et al: The inactivation of herpes simplex virus by some Solanaceae glycoalkaloids. Antiviral Res 1985 Dec;5(6):335-43

Noni fruit is a safe antioxidant food that reduces cancer risk in smokers; works synergistically with doxorubicin to inhibit breast cancer growth; displays anti-tumor potential in several cancers; protects the liver from chemotoxicity; and has a potent

detoxifying activity that is 40 times better than sulforaphane, an anti-cancer substance found in broccoli.

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*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

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Plums and **FOS** (fructooligosaccharide – a prebiotic) reverses bone loss caused by removal of the ovaries.

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- *Marimuthu et al: Treatment of ovarian cancer cells with nutlin-3 and resveratrol combination leads to apoptosis via caspase activation. *J Med Food* 2011 Jan-Feb;14(1-2):46-52
- *No authors listed: Resveratrol induces senescence-like growth inhibition of U-2 OS cells associated with the instability of telomeric DNA and upregulation of BRCA1. *Mech Ageing Dev* 2009 Aug;130(8):528-37
- *Qin et al: Study on the effect of resveratrol on metastasis-associated ability of ovarian carcinoma HO-8910PM cells in vitro. *Zhong Yao Cai* 2007 Feb;30(2):176-8
- *Rezk et al: Use of resveratrol to improve the effectiveness of cisplatin and doxorubicin: study in human gynecologic cancer cell lines and in rodent heart. *Am J Obstet Gynecol* 2006 May;194(5):e23-6

Rooibos, Honeybush, and Green Tea prevent cancer cell formation.

- *Marnewick et al: Inhibition of tumour promotion in mouse skin by extracts of rooibos (*Aspalathus linearis*) and honeybush (*Cyclopia intermedia*), unique South African herbal teas. *Cancer Lett* 2005 Jun 28;224(2):193-202

Ruta graveolens (Rue), either in herbal or homeopathic form, inhibits colon, breast and prostate cancer cells.

- *Fadlalla et al: *Ruta graveolens* extract induces DNA damage pathways and blocks Akt activation to inhibit cancer cell proliferation and survival. *Anticancer Res* 2011 Jan;31(1):233-41

Saffron possesses some anti-cancer properties.

- *Aung et al: Crocin from *Crocus sativus* possesses significant anti-proliferation effects on human colorectal cancer cells. *Exp Oncol* 2007 Sep;29(3):175-80

SAMe (S-adenosylmethionine) is both a chemo-preventative and a treatment for liver cancer.

- *Lu & Mato: S-Adenosylmethionine in cell growth, apoptosis and liver cancer. *J Gastroenterol Hepatol* 2008 Mar;23 Suppl 1:S73-7
- *Santini et al: S-adenosylmethionine (AdoMet) supplementation for treatment of chemotherapy-induced liver injury. *Phytother Res* 2005 Dec;19(12):1030-7

Seaweed, alone or with Fermented Rice bran, prevents the growth of breast and cervical cancer cells.

- *Chui et al: Growth inhibitory potential of effective microorganism fermentation extract (EM-X) on cancer cells. *Int J Mol Med* 2004 Nov;14(5):925-9
- *Funahashi et al: Wakame seaweed suppresses the proliferation of 7,12-dimethylbenz(a)-anthracene-induced mammary tumors in rats. *Jpn J Cancer Res* 1999 Sep;90(9):922-7
- *Yuan et al: Extracts from dulce (*Palmaria palmata*) are effective antioxidants and inhibitors of cell proliferation in vitro. *Food Chem Toxicol* 2005 Jul;43(7):1073-81
- *Yuan & Walsh: Antioxidant and antiproliferative activities of extracts from a variety of edible seaweeds. *Food Chem Toxicol* 2006 Jul;44(7):1144-50

Senna contains a compound that inhibits cancer cell formation.

- *Chen et al: Sennoside B inhibits PDGF receptor signaling and cell proliferation induced by PDGF-BB in human osteosarcoma cells. *Life Sci* 2009 Jun 19;84(25-26):915-22

Sesame seeds contain compounds that stop the growth of a wide variety of tumor cells including leukemia, multiple myeloma, and cancers of the colon, prostate, breast, pancreas, and lung.

- *Harikumar et al: Sesamin manifests chemopreventive effects through the suppression of NF-kappa B-regulated cell survival, proliferation, invasion, and angiogenic gene products. *Mol Cancer Res* 2010 May;8(5):751-61

Shiitake mushrooms inhibit the formation of various cancer cells and with **Rice Bran**, programs the death of leukemia cells.

- *Dang et al: Betulinic acid derivatives as human immunodeficiency virus type 2 (HIV-2) inhibitors. *J Med Chem* 2009 Dec 10;52(23):7887-91
- *Fang et al: Inhibition of growth and induction of apoptosis in human cancer cell lines by an ethyl acetate fraction from shiitake mushrooms. *J Altern Complement Med* 2006 Mar;12(2):125-32
- *Ghoneum & Gollapudi: Modified arabinoxylan rice bran (MGN-3/Biobran) sensitizes human T cell leukemia cells to death receptor (CD95)-induced apoptosis. *Cancer Lett* 2003 Nov 10;201(1):41-9
- *Israilides et al: In vitro cytostatic and immunomodulatory properties of the medicinal mushroom *Lentinula edodes*. *Phytomed* 2008 Jun;15(6-7):512-9
- *Ng & Yap: Inhibition of human colon carcinoma development by lentinan from shiitake mushrooms (*Lentinus edodes*). *J Altern Complement Med* 2002 Oct;8(5):581-9
- *Ngai & Ng: Lentin, a novel and potent antifungal protein from shiitake mushroom with inhibitory effects on activity of human immunodeficiency virus-1 reverse transcriptase and proliferation of leukemia cells. *Life Sci* 2003 Nov 14;73(26):3363-74
- *Shen et al: Effect of the culture extract of *Lentinus edodes* mycelia on splenic sympathetic activity and cancer cell proliferation. *Actas Urol Esp* 2003 Oct;27(9):732-4
- *Zhou et al: The shiitake mushroom-derived immuno-stimulant lentinan protects against murine malaria blood-stage infection by evoking adaptive immune-responses. *Int Immunopharmacol* 2009 Apr;9(4):455-62

Spirulina not only enhances the immune system but has significant anticancer, antiviral, and antifungal activity.

- *Blinkova et al: Biological activity of *Spirulina*. *Zh Mikrobiol Epidemiol Immunobiol* 2001 Mar-Apr;(2):114-8

Stevia, an herb that is 200 times sweeter than table sugar, is often used by diabetics and non-diabetics alike because of its sweetness with no calories. It does have additional health benefits including inhibiting the formation of skin cancer.

- *Yasukawa et al: Inhibitory effect of stevioside on tumor promotion by 12-O-tetradecanoylphorbol-13-acetate in two-stage carcinogenesis in mouse skin. *Biol Pharm Bull* 2002 Nov;25(11):1488-90

Sulforaphane is a cancer-fighting compound found in cruciferous vegetables, especially broccoli sprouts.

- *Barcelo et al: CYP2E1-mediated mechanism of anti-genotoxicity of the broccoli constituent sulforaphane. *Carcinogen* 1996 17(2):277-282
- *Brooks et al: Potent induction of phase 2 enzymes in human prostate cells by sulforaphane. *Canc Epidemiol Biomark Prev* 2001 Sept;10:949
- *Chiao et al: Sulforaphane and its metabolite mediate growth arrest and apoptosis in human prostate cancer cells. *Internatl J Oncol* 2002;20(3):631-6
- *Chung et al: Chemoprevention of colonic aberrant crypt foci in Fischer rats by sulforaphane and phenethyl isothiocyanate. *Carcinogen* 2000;21(12):2287-91

- *Fimognari et al: Growth inhibition, cell-cycle arrest and apoptosis in human T-cell leukemia by the isothiocyanate sulforaphane. *Carcinogen* 2002;23(4):581-86
- *Gamet-Payrastre et al: Sulforaphane, a naturally occurring isothiocyanate, induces cell cycle arrest and apoptosis in HT29 human colon cancer cells. *Cancer Res* 2000 Mar 3;60:1426
- *Juge et al: Molecular basis for chemoprevention by sulforaphane: a comprehensive review. *Cell Mole Life Sci* 2007 May;64(9):1105-27
- *Kim et al: Induction of G2/M arrest and apoptosis by sulforaphane in human osteosarcoma U2-OS cells. *Mol Med Report* 2011 Sep-Oct;4(5):929-34
- *Matsui et al: Sulforaphane induces cell cycle arrest and apoptosis in murine osteosarcoma cells in vitro and inhibits tumor growth in vivo. *Oncol Rep* 2007 Nov;18(5):1263-8
- *Myzak et al: A novel mechanism of chemoprotection by sulforaphane: Inhibition of Histone Deacetylase. *Canc Res* 2004 Aug 15;64:5767
- *Singh et al: Sulforaphane induces caspase-mediated apoptosis in cultured PC-3 human prostate cancer cells and retards growth of PC-3 xenografts in vivo. *Carcinogen* 2004;25(1): 83-90
- *Wang et al: Targeting cell cycle machinery as a molecular mechanism of sulforaphane in prostate cancer prevention. *Internatl J Oncol* 2004;24(1):187-92
- *Zhang et al: Anticarcinogenic activities of sulforaphane and structurally related synthetic norbornyl isothiocyanates. *Proceed Natl Acad Sci USA (PNAS)* 1994 Apr 12;91(8):3147-50

Tart Cherries inhibit intestinal and colon cancer.

- *Bobe et al: Dietary anthocyanin-rich tart cherry extract inhibits intestinal tumorigenesis in APC(Min) mice fed suboptimal levels of sulindac. *J Agric Food Chem* 2006 Dec 13;54(25):9322-8
- *Kang et al: Tart cherry anthocyanins inhibit tumor development in Apc(Min) mice and reduce proliferation of human colon cancer cells. *Cancer Lett* 2003 May 8;194(1):13-9

Theanine is a substance found in green tea that is often used to relieve stress but it also improves the function of anti-cancer drugs.

- *Sugiyama & Sadzuka: Theanine and glutamate transporter inhibitors enhance the antitumor efficacy of chemotherapeutic agents. *Biochim Biophys Acta* 2003 Dec 5;1653(2):47-59

Tomato seed extract significantly inhibits leukemia cell proliferation.

- *Ferrerres et al: Tomato (*Lycopersicon esculentum*) seeds: new flavonols and cytotoxic effect. *J Agric Food Chem* 2010 Feb 4

Vitamin supplementation (natural sources only and not synthetically produced supplements as these can be toxic to the body) during breast cancer treatment is not only beneficial but helps to increase survival and lessen the chance of recurrence. The conclusion states: "Our results do not support the current recommendation that breast cancer patients should avoid use of vitamin supplements."

- *Busanello et al: Vitamin/mineral supplementation and cancer, cardiovascular, and all-cause mortality in a German prospective cohort (EPIC-Heidelberg). *Eur J Nutr* 2011 Jul 22
- *Nechuta et al: Vitamin supplement use during breast cancer treatment and survival: a prospective cohort study. *Cancer Epidemiol Biomark Prev* 2010 Dec 21

Vitamin C inhibits cancer cell growth and fresh fruit and vegetables high in vitamins lower the risk of developing cancers.

- *Harding et al: Plasma vitamin C level, fruit and vegetable consumption, and the risk of new-onset type 2 diabetes mellitus: the European prospective investigation of cancer--Norfolk prospective study. *Arch Intern Med* 2008 Jul 28;168(14):1493-9
- *Tsao: Inhibiting effect of ascorbic acid on the growth of human mammary tumor xenografts. *Am J Clin Nutr* 1991 Dec;54(6 Suppl):1274S-1280S

Vitamin C, EGCG (from Green Tea), Lysine and Proline (amino acids) combination has strong anti-cancer activity.

- *Roomi et al: Effect of ascorbic acid, lysine, proline, and green tea extract on human osteosarcoma cell line MNNG-HOS xenografts in nude mice: evaluation of tumor growth and immunohistochemistry. *Med Oncol* 2006;23(3):411-8
- *Roomi et al: Antitumor effect of nutrient synergy on human osteosarcoma cells U-2OS, MNNG-HOS and Ewing's sarcoma SK-ES.1. *Oncol Rep* 2005 Feb;13(2):253-7

Vitamin D3 prevents at least 16 types of cancers and decreases mortality rates (but not D2). Winter sunlight provides little protection (Webb) therefore, supplementation is a must, especially if you live in northern latitudes. A deficiency is linked to muscle pain in breast cancer survivors. There are hundreds of studies but just a few are listed here.

- *Adams, Mike: New research shows vitamin D slashes risk of cancers by 77 percent; cancer industry refuses to support cancer prevention. *NaturalNews*, Friday, June 08, 2007 www.naturalnews.com/021892_vitamin_D_American_Cancer_Society.html
- *Autier & Gandini: Vitamin D supplementation and total mortality: a meta-analysis of randomized controlled trials. *Arch Intern Med* 2007;167(16):1730-37
- *Bjelakovic et al: Vitamin D supplementation for prevention of mortality in adults. *Cochrane Data Syst Rev* 2011 Jul 6;(7):CD007470
- *Chiang & Chen: Vitamin D for the prevention and treatment of pancreatic cancer. *World J Gastroenterol* 2009 Jul 21;15(27):3349-54
- *Chlebowski et al: Calcium plus vitamin D supplementation and the risk of breast cancer. *J Natl Cancer Inst* 2008 Nov 19;100(22):1581-91
- *Crew et al: Association between plasma 25-hydroxyvitamin D and breast cancer risk. *Canc Prev Res (Phila Pa)* 2009 Jun;2(6):598-604
- *Crew et al: High prevalence of vitamin D deficiency despite supplementation in premenopausal women with breast cancer undergoing adjuvant chemotherapy. *J Clin Oncol* 2009 May 1;27(13):2151-6
- *Engel et al: Joint effects of dietary vitamin D and sun exposure on breast cancer risk: results from the French E3N cohort. *Canc Epidemiol Biomark Prev* 2011 Jan;20(1):187-98
- *Fife et al: Effects of vitamin D3 on proliferation of cancer cells in vitro. *Cancer Lett* 1997 Nov 25;120(1):65-9
- *Garland et al: Vitamin D for cancer prevention: global perspective. *Ann Epidemiol* 2009 Jul;19(7):468-83
- *Garland et al: What is the dose-response relationship between vitamin D and cancer risk? *Nutr Rev* 2007 Aug;65(1):91-95
- *Garland et al: Vitamin D and prevention of breast cancer: Pooled analysis. *J Steroid Biochem Molec Biol* 2007 March;103(3-5):708-11
- *Garland & Garland: Do sunlight and vitamin D reduce the likelihood of colon cancer? *Int J Epidemiol* 1980;9:227-31
- *Grant: 826 Highly Cited and Recent Papers on UVB and/or Vitamin D and Cancer (pdf online)
- *Grant: Geographic variation of prostate cancer mortality rates in the USA; implications for prostate cancer risk related to vitamin D. *Int J Canc* 2004;111:470-1
- *Grant: A multicountry ecologic study of risk and risk reduction factors for prostate cancer mortality. *Eur Urol* 2004;45:371-9
- *Grant: An estimate of premature cancer mortality in the United States due to inadequate doses of solar ultraviolet-B radiation. *Cancer* 2002b;94:1867-75
- *Grant & Garland: A critical review of studies on vitamin D in relation to colorectal cancer. *Nutr Canc* 2004;48(2):115-23
- *Grant and Holick: Benefits and requirements of vitamin D for optimal health: a review. *Alt Med Rev* 2005;10(2):94
- *John et al: Sun exposure, vitamin D receptor gene polymorphisms, and breast cancer risk in a multi-ethnic population. *Am J Epidemiol* 2007;166(12):1409-19

- *Knight et al: Vitamin D and reduced risk of breast cancer: a population-based case-control study. *Cancer Epidemiol Biomarkers Prev* 2007 Mar;16(3):422-9
- *Mondul et al: Serum vitamin D and risk of bladder cancer. *Biol Trace Elem Res* 2002 Nov;89(2):105-10
- *Reid et al: Prophylaxis against vitamin D deficiency in the elderly by regular sunlight exposure. *Age Ageing* 1986;15:35-40
- *Robsahm et al: Vitamin D(3) from sunlight may improve the prognosis of breast-, colon- and prostate cancer (Norway). *Canc Cau Contr* 2004;15:149-58
- *Sears, Al MD and Herring, John. *Your Best Health Under the Sun*. 2007
- *Sharabani et al: Cooperative antitumor effects of vitamin D3 derivatives and rosemary preparations in a mouse model of myeloid leukemia. *Int J Cancer* 2006 Jun 15;118(12):3012-21
- *Skinner et al: Vitamin D intake and the risk for pancreatic cancer in two cohort studies. *Canc Epidemiol Biomark Prev* 2006 Sep;15(9):1688-95
- *Sorenson, Marc MD. ABC Denver Ch 7 interview online: www.youtube.com/watch?v=JyOT8UcGhhg
- *Swami et al: Vitamin D growth inhibition of breast cancer cells: gene expression patterns assessed by cDNA microarray. *Breast Cancer Res Treat* 2003 Jul;80(1):49-62
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- *van den Bemd & Chang: Vitamin D and vitamin D analogs in cancer treatment. *Curr Drug Targets* 2002;3:85-94
- *Vrieling et al: Serum 25-hydroxyvitamin D and postmenopausal breast cancer survival: a prospective patient cohort study. *Breast Cancer Res* 2011 Jul 26;13(4):R74
- *Waltman et al: Vitamin D insufficiency and musculoskeletal symptoms in breast cancer survivors on aromatase inhibitor therapy. *Cancer Nurs* 2009 Mar-Apr;32(2):143-50
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- *Welsh: Induction of apoptosis in breast cancer cells in response to vitamin D and antiestrogens. *Biochem Cell Biol* 1994 Nov-Dec;72(11-12):537-45
- *Wu et al: 1alpha,25-Dihydroxyvitamin D(3) antiproliferative actions involve vitamin D receptor-mediated activation of MAPK pathways and AP-1/p21(waf1) upregulation in human osteosarcoma. *Phytomed* 2008 Aug;15(8):577-86

Vitamin E, particularly gamma-enriched, helps prevent prostate and other cancers (contrary to media hype that says the opposite). The best vitamin E supplement is one that has all 4 tocopherols and 4 tocotrienols.

- *Alleva et al: Alpha-tocopheryl succinate induces cytostasis and apoptosis in osteosarcoma cells: the role of E2F1. *Biochem Biophys Res Commun* 2005 Jun 17;331(4):1515-21
- *Alkhenizan & Hafez: The role of vitamin E in the prevention of cancer: a meta-analysis of randomized controlled trials. *Ann Saudi Med* 2007 Nov-Dec;27(6):409-14
- *Conte et al: Gamma-tocotrienol metabolism and antiproliferative effect in prostate cancer cells. *Ann NY Acad Sci* 2004;1031:391-4
- *Heinonen et al: Prostate cancer and supplementation with alpha-tocopherol and beta-carotene: incidence and mortality in a controlled trial. *J Natl Cancer Inst* 1998 Mar 18;90(6):440-6
- *Ju et al: Cancer-preventive activities of tocopherols and tocotrienols. *Carcinogen* 2009 Sep 11
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- *Luk et al. Gamma-tocotrienol as an effective agent in targeting prostate cancer stem cell-like population. *Internat J Canc* 2011;128(9):2182-91
- *Nesaretnam et al: Modulation of cell growth and apoptosis response in human prostate cancer cells supplemented with tocotrienols. *Eur J Lipid Sci Technol* 2008;110:23-31
- *Watters et al: Associations between alpha-tocopherol, beta-carotene, and retinol and prostate cancer survival. *Cancer Res* 2009 May 1;69(9):3833-41

Vitamin E, Green tea (EGCG), and Genistein work synergistically with the chemotherapy drug Taxol (paclitaxel) to kill prostate cancer cells.

- *Ping et al: Taxol synergizes with antioxidants in inhibiting hormonal refractory prostate cancer cell growth. *Urol Oncol* 2008 Sep 23

Vitex/Chasteberry is often used to prevent menopausal symptoms in women and osteoporosis in men but it does have anti-cancer effects as well.

- *Imai et al: Cytotoxic effects of flavonoids against a human colon cancer derived cell line, COLO 201: a potential natural anti-cancer substance. *Cancer Lett* 2009 Apr 8;276(1):74-80
- *Weisskopf et al: A Vitex agnus-castus extract inhibits cell growth and induces apoptosis in prostate epithelial cell lines. *Planta Med* 2005 Oct;71(10):910-6

White Button mushrooms inhibit various cancers; stimulate natural killer cells; and contain significant quantities of bioavailable vitamin B12.

- *Adams et al: White button mushroom (*Agaricus bisporus*) exhibits antiproliferative and proapoptotic properties and inhibits prostate tumor growth in athymic mice. *Nutr Cancer* 2008;60(6):744-56
- *Carrizo et al: The antineoplastic lectin of the common edible mushroom (*Agaricus bisporus*) has two binding sites, each specific for a different configuration at a single epimeric hydroxyl. *J Biol Chem* 2005 Mar 18;280(11):10614-23
- *Chen et al: Anti-aromatase activity of phytochemicals in white button mushrooms (*Agaricus bisporus*). *Mol Cell Biochem* 2005 Dec;280(1-2):173-9
- *Grube et al: White button mushroom phytochemicals inhibit aromatase activity and breast cancer cell proliferation. *J Nutr* 2001 Dec;131(12):3288-93
- *Koyyalamudi et al: Vitamin B12 is the active corrinoid produced in cultivated white button mushrooms (*Agaricus bisporus*). *J Agric Food Chem* 2009 Jul 22;57(14):6327-33
- *Miyake et al: Inhibitory effects of 2-amino-3H-phenoxazin-3-one on the melanogenesis of murine B16 melanoma cell line. *Biosci Biotechnol Biochem* 2010;74(4):753-8
- *Wu et al: Dietary supplementation with white button mushroom enhances natural killer cell activity in C57BL/6 mice. *Child Dev* 2007 May-Jun;78(3):927-37

Wormwood is an herb used mainly to get rid of parasites but it does have anti-cancer effects as well.

- *Du et al: Artesunate induces oncosis-like cell death in vitro and has antitumor activity against pancreatic cancer xenografts in vivo. *Cancer Chemother Pharmacol* 2010 Apr;65(5):895-902
- *Nam et al: Effects of artemisinin and its derivatives on growth inhibition and apoptosis of oral cancer cells. *Head Neck*. 2007 Apr;29(4):335-40

Zyflamend by New Chapter kills various cancer cells and suppresses tumor growth in the prostate.

- *Bemis et al: Zyflamend, a unique herbal preparation with nonselective COX inhibitory activity, induces apoptosis of prostate cancer cells that lack COX-2 expression. *Nutr Canc* 2005;52(2):202-12
- *Capodice et al: Zyflamend in men with high-grade prostatic intraepithelial neoplasia: results of a phase I clinical trial. *J Soc Integr Oncol* 2009 Spring;7(2):43-51
- *Kunnumakkara et al: Zyflamend suppresses growth and sensitizes human pancreatic tumors to gemcitabine in an orthotopic mouse model through modulation of multiple targets. *Int J Canc* 2011 Sept 20
- *Rafailov et al: The role of Zyflamend, an herbal anti-inflammatory, as a potential chemopreventive agent against prostate cancer: a case report. *Integr Cancer Ther* 2007 Mar;6(1):74-76
- *Sandur et al: Zyflamend, a polyherbal preparation, inhibits invasion, suppresses osteoclastogenesis, and potentiates apoptosis through down-regulation of NF-kappa B activation and NF-kappa B-regulated gene products. *Nutr Canc* 2007;57(1):78-87

- *Yang et al: Zylamend reduces LTB4 formation and prevents oral carcinogenesis in a 7,12-dimethylbenz[alpha]anthracene (DMBA)-induced hamster cheek pouch model. *Carcinogen* 2008 Aug 6
- *Yang et al: Zylamend-mediated inhibition of human prostate cancer PC3 cell proliferation: effects on 12-LOX and Rb protein phosphorylation. *Cancer Biol Ther* 2007 Feb;6(2):228-36



CHOLESTEROL- (LIPID-) LOWERING

(USED TO REDUCE CHOLESTEROL AND/OR TRIGLYCERIDE LEVELS)

COMMON EXAMPLES:

Bile Acid Sequestrants

cholestyramine – Questran and others
 colestipol – Colestid

Fibrates

clofibrate – Atromid-S
 fenofibrate – Tricor
 gemfibrozil – Lopid

... and others

Statins (HMG-CoA reductase inhibitors)

atorvastatin – Lipitor
 lovastatin – Mevacor
 pravastatin – Pravachol, Selektine
 rosuvastatin – Crestor
 simvastatin – Zocor

... and others

DEplete:

A, beta carotene, B1, B3, B9, B12, D, E, K, calcium, copper, iron, magnesium, potassium, phosphorus, zinc and other minerals, essential fatty acids, CoQ10

⚠ **Cholesterol-lowering drugs** increase the risk of post-operative death.

*Wilhelmi et al: Massive postoperative rhabdomyolysis following combined CABG/abdominal aortic replacement: a possible association with HMG-CoA reductase inhibitors. Cardiovasc Drugs Ther 2002 Sep;16(5):471-5

⚠ **Statins rapidly deplete CoQ10.** Within two weeks, body stores of CoQ10 have decreased by 50% but this loss can be reversed with supplementation which goes on to improve congestive heart failure, brain function, myopathies and more.

*Akahane et al: Atrial fibrillation induced by simvastatin treatment in a 61-year-old man. Heart Vessels 2003 Jul;18(3):157-9

- *Bargossi et al: Exogenous CoQ10 supplementation prevents plasma ubiquinone reduction induced by HMG-CoA reductase inhibitors. *Mol Aspects Med* 1994;15 Suppl:s187-93
- *Beltowski et al: Adverse effects of statins - mechanisms and consequences. *World J Gastroenterol* 2005 Dec 21;11(47):7466-72
- *Diebold et al: Influences of lovastatin administration on the respiratory burst of leukocytes and the phosphorylation potential of mitochondria in guinea pigs. *Biochim Biophys Acta* 1994 Jul 6 ;1200(2):100-8
- *Folkers et al: Lovastatin decreases coenzyme Q levels in humans. *Proc Natl Acad Sci USA* 1990 Nov;87(22):8931-4
- *Fux et al: Coenzyme Q10 and cognition in atorvastatin treated dogs. *Neurosci Lett* 2011 Jul 8
- *Galli & Iuliano: Do statins cause myopathy by lowering vitamin E levels? *Med Hypotheses* 2009 Nov 5
- *Kromer & Moosmann: Statin-induced liver injury involves cross-talk between cholesterol and selenoprotein biosynthetic pathways. *Mol Pharmacol* 2009 Jun;75(6):1421-9
- *Kucharská et al: Simvastatin decreased coenzyme Q in the left ventricle and skeletal muscle but not in the brain and liver in L-NAME-induced hypertension. *Physiol Res* 2007;56 Suppl 2:S49-54
- *Langsjoen & Langsjoen: The clinical use of HMG CoA-reductase inhibitors and the associated depletion of coenzyme Q10. A review of animal and human publications. *Biofactors* 2003;18(1-4):101-11
- *Miyake et al: Effect of treatment with 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors on serum coenzyme Q10 in diabetic patients. *Arzneimittelforschung* 1999 Apr;49(4):324-9
- *Moosmann & Behl: Selenoprotein synthesis and side-effects of statins. *Lancet* 2004 Mar13;363(9412):892-4
- *Moosmann & Behl: Selenoproteins, cholesterol-lowering drugs, and the consequences: revisiting of the mevalonate pathway. *Trends Cardiovasc Med* 2004 Oct;14(7):273-81
- *Mortensen et al: Dose-related decrease of serum coenzyme Q10 during treatment with HMG-CoA reductase inhibitors. *Mol Aspects Med* 1997 ;18 Suppl:S137-44
- *Neale et al: Statin precipitated lactic acidosis? *J Clin Pathol* 2004 Sep ;57(9):989-90
- *Okello et al: Combined statin/coenzyme Q10 as adjunctive treatment of chronic heart failure. *Med Hypotheses* 2009 Sep;73(3):306-8
- *Rubinstein et al: Statin therapy decreases myocardial function as evaluated via strain imaging. *Clin Cardiol* 2009 Dec;32(12):684-9
- *Satoh et al: Effects of 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors on mitochondrial respiration in ischaemic dog hearts. *Br J Pharmacol* 1995 Sep ;116(2):1894-8
- *Silver et al: Effect of atorvastatin on left ventricular diastolic function and ability of coenzyme Q10 to reverse that dysfunction. *Am J Cardiol* 2004 Nov 15;94(10):1306-10
- *Sugiyama: HMG CoA reductase inhibitor accelerates aging effect on diaphragm mitochondrial respiratory function in rats. *Biochem Mol Biol Int* 1998 Dec;46(5):923-31
- *Willis et al: Lovastatin decreases coenzyme Q levels in rats. *Proc Natl Acad Sci USA* 1990;87(22):8928-30

☞ **Statins** are not the only medications that deplete CoQ10. It is estimated that there are some 200 medications that rob the body of CoQ10 including acid blockers, antacids, allergies, antiarrhythmics, antibiotics, antidepressants, blood thinners, blood pressures, cancers, cholesterol-lowering, diabetes, anti-retrovirals, and psychiatric meds.

*Cohen, 2011:126-129

☞ **Statins** are associated with over 70 physical and mental conditions. Even the FDA admits that statin use contributes to hearing loss, muscle disease and diabetes. Despite more than 900 studies proving adverse effects, they still remain on the market with young children now being encouraged to take them.

*www.greenmedinfo.com/toxic-ingredient/statin-drugs

*Alborton et al: Adverse events associated with individual statin treatments for cardiovascular disease: an indirect comparison meta-analysis. *QJM* 2011 Sep 14

- *Alsheikh-Ali et al: Effect of the magnitude of lipid lowering on risk of elevated liver enzymes, rhabdomyolysis, and cancer: insights from large randomized statin trials. *J Am Coll Cardiol* 2007 Jul 31;50(5):409-18
- *Backes et al: Does simvastatin cause more myotoxicity compared with other statins? *Ann Pharmacother* 2009 Dec;43(12):2012-20
- *Baker et al: Differing effect of statins on insulin sensitivity in non-diabetics: a systematic review and meta-analysis. *Diabetes Res Clin Pract* 2010 Jan ;87(1):98-107
- *Benson: FDA admits statin drugs cause diabetes, memory loss. *NaturalNews* 2012 March 1
- *Berner: Statins can produce ataxia in bipolar disorder: two case reports. *J Clin Psych* 2010 Mar;71(3):359
- *Biesenbach et al: Terminal myoglobinuric renal failure in lovastatin therapy with pre-existing chronic renal insufficiency. *Wien Klin Wochenschr* 1996;108(11):334-7
- *Bonovas & Sitaras: Does pravastatin promote cancer in elderly patients? A meta-analysis. *CMAJ* 2007 Feb 27;176(5):649-54
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☞ **Statins** induce testicular pain, insomnia, adverse behavior, multi-organ failure, and myopathies including **rhabdomyolysis** (destruction of the skeletal muscle tissue which can be fatal). The incidence of statin-induced

rhabdomyolysis is higher in clinical practice than in controlled trials because high-risk subjects are usually excluded from studies (Antons). Statin toxicity also mimics other disorders including Guillain-Barré and viral hepatitis.

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- *Stankovic et al: Concomitant administration of simvastatin and danazol associated with fatal rhabdomyolysis. *Clin Ther* 2010 May;32(5):909-14
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⌘ **Statins** alter platelet function and **increase** LDL oxidation which is corrected with CoQ10 and Vitamin E.

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- *Palomäki et al: Enhanced oxidizability of ubiquinol and alpha-tocopherol during lovastatin treatment. *FEBS Lett* 1997 Jun 30;410(2-3):254-8
- *Puccetti et al: Time-dependent effect of statins on platelet function in hypercholesterolaemia. *Eur J Clin Invest* 2002 Dec;32(12):901-8

⌘ **Statins** increase numerous dysfunctions that range from mild to very serious including liver dysfunction, acute renal failure, and cataracts. Liver dysfunction is the highest with fluvastatin. This was found in studies of over 2,000,000 people in England and Wales.

- *Hippisley-Cox & Coupland: Unintended effects of statins in men and women in England and Wales: population based cohort study using the QResearch database. *BMJ* 2010;340:c2197

⌘ **Shocking, but true**, is the the fact that Lipitor is the number one selling drug of all time in any drug category worldwide.

- *www.reuters.com/article/2010/04/13/roche-avastin-drugs-idUSLDE63C0BC20100413
- *www.forbes.com/2006/03/21/pfizer-merck-amgen-cx_mh_pk_0321topdrugs.html
- *www.medindia.net/health_statistics/health_facts/top-ten-selling-drugs.htm

⌘ **High cholesterol does not** reduce risk of death or other coronary heart diseases. This 1992 study states in its conclusion that “Lowering serum cholesterol concentrations does not reduce mortality and is unlikely to prevent coronary heart disease. Claims of the opposite are based on preferential citation of supportive trials.”

- *Ravnskov et al: Cholesterol lowering trials in coronary heart disease: frequency of citation and outcome. *BMJ* 1992 Jul 4;305(6844):15-9

⌘ **Cholesterol levels**, a little on the high side, actually protect against cancer, especially in older people. Low cholesterol levels increase mortality.

- *Al-Mallah et al: Low admission LDL-cholesterol is associated with increased 3-year all-cause mortality in patients with non ST segment elevation myocardial infarction. *Canc* 1995 Dec 15;76(12):2491-6
- *Traissac et al: Significance of cholesterol levels in patients 75 years or older. *Presse Med* 2005 Nov

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☞ **Cholesterol-lowering drugs** contribute to skin disorders.

*Proksch: Antilipemic drug-induced skin manifestations. *Hautarzt* 1995 Feb ;46(2):76-80

☞ **Meat:** Irradiation and microwave cooking increase cell oxidation which causes irregularities in cholesterol and triglyceride levels and could lead to cancer.

*Broncano et al: Effect of different cooking methods on lipid oxidation and formation of free cholesterol oxidation products (COPs) in Latissimus dorsi muscle of Iberian pigs. *Meat Sci* 2009 Jun 16

*Echarte et al: Consequences of microwave heating and frying on the lipid fraction of chicken and beef patties. *J Agric Food Chem* 2003 Sep 24;51(20):5941-5

*Lee et al: Formation of cholesterol oxides in irradiated raw and cooked chicken meat during storage. *Poult Sci* 2001 Jan ;80(1):105-8

☞ **Caution:** There is a severe decrease in HDL cholesterol when taking the diabetes drug rosiglitazone together with fenofibrate.

*Magee & Sharpe: Paradoxical decreases in high-density lipoprotein cholesterol with fenofibrate: a quite common phenomenon. *J Clin Pathol* 2009 Mar;62(3):250-3

*Schwing et al: Paradoxical severe decrease in high-density lipoprotein cholesterol due to rosiglitazone-fenofibrate interaction. *Endocr Pract* 2010 May-Jun;16(3):382-8

SUGGESTED ALTERNATIVES:

Açai fruit is a potent antioxidant that improves cholesterol levels and prevents damage to regions of the brain and elsewhere in the body.

*Kang et al: Anti-oxidant capacities of flavonoid compounds isolated from acai pulp (*Euterpe oleracea* Mart). *Food Chem* 2010, Oct:122(3):610-617

*Mertens-Talcott et al: Pharmacokinetics of anthocyanins and antioxidant effects after the consumption of anthocyanin-rich acai juice and pulp (*Euterpe oleracea* Mart) in human healthy volunteers. *J Agric Food Chem* 2008;56(17):7796-7802

*Oliveira de Souza et al: Diet supplementation with acai (*Euterpe oleracea* Mart.) pulp improves biomarkers of oxidative stress and the serum lipid profile in rats. *Nutr* 2010, July-Aug:26(7-8):804-810

*Schauss et al: Antioxidant capacity and other bioactivities of the freeze-dried Amazonian palm berry, *Euterpe oleracea* Mart (Acai). *J Agric Food Chem* 2006;54(22):8604-8610

*Spada et al: Frozen fruit pulp of *Euterpe oleracea* Mart (Acai) prevents hydrogen peroxide-induced damage in the cerebral cortex, cerebellum, and hippocampus of rats. *J Med Food* 2009, Oct:12(5):1084-1088

*Udani et al: Effects of Açai (*Euterpe oleracea* Mart.) berry preparation on metabolic parameters in a healthy overweight population: A pilot study. *Nutr J* 2011;10:45

Alfalfa reduces high cholesterol levels and prevents plaque buildup in the arteries.

*Malinow et al: Effect of alfalfa meal on shrinkage (regression) of atherosclerotic plaques during cholesterol feeding in monkeys. *Atheroscler* 1980 Nov;37(3):433-8

*Malinow et al: Alfalfa saponins and alfalfa seeds. Dietary effects in cholesterol-fed rabbits. *Atheroscler* 1980 Nov;37(3):433-8

Alpha lipoic acid and **Vitamin C** (ascorbate form, not ascorbic) prevent LDL oxidation.

*Sabharwal & May: Alpha-Lipoic acid and ascorbate prevent LDL oxidation and oxidant stress in endothelial cells. *Mol Cell Biochem* 2008 Feb;309(1-2):125-32

Almonds reduce biomarkers for lipid (fat) oxidation.

- *Hyson et al: Almonds and almond oil have similar effects on plasma lipids and LDL oxidation in healthy men and women. *J Nutr* 2002 Apr;132(4):703-7
- *Jenkins et al: Almonds reduce biomarkers of lipid peroxidation in older hyperlipidemic subjects. *J Nutr* 2008 May;138(5):908-13

Apples and **Pears** have a significantly positive effect on blood lipid levels thereby decreasing the risk of atherosclerosis. But do yourself a favour, eat only **organic** fruit as apples are the number one food that contains pesticides, many of which cause cancer.

- *Apples worst for pesticides on produce list. CBC News, Jun 14, 2011
- *Auclair et al: Apple polyphenols and fibers attenuate atherosclerosis in apolipoprotein E-deficient mice. *Phytomed* 2007 Apr;14(4):280-4
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. WebMD Health News June 13, 2011
- *Leontowicz et al: Apple and pear peel and pulp and their influence on plasma lipids and antioxidant potentials in rats fed cholesterol-containing diets. *J Agric Food Chem* 2003 Sep 10;51(19):5780-5
- *Pearson et al: Apple juice inhibits human low density lipoprotein oxidation. *Life Sc* 1999, Apr;64(21):1913-20
- *Setorki et al: Effects of apple juice on risk factors of lipid profile, inflammation and coagulation, endothelial markers and atherosclerotic lesions in high cholesterolemic rabbits. *Lipids Health Dis* 2009;8:39
- *Shabecoff: 100 Chemicals for Apples Add Up to Enigma on Safety. *NY Times* Feb 5, 1989

Arginine (in the L-form) is an amino acid that improves arterial function in those with high cholesterol.

- *Javanmard et al: Effect of L-arginine on circulating endothelial progenitor cells in hypercholesterolemic rabbits. *Int J Cardiol* 2010 Aug 20;143(2):213-6
- *Nakai et al: Effects of L-arginine on the endogenous angiogenic response in a model of hypercholesterolemia. *Surgery* 2005 Aug;138(2):291-8
- *Nematbakhsh et al: The prevention of endothelial dysfunction through endothelial cell apoptosis inhibition in a hypercholesterolemic rabbit model: the effect of L-arginine supplementation. *Lipids Health Dis* 2008;7:27

Ashwaganda significantly lowers cholesterol while regulating blood lipids.

- *Visavadiya & Narasimhacharya: Hypocholesteremic and antioxidant effects of *Withania somnifera* (Dunal) in hypercholesteremic rats. *Caries Res* 2001 Mar-Apr;35(2):125-8

Astaxanthin is one of many antioxidants which help regulate cholesterol levels.

- *Choi et al: Positive Effects of Astaxanthin on Lipid Profiles and Oxidative Stress in Overweight Subjects. *Plant Foods Hum Nutr* 2011 Oct 1
- *Lankin et al: Antioxidants decreases the intensification of low density lipoprotein in vivo peroxidation during therapy with statins. *Mol Cell Biochem* 2003 Jul;249(1-2):129-40
- *Zhao et al: Ameliorative effect of astaxanthin on endothelial dysfunction in streptozotocin-induced diabetes in male rats. *Arzneimittelforschung* 2011;61(4):239-46

Astragalus protects against homocysteine-induced injury to arteries.

- *Qiu et al: Astragaloside IV improves homocysteine-induced acute phase endothelial dysfunction via antioxidation. *Biol Pharm Bull* 2010;33(4):641-6
- *Zhang et al: Effects of *Astragalus membranaceus* and its main components on the acute phase endothelial dysfunction induced by homocysteine. *Vascul Pharmacol* 2007 Apr;46(4):278-85

Bamboo extract lowers cholesterol and blood lipids.

*Jiao et al: Antihyperlipidemic and antihypertensive effect of a triterpenoid-rich extract from bamboo shavings and vasodilator effect of friedelin on phenylephrine-induced vasoconstriction in thoracic aortas of rats. *Phytother Res* 2007 Dec;21(12):1135-41

*Park & Jhon: Effects of bamboo shoot consumption on lipid profiles and bowel function in healthy young women. *Exp Biol Med (Maywood)* 2008 Oct;233(10):1242-54

Bananas have an antioxidant effect thus preventing lipid oxidation.

*Krishnan & Vijayalakshmi: Alterations in lipids&lipid peroxidation in rats fed with flavonoid rich fraction of banana (*Musa paradisiaca*) from high background radiation area. *Indian J Med Res* 2005 Dec;122(6):540-6

Barley grass reduces LDL oxidation and improves overall health.

*Barley Grass. *Drugs.com*

*Ohkawa et al: Three new anti-oxidative saponarin analogs from young green barley leaves. *Chem Pharm Biol* 1998;46:1887-90

*Ohtake et al: Studies on the constituents of green juice from young barley leaves. Effect on dietarily induced hypercholesterolemia in rats [in Japanese]. *Yakugaku Zasshi* 1985;105:1052-57

*Yu et al: Effect of young barley leaf extract and adlay on plasma lipids and LDL oxidation in hyperlipidemic smokers. *Biol Pharm Bull* 2004 Jun;27(6):802-5

*Yu et al: Antioxidative and hypolipidemic effects of barley leaf essence in a rabbit model of atherosclerosis. *Jpn J Pharmacol* 2002;89:142-8

Basil oil inhibits cholesterol synthesis. Basil oil can be made at home by placing the herb into extra-virgin olive oil and letting it stand at room temperature for a couple of weeks.

*Bazzano et al: Non-soy legume consumption lowers cholesterol levels: a meta-analysis of randomized controlled trials. *Nutr Metab Cardiovasc Dis* 2009 Nov 23

*Bravo et al: *Ocimum basilicum* ethanolic extract decreases cholesterol synthesis and lipid accumulation in human macrophages. *J Carcinog* 2005 Sep 2;4:15

Bay leaves improve blood sugar and fat levels in diabetics.

*Khan et al: Bay leaves improve glucose and lipid profile of people with type 2 diabetes. *J Clin Biochem Nutr* 2009 Jan;44(1):52-6

Beans help lower and regulate cholesterol levels. Beans are a better sustainable and healthier protein choice than meat.

*Dabai et al: Comparative effects on blood lipids and faecal steroids of five legume species incorporated into a semi-purified, hypercholesterolaemic rat diet. *Br J Nutr* 1996 Apr;75(4):557-71

*Xu et al: Comparative studies on the antioxidant activities of nine common food legumes against copper-induced human low-density lipoprotein oxidation in vitro. *J Food Sci* 2007 Sep;72(7):S522-7

Beetroot significantly reduces LDL cholesterol while raising HDL levels.

*Bobek et al: The effect of red beet (*Beta vulgaris* var. *rubra*) fiber on alimentary hypercholesterolemia and chemically induced colon carcinogenesis in rats. *Nahrung* 2000 Jun;44(3):184-7

Berberine-containing plants (Barberry, Goldenseal, Oregon grape, Goldentthread) are known as strong anti-microbials that also help regulate cholesterol levels.

*Wu et al: Regulation of hepatic cholesterol biosynthesis by berberine during hyperhomocysteinemia. *Am J Physiol Regul Integr Comp Physiol* 2010 Dec 22

Black Cumin improves cholesterol levels.

*Dahri et al: Effect of *Nigella sativa* (kalonji) on serum cholesterol of albino rats. *Neurosci Lett* 2010 Oct;482(3):183-7

Black Raspberry Oil significantly lowers triglycerides while regulating cholesterol levels.

- *Ash et al: Unrefined and refined black raspberry seed oils significantly lower triglycerides and moderately affect cholesterol metabolism in male syrian hamsters. *J Med Food* 2011 May 6

Black and Brown Rice have cardio-protective properties that prevent arterial plaque formation.

- *Kim et al: The effects of a mixture of brown and black rice on lipid profiles and antioxidant status in rats. *Ann Nutr Metab* 2006;50(4):347-53
- *Xia et al: Supplementation of diets with the black rice pigment fraction attenuates atherosclerotic plaque formation in apolipoprotein e deficient mice. *J Nutr* 2003 Mar;133(3):744-51

Buckwheat Sprouts help regulate cholesterol levels while increasing antioxidant effects.

- *Lin et al: Optimization of bioactive compounds in buckwheat sprouts and their effect on blood cholesterol in hamsters. *J Agric Food Chem* 2008 Feb 27;56(4):1216-23

Carnitine lowers cholesterol in diabetics better than simvastatin. Carnitine is made in the body by two amino acids, lysine and methionine.

- *Malaguarnera et al: L-Carnitine supplementation reduces oxidized LDL cholesterol in patients with diabetes. *Am J Clin Nutr* 2009 Jan;89(1):71-6
- *Solfrizzi et al: Efficacy and tolerability of combined treatment with L-carnitine and simvastatin in lowering lipoprotein(a) serum levels in patients with type 2 diabetes mellitus. *Atherosclerosis*. 2006 Oct;188(2):455-61

Carnosine and Histidine (amino acids) delay diabetic deterioration and protect LDL cholesterol from being oxidized.

- *Lee et al: Histidine and carnosine delay diabetic deterioration in mice and protect human low density lipoprotein against oxidation and glycation. *Cont Lens Anterior Eye* 2008 Jun;31(3):141-6; quiz 170

Celery, Chicory leaves and Barley protect the liver in those with high cholesterol levels.

- *El-Mageed: Hepatoprotective effect of feeding celery leaves mixed with chicory leaves and barley grains to hypercholesterolemic rats. *Pharmacogn Mag* 2011 Apr ;7(26):151-6

Chickpeas/Garbanzo beans have cholesterol-lowering effects.

- *Pittaway et al: Dietary supplementation with chickpeas for at least 5 weeks results in small but significant reductions in serum total and low-density lipoprotein cholesterol levels in adult women and men. *Ann Nutr Metab* 2006;50(6):512-8

Cherries are potent antioxidants that protect cholesterol levels.

- *Mulabagal et al: Anthocyanin content, lipid peroxidation and cyclooxygenase enzyme inhibitory activities of sweet and sour cherries. *J Agric Food Chem* 2009 Feb 25;57(4):1239-46
- *Wang et al: Antioxidant polyphenols from tart cherries (*Prunus cerasus*). *J Agric Food Chem* 1999 Mar;47(3):840-4

Cinnamon significantly improves blood lipid profiles.

- *Babu et al: Cinnamaldehyde--a potential antidiabetic agent. *Phytomed* 2007 Jan;14(1):15-22

Cocoa (dark unsweetened) reduces blood cholesterol levels but not sweetened milk chocolate.

- *Baba et al: Continuous intake of polyphenolic compounds containing cocoa powder reduces LDL oxidative susceptibility and has beneficial effects on plasma HDL-cholesterol concentrations in humans. *Proc Natl Acad Sci USA* 2009 Jun 2;106(22):9033-8
- *Hirano et al: Antioxidant effects of polyphenols in chocolate on low-density lipoprotein both in vitro and ex vivo. *Mutat Res* 1999 Apr 6;440(2):181-8
- *Jia et al: Short-term effect of cocoa product consumption on lipid profile: a meta-analysis of randomized controlled trials. *Am J Clin Nutr* 2010 Jul;92(1):218-25
- *Mellor et al: High-cocoa polyphenol-rich chocolate improves HDL cholesterol in Type 2 diabetes patients. *Diabet Med* 2010 Nov;27(11):1318-21
- *Mursu et al: Dark chocolate consumption increases HDL cholesterol concentration and chocolate fatty acids may inhibit lipid peroxidation in healthy humans. *Food Chem Toxicol* 2008 Dec;46(12):3586-92
- *No authors listed: Effects of cocoa powder and dark chocolate on LDL oxidative susceptibility and prostaglandin concentrations in humans. *Am J Clin Nutr* 2001 Nov;74(5):596-602
- *Ruzaidi et al: The effect of Malaysian cocoa extract on glucose levels and lipid profiles in diabetic rats. *J Ethnopharmacol* 2005 Apr 8;98(1-2):55-60
- *Wan et al: Effects of cocoa powder and dark chocolate on LDL oxidative susceptibility and prostaglandin concentrations in humans. *Am J Clin Nutr* 2001 Nov;74(5):596-602

Coconut (and Palm) Oil, Coconut Water, Coconut Milk and Coconut Protein contain MCTs (medium chain triglycerides) which lower LDL cholesterol and triglycerides while increasing HDL cholesterol, similar to statins but without the side effects. They also have multi-system protective actions.

- *Assunção et al: Effects of dietary coconut oil on the biochemical and anthropometric profiles of women presenting abdominal obesity. *Lipids* 2009 Jul;44(7):593-601
- *Bester et al: Dietary red palm oil supplementation reduces myocardial infarct size in an isolated perfused rat heart model. *J Clin Endocrinol Metab* 2002 Mar;87(3):1010-4
- *Engelbrecht et al: The effect of dietary red palm oil on the functional recovery of the ischaemic/reperfused isolated rat heart: the involvement of the PI3-kinase signaling pathway. *Lipids Health Dis* 2009;8:18
- *Feranil et al: Coconut oil is associated with a beneficial lipid profile in pre-menopausal women in the Philippines. *Asia Pac J Clin Nutr* 2011;20(2):190-5
- *Hargrave et al: Dietary coconut oil increases conjugated linoleic acid-induced body fat loss in mice independent of essential fatty acid deficiency. *Biochim Biophys Acta* 2005 Oct 15;1737(1):52-60
- *Kruger et al: Dietary red palm oil reduces ischaemia-reperfusion injury in rats fed a hypercholesterolaemic diet. *Br J Nutr* 2007 Apr;97(4):653-60
- *McNamara: Palm oil and health: a case of manipulated perception and misuse of science. *J Am Coll Nutr* 2010 Jun;29(3 Suppl):240S-244S
- *Mini & Rajamohan: Influence of coconut kernel protein on lipid metabolism in alcohol fed rats. *Indian J Exp Biol* 2004 Jan;42(1):53-7
- *Nair et al: Coconut kernel protein modifies the effect of coconut oil on serum lipids. *Plant Foods Hum Nutr* 1999;53(2):133-44
- *Narang et al: Dietary palm olein oil augments cardiac antioxidant enzymes and protects against isoproterenol-induced myocardial necrosis in rats. *J Med Assoc Thai* 2008 Mar;91(3):400-7
- *Narang et al: Effect of dietary palm olein oil on oxidative stress associated with ischemic-reperfusion injury in isolated rat heart. *BMC Pharmacol* 2004 Nov 9;4:29
- *Nevin & Rajamohan: Wet and dry extraction of coconut oil: impact on lipid metabolic and antioxidant status in cholesterol coadministered rats. *Can J Physiol Pharmacol* 2009 Aug;87(8):610-6
- *Nevin & Rajamohan: Beneficial effects of virgin coconut oil on lipid parameters and in vitro LDL oxidation. *Clin Biochem* 2004 Sep;37(9):830-5
- *Oguntibeju et al: Red palm oil: nutritional, physiological and therapeutic roles in improving human wellbeing and quality of life. *Br J Pharmacol* 1999 Sep;128(2):380-4

- *Ong & Goh: Palm oil: a healthful and cost-effective dietary component. *Food Nutr Bull* 2002 Mar;23(1):11-22
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- *Rajamohan et al: Hypolipidemic and antiperoxidative effect of coconut protein in hypercholesterolemia rats. *Clin Ther* 2010 May;32(5):909-14
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Cranberries reduce cholesterol oxidation.

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Cruciferous Vegetables contain a substance called **Sulforaphane** which has a beneficial effect on HDL cholesterol.

- *Kivelä et al: Sulforaphane inhibits endothelial lipase expression through NF- κ B in endothelial cells. *Atherosclerosis* 2010 Nov;213(1):122-8

Curcumin (a potent part of the food spice **Turmeric**) has cholesterol-lowering properties and can prevent in-stent restenosis after angioplasty.

- *Alwi et al: The effect of curcumin on lipid level in patients with acute coronary syndrome. *Acta Med Indones* 2008 Oct;40(4):201-10
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Curcumin, Capsaicin (found in hot peppers), and **Garlic** keep cholesterol levels in check.

- *Ahuja et al: Effects of capsaicin, dihydrocapsaicin, and curcumin on copper-induced oxidation of human serum lipids. *J Agric Food Chem* 2006 Aug 23;54(17):6436-9
- *Ahuja & Ball: Effects of daily ingestion of chilli on serum lipoprotein oxidation in adult men and women. *Br J Nutr* 2006 Aug;96(2):239-42

- *Hussain and Chandrasekhara: Biliary proteins from hepatic bile of rats fed curcumin or capsaicin inhibit cholesterol crystal nucleation in supersaturated model bile. *Indian J Biochem Biophys* 1994 Oct;31(5):407-12
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- *Rock et al: Effects of date (*Phoenix dactylifera* L, Medjool or Hallawi Variety) consumption by healthy subjects on serum glucose and lipid levels and on serum oxidative status: a pilot study. *J Agric Food Chem* 2009 Sep 9;57(17):8010-7

Diet rich in fruit, vegetables, and fiber reduce abdominal fat as well as cholesterol levels which significantly reduces the risk of coronary heart disease.

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Dill weed helps regulate blood lipid levels.

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- *Hajhashemi & Abbasi: Hypolipidemic activity of *Anethum graveolens* in rats. *Phytother Res* 2008 Sep 23

Eggplant has a positive effect on blood lipid levels.

- *Jorge et al: Effect of eggplant on plasma lipid levels, lipidic peroxidation and reversion of endothelial dysfunction in experimental hypercholesterolemia. *Arq Bras Cardiol* 1998 Feb;70(2):87-91

Essential Oils (Lemon, Oregano, Thyme) prevent LDL oxidation.

- *Grassmann et al: Antioxidative effects of lemon oil and its components on copper induced oxidation of low density lipoprotein. *Arzneimittelforschung* 2001 Oct;51(10):799-805
- *Kulisić et al: The effects of essential oils and aqueous tea infusions of oregano (*Origanum vulgare* L. spp. *hirtum*), thyme (*Thymus vulgaris* L.) and wild thyme (*Thymus serpyllum* L.) on the copper-induced oxidation of human low-density lipoproteins. *Int J Food Sci Nutr* 2007 Mar;58(2):87-93

Fiber (barley, flaxseed, oats, psyllium, konjac root) improves cholesterol levels, prevents diabetes, and helps with weight loss.

- *Anderson et al: Cholesterol-lowering effects of psyllium intake adjunctive to diet therapy in men and women with hypercholesterolemia: meta-analysis of 8 controlled trials. *Am J Clin Nutr* 2000 Feb;71(2):472-9
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- *Pan et al: Meta-analysis of the effects of flaxseed interventions on blood lipids. *Am J Clin Nutr* 2009 Aug;90(2):288-97
- *Queenan et al: Concentrated oat beta-glucan, a fermentable fiber, lowers serum cholesterol in hypercholesterolemic adults in a randomized controlled trial. *Nutr J* 2007;6:6
- *Reyna-Villasmil et al: Oat-derived beta-glucan significantly improves HDLC and diminishes LDLC and non-HDL cholesterol in overweight individuals with mild hypercholesterolemia. *Am J Ther* 2007 Mar-Apr;14(2):203-12
- *Romero et al: Cookies enriched with psyllium or oat bran lower plasma LDL cholesterol in normal and hypercholesterolemic men from Northern Mexico. *J Pharmacol Sci* 2007 Aug;104(4):355-65
- *Rondanelli et al: The biological activity of beta-glucans. *Minerva Med* 2009 Jun;100(3):237-45
- *Shimizu et al: Effect of high beta-glucan barley on serum cholesterol concentrations and visceral fat area in Japanese men--a randomized, double-blinded, placebo-controlled trial. *Plant Foods Hum Nutr* 2008 Mar;63(1):21-5

*Talati et al: The effects of barley-derived soluble fiber on serum lipids. *Ann Fam Med* 2009 Mar-Apr;7(2):157-63

*Wolever et al: Physicochemical properties of oat β -glucan influence its ability to reduce serum LDL cholesterol in humans: a randomized clinical trial. *Am J Clin Nutr* 2010 Oct;92(4):723-32

Fish oil and Coconut fat taken during pregnancy prevents stress-induced changes in early post-delivery development of the infant.

*Borsonelo et al: Supplementation with fish oil and coconut fat prevents prenatal stress-induced changes in early postnatal development. *Int J Dev Neurosci* 2011 Aug ;29(5):521-7

Flavonoids increase antioxidant effects.

*Wu et al: Low-density-lipoprotein (LDL)-bound flavonoids increase the resistance of LDL to oxidation and glycation under pathophysiological concentrations of glucose in vitro. *J Agric Food Chem* 2009 Jun 10;57(11):5058-64

Flaxseed reduces circulating total and LDL-cholesterol levels and with Pumpkin seeds, protects the arteries and liver. Flaxseed is also more protective than soy protein against increasing triglyceride levels and fatty liver.

*Bhathena et al: Dietary flaxseed meal is more protective than soy protein concentrate against hypertriglyceridemia and steatosis of the liver in an animal model of obesity. *J Am Coll Nutr* 2003 Apr;22(2):157-64

*Makni et al: Hypolipidemic and hepatoprotective effects of flax and pumpkin seed mixture rich in omega-3 and omega-6 fatty acids in hypercholesterolemic rats. *Food Chem Toxicol* 2008 Dec;46(12):3714-20

*Pan et al: Meta-analysis of the effects of flaxseed interventions on blood lipids. *Am J Clin Nutr* 2009 Aug;90(2):288-97. Epub 2009 Jun 10

*Yang et al: Flaxseed oil attenuates nonalcoholic fatty liver of hyperlipidemic hamsters. *J Agric Food Chem* 2009 Jun 10;57(11):5078-83

Folic acid (B9) prevents LDL oxidation. Do not take one B vitamin without a B-complex as it will increase the likelihood of a deficiency in one or more of the other B-family members.

*McEneny et al: Folate: in vitro and in vivo effects on VLDL and LDL oxidation. *Int J Vitam Nutr Res* 2007 Jan;77(1):66-72

Fo-Ti root protects arteries.

*Liu et al: Effect of 2,3,5,4'-tetrahydroxystilbene-2-O-beta-D-glucoside on lipoprotein oxidation and proliferation of coronary arterial smooth cells. *J Asian Nat Prod Res* 2007 Sep-Dec;9(6-8):689-97

Fruit-enriched diet lowers LDL-cholesterol levels better than a fruit-free diet and helps the obese, with high cholesterol levels, lose weight.

*Crujeiras et al: A role for fruit content in energy-restricted diets in improving antioxidant status in obese women during weight loss. *Nutr* 2006 Jun;22(6):593-9

*de Oliveira et al: Weight loss associated with a daily intake of three apples or three pears among overweight women. *Nutr* 2003 Mar;19(3):253-6

Garlic has antioxidant activity that improves blood lipid metabolism.

*Gorinstein et al: Raw and boiled garlic enhances plasma antioxidant activity and improves plasma lipid metabolism in cholesterol-fed rats. *Life Sci* 2006 Jan 2;78(6):655-63

Garlic (aged), B-complex and Arginine prevent atherosclerosis.

*Budoff et al: Aged garlic extract supplemented with B vitamins, folic acid and L-arginine retards the progression of subclinical atherosclerosis: a randomized clinical trial. *Breast Cancer Res Treat* 2004 Feb;83(3):221-31

Ginger has significant cholesterol management effects.

- *Alizadeh-Navaei et al: Investigation of the effect of ginger on the lipid levels. A double blind controlled clinical trial. Saudi Med J 2008 Sep;29(9):1280-4
- *Bhandari et al: Effect of ethanolic extract of Zingiber officinale on dyslipidaemia in diabetic rats. J Ethnopharmacol 2005 Feb 28;97(2):227-30

Goji berries/Wolfberry have neuroprotective properties against homocysteine-induced toxicity and are comparable to lovastatin but without the side-effects.

- *Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized Lycium barbarum (Goji) Juice, GoChi. J Altern Complement Med 2008 May;14(4):403-12
- *Ho et al: Neuroprotective effects of polysaccharides from wolfberry, the fruits of Lycium barbarum, against homocysteine-induced toxicity in rat cortical neurons. J Alzheimers Dis 2010;19(3):813-27
- *Jiang et al: Experimental study of anti-atherosclerosis potency by lycium seed oil and its possible mechanism. Zhong Yao Cai 2007 Jun;30(6):672-7
- *Potterat: Goji (Lycium barbarum and L. chinense): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. Planta Med 2010;76(1):7-19

Goldenseal is a natural LDL-lowering herb.

- *Abidi et al: The medicinal plant goldenseal is a natural LDL-lowering agent with multiple bioactive components and new action mechanisms. J Lipid Res 2006 Oct;47(10):2134-47

Grape polyphenol protects against non-alcoholic fatty liver disease.

- *Aoun et al: A polyphenol extract modifies quantity but not quality of liver fatty acid content in high-fat-high-sucrose diet-fed rats: possible implication of the sirtuin pathway. Br J Nutr 2010 Dec;104(12):1760-70

Grapes and **Grapeseed extract** have potent antioxidant effects that protect against LDL oxidation and coronary artery disease in general. Buy only **organic** grapes as non-organic grapes are high on the list of foods containing a good number of pesticides.

- *Chou et al: Effect of ingestion of purple grape juice on endothelial function in patients with coronary heart disease. Am J Card 2001;88(5):553-555
- *Day et al: Effect of concentrated red grape juice consumption on serum antioxidant capacity and low-density lipoprotein oxidation. Ann Nutr Metab 1997;41:353-357
- *Miyagi et al: Inhibition of human low-density lipoprotein oxidation by flavonoids in red wine and grape juice. Am J Cardio 1997, Dec;80(12):1627-31
- *O'Byrne et al: Comparison of the antioxidant effects of Concord grape juice flavonoids α -tocopherol on markers of oxidative stress in healthy adults. Am J Clin Nutr 2002, Dec;76(6):1367-1374
- *Park et al: Daily grape juice consumption reduces oxidative DNA damage and plasma free radical levels in healthy Koreans. Mut Res Fund Mol Mech Mutagen 2003, Aug;529(1-2):77-86
- *Shafiee et al: Grape and grape seed extract capacities at protecting LDL against oxidation generated by Cu²⁺, AAPH or SIN-1 and at decreasing superoxide THP-1 cell production. A comparison to other extracts or compounds. Free Radic Res 2003 May;37(5):573-84
- *Stein et al: Purple grape juice improves endothelial function and reduces the susceptibility of LDL cholesterol to oxidation in patients with coronary artery disease. Circ 1999;100:1050-1055
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/
- *Vinson et al: Red wine, dealcoholized red wine, and especially grape juice, inhibit atherosclerosis in a hamster model. Athero 2001, May;156(1):67-72

Grapefruit – the Upside – even though it **cannot be taken with medications**, grapefruit does have many health benefits, including normalizing triglyceride levels, but only for those not on any medication (including the once-a-day aspirin).

- *Gorinstein et al: Red grapefruit positively influences serum triglyceride level in patients suffering from coronary atherosclerosis: studies in vitro and in humans. *J Agric Food Chem* 2006 Mar 8;54(5):1887-92

Grapefruit seed extract lowers cholesterol and blood sugar levels.

- *Adeneye: Methanol seed extract of *Citrus paradisi* Macfad lowers blood glucose, lipids and cardiovascular disease risk indices in normal Wistar rats. *Nig Q J Hosp Med* 2008 Jan-Mar;18(1):16-20

Green Tea reduces LDL blood levels.

- *Hsu et al: Effect of green tea extract on obese women: a randomized, double-blind, placebo-controlled clinical trial. *Clin Nutr* 2008 Jun;27(3):363-70
- *Zheng et al: Green tea intake lowers fasting serum total and LDL cholesterol in adults: a meta-analysis of 14 randomized controlled trials. *Am J Clin Nutr* 2011 Aug;94(2):601-10

Guggulipid (extract of guggul gum) inhibits LDL oxidation and lowers blood fats.

- *Wang et al: The hypolipidemic natural product *Commiphora mukul* and its component guggulsterone inhibit oxidative modification of LDL. *Atheroscler* 2004 Feb;172(2):239-46

Gymnema, an herb usually sold for improving blood sugar levels, also improves serum cholesterol and triglyceride levels.

- *Shigematsu et al: Effect of administration with the extract of *Gymnema sylvestre* R. Br leaves on lipid metabolism in rats. *Biol Pharm Bull* 2001 Jun;24(6):713-7

Hawthorn and **Kiwi fruit** are superior to statins in lowering cholesterol levels and without the side effects.

- *Xu et al: A study of the comparative effects of hawthorn fruit compound and simvastatin on lowering blood lipid levels. *Am J Chin Med* 2009;37(5):903-8

Hibiscus improves blood pressure and cholesterol levels in diabetics.

- *Mozaffari-Khosravi et al: Effects of sour tea (*Hibiscus sabdariffa*) on lipid profile and lipoproteins in patients with type II diabetes. *J Altern Complement Med* 2009 Aug;15(8):899-903
- *Mozaffari-Khosravi et al: The effects of sour tea (*Hibiscus sabdariffa*) on hypertension in patients with type II diabetes. *J Hum Hypertens* 2008 Aug 7

High fructose corn syrup (HFCS) and **Fructose** are added to processed foods. They significantly increase the risk factors for cardiovascular disease.

- *Shahraki et al: Prevention of high fructose-induced metabolic syndrome in male wistar rats by aqueous extract of *tamarindus indica* seed. *Acta Med Iran* 2011 May;49(5):277-83
- *Stanhope et al: Consumption of fructose and high fructose corn syrup increase postprandial triglycerides, LDL-cholesterol, and apolipoprotein-B in young men and women. *J Clin Endocrinol Metab* 2011 Aug 17

Honokiol, a *Magnolia* extract, prevents LDL oxidation.

- *Ou et al: Protective effects of honokiol against oxidized LDL-induced cytotoxicity and adhesion molecule expression in endothelial cells. *Chem Biol Interact* 2006 May 15;161(1):1-13

Horehound, an herb noted for its lung-cleansing effects during colds, also has antioxidant properties that prevent LDL oxidation.

- *Martin-Nizard et al: Natural phenylpropanoids protect endothelial cells against oxidized LDL-induced cytotoxicity. *Planta Med* 2003 Mar;69(3):207-11

Kale juice significantly improves blood cholesterol levels.

- *Kim et al: Kale juice improves coronary artery disease risk factors in hypercholesterolemic men. *Bio-med Environ Sci* 2008 Apr;21(2):91-7

Kiwifruit reduces blood triglycerides as well as having anti-platelet effects.

*Duttaroy & Jørgensen: Effects of kiwi fruit consumption on platelet aggregation and plasma lipids in healthy human volunteers. *J Altern Complement Med* 2010 May;16(5):555-60

Lecithin, a phospholipid, helps restore cholesterol to normal levels.

*Hunt & Duncan: Hyperlipoproteinaemia and atherosclerosis in rabbits fed low-level cholesterol and lecithin. *Br J Exp Pathol* 1985 Feb;66(1):35-46

Licorice root contains a substance called Glabridin which prevents LDL oxidation.

*Carmeli & Fogelman: Antioxidant effect of polyphenolic glabridin on LDL oxidation. *Toxicol Ind Health* 2009 May;25(4-5):321-4

Lycopene is another antioxidant that prevents LDL oxidation.

*Fuhrman et al: Lycopene synergistically inhibits LDL oxidation in combination with vitamin E, glabridin, rosmarinic acid, carnosic acid, or garlic. *Antioxid Redox Signal* 2000 Fall;2(3):491-506

Magnesium reduces high cholesterol and triglyceride levels by functioning in a safer statin-like manner.

*Inoue et al: Lipid metabolism and magnesium. *Clin Calcium* 2005 Nov;15(11):65-76

*Olatunji & Soladoye: Effect of increased magnesium intake on plasma cholesterol, triglyceride and oxidative stress in alloxan-diabetic rats. *Afr J Med Med Sci* 2007 Jun;36(2):155-61

*Rosanoff & Seelig: Comparison of mechanism and functional effects of magnesium and statin pharmaceuticals. *J Am Coll Nutr* 2004 Oct;23(5):501S-505S

Medicinal mushrooms (Cordyceps, Oyster, Shiitake) normalize blood lipid levels and prevent the formation of atherosclerosis.

*Bobek, S Galbavý: The oyster mushroom (*Pleurotus ostreatus*) effectively prevents the development of atherosclerosis in rabbits. *Ceska Slov Farm* 1999 Sep;48(5):226-30

*Bobek & Ozdin: Oyster mushroom (*Pleurotus ostreatus*) reduces the production and secretion of very low density lipoproteins in hypercholesterolemic rats. *Z Ernahrungswiss* 1996 Sep;35(3):249-52

*Bobek et al: The mushroom *Pleurotus ostreatus* reduces secretion and accelerates the fractional turnover rate of very-low-density lipoproteins in the rat. *Ann Nutr Metab* 1993;37(3):142-5

*Hossain et al: Dietary mushroom (*Pleurotus ostreatus*) ameliorates atherogenic lipid in hypercholesterolaemic rats. *Clin Exp Pharmacol Physiol* 2003 Jul;30(7):470-5

*Koh et al: Hypocholesterolemic effect of hot-water extract from mycelia of *Cordyceps sinensis*. *Biol Pharm Bull* 2003 Jan;26(1):84-7

*No authors listed: Antihyperlipidemic and antioxidant effects of extracts from *Pleurotus citrinopileatus*. *J Agric Food Chem* 2006 Mar 22;54(6):2103-10

*Yamada et al: Effects of *Lentinus edodes* mycelia on dietary-induced atherosclerotic involvement in rabbit aorta. *J Atheroscler Thromb* 2002;9(3):149-56

Melatonin prevents free radical fatty acid damage to the liver caused by exposure to the chemical toxin benzene.

*Sharma & Rana: Melatonin inhibits benzene-induced lipid peroxidation in rat liver. *Arh Hig Rada Toksikol* 2010 Mar;61(1):11-8

Milk Thistle is an herb long-used to improve liver function and does not interact with statins.

*Deng et al: Effect of silymarin supplement on the pharmacokinetics of rosuvastatin. *Pharm Res* 2008 Aug;25(8):1807-14

Moringa oleifera (Miracle Tree) has a cholesterol lowering effects.

- *Mehta et al: Effect of fruits of *Moringa oleifera* on the lipid profile of normal and hypercholesterolaemic rabbits. *J Ethnopharmacol* 2003 Jun;86(2-3):191-5

Niacin (B3) but not Niacinamide raises HDL cholesterol while lowering phosphate levels in dialysis patients.

- *Harikrishnan et al: Efficacy and safety of combination of extended release niacin and atorvastatin in patients with low levels of high density lipoprotein cholesterol. *Indian Heart J* 2008 May-Jun;60(3):215-22
- *Müller et al: Niacin lowers serum phosphate and increases HDL cholesterol in dialysis patients. *Clin J Am Soc Nephrol* 2007 Nov;2(6):1249-54
- *Murray, 2009:143-146
- *Philipp et al: Effect of niacin supplementation on fibrinogen levels in patients with peripheral vascular disease. *Am J Cardiol* 1998 Sep;82(5):697-9, A9
- *Rosenson: Management of non-high-density lipoprotein abnormalities. *Am J Chin Med* 2004;32(2):175-83
- *Sampathkumar: Niacin and analogs for phosphate control in dialysis--perspective from a developing country. *Int Urol Nephrol* 2008 Nov 27
- *Tavintharan et al: Effects of niacin on cell adhesion and early atherogenesis: biochemical and functional findings in endothelial cells. *Basic Clin Pharmacol Toxicol* 2009 Mar;104(3):206-10
- *Taylor et al: The effect of 24 months of combination statin and extended-release niacin on carotid intima-media thickness: ARBITER 3. *Curr Med Res Opin* 2006 Nov;22(11):2243-50
- *Yang et al: Effect of niacin on adipocyte leptin in hypercholesterolemic rabbits. *Cardiovasc Pathol* 2008 Jul-Aug;17(4):219-25
- *Zhang et al: Niacin inhibits surface expression of ATP synthase beta chain in HepG2 cells: implications for raising HDL. *Pediatr Allergy Immunol* 2010 Feb;21(1 Pt 1):60-6

Noni fruit, leaves, and root extracts help regulate cholesterol levels. The juice is safe to take even at almost a litre a day.

- *Mandukhail et al: Studies on antidyslipidemic effects of *Morinda citrifolia* (Noni) fruit, leaves and root extracts. *Lipids Health Dis* 2010;9:88
- *West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Nutmeg has some LDL-protective properties.

- *Kwon et al: Low-density lipoprotein (LDL)-antioxidant lignans from *Myristica fragrans* seeds. *Explore (NY)* 2007 Nov-Dec;3(6):573-84

Nuts (macadamias, pecans, pine nuts, pistachios) and **Seeds** (flaxseed, hempseed, sesame) improve cholesterol levels.

- *Aksoy et al: Pistachio intake increases high density lipoprotein levels and inhibits low-density lipoprotein oxidation in rats. *Tohoku J Exp Med* 2007 May;212(1):43-8
- *Curb et al: Serum lipid effects of a high-monounsaturated fat diet based on macadamia nuts. *Arch Intern Med* 2000 Apr 24;160(8):1154-8
- *Garg et al: Macadamia nut consumption lowers plasma total and LDL cholesterol levels in hypercholesterolemic men. *J Nutr* 2003 Apr;133(4):1060-3
- *Garg et al: Macadamia nut consumption modulates favourably risk factors for coronary artery disease in hypercholesterolemic subjects. *Lipids* 2007 Jun;42(6):583-7
- *Griel et al: A macadamia nut-rich diet reduces total and LDL-cholesterol in mildly hypercholesterolemic men and women. *Basic Clin Pharmacol Toxicol* 2009 Mar;104(3):206-10
- *Hiraoka-Yamamoto et al: Serum lipid effects of a monounsaturated (palmitoleic) fatty acid-rich diet based on macadamia nuts in healthy, young Japanese women. *Clin Exp Pharmacol Physiol* 2004 Dec;31 Suppl 2:S37-8
- *Hudthagosol et al: Pecans acutely increase plasma postprandial antioxidant capacity and catechins and decrease LDL oxidation in humans. *J Nutr* 2011 Jan;141(1):56-62

- *Lee et al: Selective increase in pinolenic acid (all-cis-5,9,12-18:3) in Korean pine nut oil by crystallization and its effect on LDL-receptor activity. *Lipids* 2004 Apr;39(4):383-7
- *Li et al: Regular consumption of nuts is associated with a lower risk of cardiovascular disease in women with type 2 diabetes. *J Nutr* 2009 Jul;139(7):1333-8
- *Mercanligil et al: Effects of hazelnut-enriched diet on plasma cholesterol and lipoprotein profiles in hypercholesterolemic adult men. *Nutr J* 2009 Jul 22;8(1):34
- *Morgan & Clayshulte: Pecans lower low-density lipoprotein cholesterol in people with normal lipid levels. *J Am Diet Assoc* 2000 Mar;100(3):312-8
- *Pan et al: Meta-analysis of the effects of flaxseed interventions on blood lipids. *Am J Clin Nutr* 2009 Aug;90(2):288-97. Epub 2009 Jun 10
- *Prociuk et al: Cholesterol-induced stimulation of platelet aggregation is prevented by a hempseed-enriched diet. *Can J Physiol Pharmacol* 2008 Apr;86(4):153-9
- *Sari et al: Effect of pistachio diet on lipid parameters, endothelial function, inflammation, and oxidative status: a prospective study. *Nutr* 2009 Jul 30
- *Sheridan et al: Pistachio nut consumption and serum lipid levels. *J Am Coll Nutr* 2007 Apr;26(2):141-8
- *Visavadiya & Narasimhacharya: Sesame as a hypocholesterolaemic and antioxidant dietary component. *Food Chem Toxicol* 2008 Jun;46(6):1889-95
- *Yen et al: Protective effect of pine (*Pinus morrisonicola* Hay.) needle on LDL oxidation and its anti-inflammatory action by modulation of iNOS and COX-2 expression in LPS-stimulated RAW 264.7 macrophages. *Food Chem Toxicol* 2008 Jan;46(1):175-85

Oats contains beta-glucans which significantly lower LDL while improving HDL cholesterol.

- *Butt et al: Oat: unique among the cereals. *Eur J Nutr* 2008 Mar;47(2):68-79
- *Chen et al: Avenanthramides and phenolic acids from oats are bioavailable and act synergistically with vitamin C to enhance hamster and human LDL resistance to oxidation. *J Nutr* 2004 Jun;134(6):1459-66
- *Horn et al: Oats and soy in lipid-lowering diets for women with hypercholesterolemia: is there synergy? *J Am Diet Assoc* 2001 Nov;101(11):1319-25
- *Karmally et al: Cholesterol-lowering benefits of oat-containing cereal in Hispanic americans. *J Am Diet Assoc* 2005 Jun;105(6):967-70
- *Queenan et al: Concentrated oat beta-glucan, a fermentable fiber, lowers serum cholesterol in hypercholesterolemic adults in a randomized controlled trial. *Nutr J* 2007;6:6
- *Reyna-Villasmil et al: Oat-derived beta-glucan significantly improves HDLC and diminishes LDLC and non-HDL cholesterol in overweight individuals with mild hypercholesterolemia. *Am J Ther* 2007 Mar-Apr;14(2):203-12
- *Wolever et al: Physicochemical properties of oat β -glucan influence its ability to reduce serum LDL cholesterol in humans: a randomized clinical trial. *Am J Clin Nutr* 2010 Oct;92(4):723-32

Oats and **Amaranth** help maintain good cholesterol levels.

- *Czerwiński et al: Oat (*Avena sativa* L.) and amaranth (*Amaranthus hypochondriacus*) meals positively affect plasma lipid profile in rats fed cholesterol-containing diets. *J Nutr Biochem* 2004 Oct;15(10):622-9

Olive leaf and **Olive oil** help prevent arterial damage by reducing LDL oxidation while increasing HDL levels. Hydroxytyrosol and Oleuropein are the antioxidants found in good quality extra-virgin olive oils.

- *Covas et al: Virgin olive oil phenolic compounds: binding to human low density lipoprotein (LDL) and effect on LDL oxidation. *Urology* 2010 Aug;76(2 Suppl 1):S2-6
- *Cullinen: Olive oil in the treatment of hypercholesterolemia. *Med Health R I* 2006 Mar;89(3):113
- *El & Karakaya: Olive tree (*Olea europaea*) leaves: potential beneficial effects on human health. *Nutr Rev* 2009 Nov;67(11):632-8

- *Fabiani et al: Oxidative DNA damage is prevented by extracts of olive oil, hydroxytyrosol, and other olive phenolic compounds in human blood mononuclear cells and HL60 cells. *J Nutr* 2008 Aug;138(8):1411-6
- *Gimeno et al: Changes in the phenolic content of low density lipoprotein after olive oil consumption in men. A randomized crossover controlled trial. *Br J Nutr* 2007 Dec;98(6):1243-50
- *Jemai et al: Lipid-lowering and antioxidant effects of hydroxytyrosol and its triacetylated derivative recovered from olive tree leaves in cholesterol-fed rats. *J Agric Food Chem* 2008 Apr 23;56(8):2630-6
- *Masella et al: Extra virgin olive oil biophenols inhibit cell-mediated oxidation of LDL by increasing the mRNA transcription of glutathione-related enzymes. *J Nutr* 2004 Apr;134(4):785-91
- *Moreno et al: Effect of phenolic compounds of virgin olive oil on LDL oxidation resistance. *Med Clin (Barc)* 2003 Feb 8;120(4):128-31
- *Rietjens et al: New insights into controversies on the antioxidant potential of the olive oil antioxidant hydroxytyrosol. *J Agric Food Chem* 2007 Sep 5;55(18):7609-14
- *Turner et al: Antioxidant and anti-atherogenic activities of olive oil phenolics. *Int J Vitam Nutr Res* 2005 Jan;75(1):61-70
- *Wang et al: The anti-atherosclerotic effect of olive leaf extract is related to suppressed inflammatory response in rabbits with experimental atherosclerosis. *Eur J Nutr* 2008 Aug;47(5):235-43

Omega fatty acids (flax, pumpkin seeds, krill oil) have antioxidant effects.

- *Bunea et al: Evaluation of the effects of Neptune Krill Oil on the clinical course of hyperlipidemia. *Altern Med Rev* 2004 Dec;9(4):420-8
- *Ferramosca et al: A krill oil supplemented diet reduces the activities of the mitochondrial tricarboxylate carrier and of the cytosolic lipogenic enzymes in rats. *J Anim Physiol Anim Nutr (Berl)* 2011 Feb 25
- *Garrido-Sánchez et al: Inverse relation between levels of anti-oxidized-LDL antibodies and eicosapentanoic acid (EPA). *Br J Nutr* 2008 Sep;100(3):585-9
- *Makni et al: Hypolipidemic and hepatoprotective effects of flax and pumpkin seed mixture rich in omega-3 and omega-6 fatty acids in hypercholesterolemic rats. *Food Chem Toxicol* 2008 Dec;46(12):3714-20
- *Zhu et al: Effects of krill oil on serum lipids of hyperlipidemic rats and human SW480 cells. *Lipids Health Dis* 2008 Aug 29;7(1):30

Orange juice improves blood lipid levels.

- *Kurowska et al: HDL-cholesterol-raising effect of orange juice in subjects with hypercholesterolemia. *Am J Clin Nutr* 2000 Nov;72(5):1095-100

Oyster mushrooms reduce the production and secretion of LDL cholesterol.

- *Hossain et al: Dietary mushroom (*Pleurotus ostreatus*) ameliorates atherogenic lipid in hypercholesterolaemic rats. *Clin Exp Pharmacol Physiol* 2003 Jul;30(7):470-5
- *Ozdin et al: Oyster mushroom (*Pleurotus ostreatus*) reduces the production and secretion of very low density lipoproteins in hypercholesterolemic rats. *Z Ernährungswiss* 1996 Sep;35(3):249-52

Peanuts help regulate cholesterol levels. Eat only organically grown peanuts as others often contain molds that cause other health issues.

- *Lokko et al: Regular peanut consumption improves plasma lipid levels in healthy Ghanaians. *Int J Food Sci Nutr* 2007 May;58(3):190-200
- *O'Byrne et al: Low fat-monounsaturated rich diets containing high-oleic peanuts improve serum lipoprotein profiles. *Lipids* 1997 Jul;32(7):687-95

Persimmon leaves improve cholesterol levels.

- *Lee et al: Supplementation of whole persimmon leaf improves lipid profiles and suppresses body weight gain in rats fed high-fat diet. *Food Chem Toxicol* 2006 Nov;44(11):1875-83

Phellodendron and Citrus peel improve blood pressure, cholesterol and blood sugar levels.

- *Oben et al: Phellodendron and Citrus extracts benefit cardiovascular health in osteoarthritis patients: a double-blind, placebo-controlled pilot study. *Nutr J* 2008;7:16

Pineapple leaf extract has cholesterol-controlling effects similar to statins but does not have the side effects attributed to statin drugs.

- *Xie et al: Hypolipidemic mechanisms of Ananas comosus L. leaves in mice: different from fibrates but similar to statins. *J Pharmacol Sci* 2007 Mar;103(3):267-74
- *Xie et al: The effects of Ananas comosus L. leaves on diabetic-dyslipidemic rats induced by alloxan and a high-fat/high-cholesterol diet. *Am J Chin Med* 2005;33(1):95-105

Plant Sterols are cholesterol-like compounds found in vegetable oils, nuts, and legumes. Alone, they are required by every cell membrane. Together with Sytrinol (a citrus bioflavonoid combination), plant sterols are notably more effective in regulating cholesterol levels.

- *Abumweis et al: Plant sterols/stanols as cholesterol lowering agents: A meta-analysis of randomized controlled trials. *Food Nutr Res* 2008;52. doi: 10.3402/fnr.v52i0.1811
- *de Jong et al: Effects of long-term plant sterol or stanol ester consumption on lipid and lipoprotein metabolism in subjects on statin treatment. *Br J Nutr* 2008 Nov;100(5):937-41
- *English: New Dietary Supplement Shows Dramatic Effects in Lowering Cholesterol, LDL, and Triglycerides. *Nutr Rev* online from Life Extension November 2004 issue.
- *Ferretti et al: Effect of phytosterols on copper lipid peroxidation of human low-density lipoproteins. *Nutr* 2009 Oct 6
- *Jenkins et al: Effects of a dietary portfolio of cholesterol-lowering foods vs lovastatin on serum lipids and C-reactive protein. *JAMA* 2003 Jul 23;290(4):502-10
- *Murray, 2009:146-147
- *Racette et al: Dose effects of dietary phytosterols on cholesterol metabolism: a controlled feeding study. *Am J Clin Nutr* 2010 Jan;91(1):32-8

Policosanol is a potent antioxidant that is superior to statins and fibrates.

- *Castaño et al: Effects of policosanol and pravastatin on lipid profile, platelet aggregation and endothelium in older hypercholesterolemic patients. *Zhong Yao Cai* 2003 Jan;26(1):31-2
- *Castaño et al: Comparison of the effects of policosanol and atorvastatin on lipid profile and platelet aggregation in patients with dyslipidaemia and type 2 diabetes mellitus. *Clin Drug Investig* 2003;23(10):639-50
- *Janikula: Policosanol: a new treatment for cardiovascular disease? *Altern Med Rev* 2002 Jun;7(3):203-17
- *Nikitin et al: Results of the multicenter controlled study of the hypolipidemic drug polycosanol in Russia. *Ter Arkh* 2000;72(12):7-10
- *Prat et al: Comparative effects of policosanol and two HMG-CoA reductase inhibitors on type II hypercholesterolemia. *Rev Med Chil* 1999 Mar;127(3):286-94

Pomegranates reduce blood pressure and LDL oxidation and improve metabolism of the obese. BUT, like grapefruit, pomegranates should not be eaten if taking medications.

- *Arao et al: Dietary effect of pomegranate seed oil rich in 9cis, 11trans, 13cis conjugated linolenic acid on lipid metabolism in obese, hyperlipidemic OLETF rats. *Lipids Health Dis* 2004 Nov 9;3:24
- *Aviram et al: Pomegranate juice consumption for 3 years by patients with carotid artery stenosis reduces common carotid intima-media thickness, blood pressure and LDL oxidation. *Clin Nutr* 2004 Jun;23(3):423-33
- *Sorokin et al: Rhabdomyolysis associated with pomegranate juice consumption. *Am J Cardiol* 2006 Sept;98(5):705-6

Probiotics help medications function better and assist in manufacturing some of the nutrients lost by the medications, especially some of the B vitamins.

- *Ataie-Jafari et al: Cholesterol-lowering effect of probiotic yogurt in comparison with ordinary yogurt in mildly to moderately hypercholesterolemic subjects. *Ann Nutr Metab* 2009;54(1):22-7
- *Kullisaar et al: Antioxidative probiotic fermented goats' milk decreases oxidative stress-mediated atherogenicity in human subjects. *Br J Nutr* 2003 Aug;90(2):449-56
- *Zvenigorodskaja et al: Advisability of using probiotics in the treatment of atherogenic dyslipidemia. *Eksp Klin Gastroenterol* 2011(2):37-43

Psyllium has significant effect in lowering LDL cholesterol in both men and women.

- *Anderson et al: Long-term cholesterol-lowering effects of psyllium as an adjunct to diet therapy in the treatment of hypercholesterolemia. *Clin J Sport Med* 2009 Mar;19(2):115-9
- *Anderson et al: Cholesterol-lowering effects of psyllium intake adjunctive to diet therapy in men and women with hypercholesterolemia: meta-analysis of 8 controlled trials. *Am J Clin Nutr* 2000 Feb;71(2):472-9
- *Schwesinger et al: Soluble dietary fiber protects against cholesterol gallstone formation. *Am J Surg* 1999 Apr;177(4):307-10
- *Trautwein et al: Psyllium, not pectin or guar gum, alters lipoprotein and biliary bile acid composition and fecal sterol excretion in the hamster. *Lipids* 1998 Jun;33(6):573-82

Psyllium and **Oat Bran** is an effective combination for lowering LDL cholesterol.

- *Romero et al: Cookies enriched with psyllium or oat bran lower plasma LDL cholesterol in normal and hypercholesterolemic men from Northern Mexico. *J Pharmacol Sci* 2007 Aug;104(4):355-65

Quercetin (a bioflavonoid) reduces LDL oxidation and improves blood pressure.

- *Egert et al: Quercetin reduces systolic blood pressure and plasma oxidised low-density lipoprotein concentrations in overweight subjects with a high-cardiovascular disease risk phenotype: a double-blinded, placebo-controlled cross-over study. *Br J Nutr* 2009 Oct;102(7):1065-74

Red Beets significantly lower LDL while increasing HDL cholesterol.

- *Bobek et al: The effect of red beet (*Beta vulgaris* var. *rubra*) fiber on alimentary hypercholesterolemia and chemically induced colon carcinogenesis in rats. *Nahrung* 2000 Jun;44(3):184-7

Red Yeast Rice (produced from fermented rice with an added yeast, *Monascus purpurus*, which gives it a reddish hue) is proving to be more effective than statins and much safer – even for children with high cholesterol. RYR has strong antioxidant activity and suppresses the development of fat cells.

- *Becker et al: Simvastatin vs therapeutic lifestyle changes and supplements: randomized primary prevention trial. *Mayo Clin Proc* 2008 Jul;83(7):758-64
- *Becker et al: Red yeast rice for dyslipidemia in statin-intolerant patients: a randomized trial. *Ann Intern Med* 2009 Jun 16;150(12):830-9, W147-9
- *Bianchi et al: Extracts of *Monascus purpureus* beyond statins--profile of efficacy and safety of the use of extracts of *Monascus purpureus*. *Chin J Integr Med* 2005 Dec;11(4):309-13
- *Dhale et al: Isolation and characterization of dihydromonacolin-MV from *Monascus purpureus* for antioxidant properties. *Appl Microbiol Biotechnol* 2007 Jan;73(5):1197-202
- *Guardamagna et al: The treatment of hypercholesterolemic children: Efficacy and safety of a combination of red yeast rice extract and policosanols. *Nutr Metab Cardiovasc Dis* 2010 Feb 10
- *Halbert et al: Tolerability of red yeast rice (2,400 mg twice daily) versus pravastatin (20 mg twice daily) in patients with previous statin intolerance. *Am J Cardiol* 2010 Jan 15;105(2):198-204
- *Heber et al: Cholesterol-lowering effects of a proprietary Chinese red-yeast-rice dietary supplement. *Am J Clin Nutr* 1999 Feb;69(2):231-6
- *Hong et al: Chinese red yeast rice versus lovastatin effects on prostate cancer cells with and without androgen receptor overexpression. *J Med Food* 2008 Dec ;11(4):657-66
- *Jeon et al: Red yeast rice extracts suppress adipogenesis by down-regulating adipogenic transcription factors and gene expression in 3T3-L1 cells. *Life Sci* 2004 Nov 12;75(26):3195-203

- *Lee et al: Red mold rice ameliorates impairment of memory and learning ability in intracerebroventricular amyloid beta-infused rat by repressing amyloid beta accumulation. *Antiviral Res* 2008 Feb;77(2):153-6
- *Li et al: Xuezhikang, an extract of cholestin, decreases plasma inflammatory markers and endothelin-1, improve exercise-induced ischemia and subjective feelings in patients with cardiac syndrome X. *Int J Cardiol* 2007 Oct 31;122(1):82-4
- *Li et al: Effects of xuezhikang, an extract of cholestin, on lipid profile and C-reactive protein: a short-term time course study in patients with stable angina. *Clin Chim Acta* 2005 Feb;352(1-2):217-24
- *Lin et al: Cholestin (*Monascus purpureus* rice) inhibits homocysteine-induced reactive oxygen species generation, nuclear factor-kappaB activation, and vascular cell adhesion molecule-1 expression in human aortic endothelial cells. *J Biomed Sci* 2008 Mar;15(2):183-96
- *Lu et al: Effect of Xuezhikang, an extract from red yeast Chinese rice, on coronary events in a Chinese population with previous myocardial infarction. *Am J Cardiol* 2008 Jun 15;101(12):1689-93
- *Wang et al: Effect of red mold rice on antifatigue and exercise-related changes in lipid peroxidation in endurance exercise. *Appl Microbiol Biotechnol* 2006 Mar;70(2):247-53
- *Wei et al: Effect of *Monascus purpureus*-fermented rice on lipidemia and fatty liver in quail. *Res Commun Mol Pathol Pharmacol* 2006;119(1-6):67-75
- *Wei et al: Effect of *Monascus purpureus*-fermented rice on lipidemia and fatty liver in quail. *Adv Exp Med Biol.* 1996;403:607-13
- *Yu et al: Safety and mutagenicity evaluation of nanoparticulate red mold rice. *J Agric Food Chem* 2008;56(22):11038-48

Red Yeast Rice and Omega-3 have similar actions to statins but much safer.

- *Ong & Cheah: Statin alternatives or just placebo: an objective review of omega-3, red yeast rice and garlic in cardiovascular therapeutics. *Chin Med J (Engl)* 2008 Aug 20;121(16):1588-94

Red Yeast Rice, Berberine and Policosanol lower lipid levels and increase insulin sensitivity in those with high cholesterol.

- *Affuso et al: Effects of a nutraceutical combination (berberine, red yeast rice and policosanols) on lipid levels and endothelial function randomized, double-blind, placebo-controlled study. *Nutr Metab Cardiovasc Dis* 2009 Aug 19

Red Yeast Rice and Nattokinase (but not nattokinase alone) have potent effects on blood lipid levels.

- *Yang et al: Combined nattokinase with red yeast rice but not nattokinase alone has potent effects on blood lipids in human subjects with hyperlipidemia. *Asia Pac J Clin Nutr* 2009;18(3):310-7

Resveratrol (found in grape skins) is a potent antioxidant that protects LDL cholesterol from oxidation.

- *Belguendouz et al: Resveratrol inhibits metal ion-dependent and independent peroxidation of porcine low-density lipoproteins. *Biochem Pharmacol* 1997 May 9;53(9):1347-55
- *Belguendouz et al: Interaction of transresveratrol with plasma lipoproteins. *Biochem Pharmacol* 1998 Mar 15;55(6):811-6
- *Berrougui et al: A new insight into resveratrol as an atheroprotective compound: inhibition of lipid peroxidation and enhancement of cholesterol efflux. *Atheroscl* 2009 Dec;207(2):420-7
- *Chang et al: Resveratrol attenuates oxidized LDL-evoked Lox-1 signaling and consequently protects against apoptotic insults to cerebrovascular endothelial cells. *J Cereb Blood Flow Metab* 2011 Mar;31(3):842-54
- *Lin et al: Resveratrol protects against oxidized LDL-induced breakage of the blood-brain barrier by lessening disruption of tight junctions and apoptotic insults to mouse cerebrovascular endothelial cells. *J Nutr* 2010 Dec;140(12):2187-92
- *Rocha et al: Weekend ethanol consumption and high-sucrose diet: resveratrol effects on energy expenditure, substrate oxidation, lipid profile, oxidative stress and hepatic energy metabolism. *Alcohol Alcohol* 2011 Jan-Feb;46(1):10-6

*Ou et al: Resveratrol, a polyphenolic compound in red wine, protects against oxidized LDL-induced cytotoxicity in endothelial cells. *Clin Chim Acta* 2006 Feb;364(1-2):196-204

Schisandra decreases LDL oxidation.

*Yu & Liu: Schisanhenol attenuated ox-LDL-induced apoptosis and reactive oxygen species generation in bovine aorta endothelial cells in vitro. *J Asian Nat Prod Res* 2008 Jul-Aug;10(7-8):799-806

Sea Buckthorn (omega-7) prevents LDL oxidation.

*Eccleston et al: Effects of an antioxidant-rich juice (sea buckthorn) on risk factors for coronary heart disease in humans. *J Nutr Biochem* 2002 Jun;13(6):346-354

Strawberries have cholesterol-lowering effects. Be sure to buy **organic** or you will be exposed to many added chemicals that would prevent them from being a healthy alternative.

*Apples Worst for Pesticides on Produce List. *CBC News* June 14, 2011

*Evans: Strawberries are About to Become More Toxic. *NaturalNews* June 23, 2010

*Jenkins et al: The effect of strawberries in a cholesterol-lowering dietary portfolio. *Metabol* 2008 Dec;57(12):1636-44

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Tart Cherries alter abdominal fat and inflammation in the obese.

*Seymour et al: Regular tart cherry intake alters abdominal adiposity, adipose gene transcription, and inflammation in obesity-prone rats fed a high fat diet. *J Med Food* 2009 Oct;12(5):935-42

Vitamin C (ascorbate forms are best) protects smooth muscle cells against death from oxidation.

*Pancorbo et al: Vitamin C-lipid metabolites: uptake and retention and effect on plasma C-reactive protein and oxidized LDL levels in healthy volunteers. *Med Sci Monit* 2008 Nov;14(11):CR547-51

*Siow et al: Vitamin C protects human vascular smooth muscle cells against apoptosis induced by moderately oxidized LDL containing high levels of lipid hydroperoxides. *Arterioscler Thromb Vasc Biol* 1999 Oct;19(10):2387-94

Vitamin D deficiency, caused by statins, is associated with myositis-myalgia.

*Ahmed et al: Low serum 25 (OH) vitamin D levels (<32 ng/mL) are associated with reversible myositis-myalgia in statin-treated patients. *Transl Res* 2009 Jan;153(1):11-6

Vitamin E (tocopherols) decreases LDL oxidation – but only the natural d-form and not the synthetic dl-form. **Tocotrienols** are similar in structure to Vitamin E tocopherols. Both are powerful antioxidants that help lower triglyceride levels. The best vitamin E supplement is one that contains all 4 tocopherols and 4 tocotrienols.

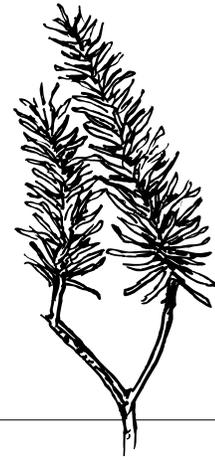
*Hodis et al: Alpha-tocopherol supplementation in healthy individuals reduces low-density lipoprotein oxidation but not atherosclerosis: the Vitamin E Atherosclerosis Prevention Study (VEAPS). *Circulation* 2002 Sep 17;106(12):1453-9

*Islam et al: Alpha-tocopherol supplementation decreases the oxidative susceptibility of LDL in renal failure patients on dialysis therapy. *Atheroscler* 2000 May;150(1):217-24

*Zaiden et al: Gamma delta tocotrienols reduce hepatic triglyceride synthesis and VLDL secretion. *J Atheroscler Thromb* 2010 Oct 27;17(10):1019-32

White button mushrooms lower blood sugar and cholesterol.

*Jeong et al: White button mushroom (*Agaricus bisporus*) lowers blood glucose and cholesterol levels in diabetic and hypercholesterolemic rats. *Nutr Res* 2010 Jan;30(1):49-56



CIRCULATION

(USED TO TREAT INTERMITTENT CLAUDICATION/PERIPHERAL ARTERY DISEASE)

COMMON EXAMPLES:

pentoxifylline – Flexital, Pentox, Pentoxil, Trental

cilostazol – Pletal

ticlopidine – Ticlid

DEplete: E

SUGGESTED ALTERNATIVES:

Amino Acids (Arginine, Carnitine, Taurine) improve symptoms of intermittent claudication (burning, crampy legs) caused by poor circulation.

- *Böger et al: Restoring vascular nitric oxide formation by L-arginine improves the symptoms of intermittent claudication in patients with peripheral arterial occlusive disease. *J Am Coll Cardiol* 1998 Nov;32(5):1336-44
- *Brevetti et al: Propionyl-L-carnitine in intermittent claudication: double-blind, placebo-controlled, dose titration, multicenter study. *J Am Coll Cardiol* 1995 Nov 15;26(6):1411-16
- *Hiatt et al: Propionyl-L-carnitine improves exercise performance and functional status in patients with claudication. *Am J Med* 2001 Jun 1;110(8):616-22
- *McCarty: The reported clinical utility of taurine in ischemic disorders may reflect a down-regulation of neutrophil activation and adhesion. *Med Hypoth* 1999 Oct;53(4):290-9
- *Oka et al: A pilot study of L-arginine supplementation on functional capacity in peripheral arterial disease. *Vasc Med* 2005 Nov;10(4):265-74

Antioxidants (A [carotenoids], C, E), along with **Fiber** and **Omega fatty acids** and **no smoking**, prevent intermittent claudication.

- *Törnwall et al: High intakes of antioxidant vitamins may be protective against intermittent claudication. *Am J Epidemiol* 2000 May;151(9):892-901

Exercise and **Massage** improve circulation and physical capacity.

- *Sefton et al: Therapeutic massage of the neck and shoulders produces changes in peripheral blood flow when assessed with dynamic infrared thermography. *J Altern Complement Med* 2010 Jul;16(7):723-32
- *Wang et al: Effects of supervised treadmill walking training on calf muscle capillarization in patients with intermittent claudication. *Angiol* 2009 Feb-Mar;60(1):36-41

Black currant and Orange juices improve peripheral artery disease and thus circulation. Likely the reason vitamin E did not respond as well in this study is because they only used 15 mg.

*Dalgård et al: Supplementation with orange and blackcurrant juice, but not vitamin E, improves inflammatory markers in patients with peripheral arterial disease. *Br J Nutr* 2009 Jan;101(2):263-9

Garlic (and other blood thinning herbs) improve circulation.

*Kiesewetter et al: Garlic has a therapeutic effect in intermittent claudication. *Clin Investig* 1993 May;71(5):383-6

Ginkgo biloba improves circulation, which is why it often works to improve memory.

*Blume et al: Placebo-controlled double-blind study of the effectiveness of Ginkgo biloba special extract EGb 761 in trained patients with intermittent claudication. *Vasa* 1996;25(3):265-74

*Peters et al: A proprietary ginkgo biloba extract is safe and effective in the treatment of patients with intermittent claudication. *J Nutr* 2008 Feb;138(2):332-7

Grapes help prevent coronary artery disease. Buy only **organic** grapes as non-organic grapes are #7 on the list of foods that are highest in pesticides which are known carcinogens.

*Fitzpatrick et al: Endothelium-dependent vasorelaxing activity of wine and other grape products. *Am J Physiol* 1993 Aug;265(2 Pt 2):H774-8

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Herbal combination called **Padma**, a long-established Tibetan formula manufactured in Switzerland, is well tolerated and effective for intermittent claudication.

*Drabaek et al: Padma-28, a herbal preparation, increases walking distance in patients with intermittent claudication]. *Ugeskr Laeger* 1994 Oct 17;156(42):6207-9

*Schräder et al: Effects of the Tibetan herbal preparation Padma 28 in intermittent claudication]. *Schweiz Med Wochenschr* 1985 Jun 1;115(22):752-6

Japanese Apricots improve blood flow and inhibit the development of cardiovascular disease.

*Chuda et al: Mumefural, citric acid derivative improving blood fluidity from fruit-juice concentrate of Japanese apricot (*Prunus mume* Sieb. et Zucc). *J Agric Food Chem* 1999 Mar;47(3):828-31

*Kim et al: *Prunus mume* extract ameliorates exercise-induced fatigue in trained rats. *J Med Food* 2008 Sep;11(3):460-8

*Utsunomiya et al: Fruit-juice concentrate of Asian plum inhibits growth signals of vascular smooth muscle cells induced by angiotensin II. *Life Sci* 2002 Dec 27;72(6):659-67

Lemon juice is an antioxidant with cardioprotective properties that act by suppressing blood adhesion molecules.

*Miyake et al: Isolation of antioxidative phenolic glucosides from lemon juice and their suppressive effect on the expression of blood adhesion molecules. *Biosci Biotechnol Biochem* 2007 Aug;71(8):1911-9

Medicinal mushrooms help prevent a number of diseases including atherosclerosis.

*Mori et al: Antiatherosclerotic effect of the edible mushrooms *Pleurotus eryngii* (Eringi), *Grifola frondosa* (Maitake), and *Hypsizygus marmoreus* (Bunashimeji) in apolipoprotein E-deficient mice. *Nutr Res* 2008 May;28(5):335-42

Noni fruit improves the growth of new blood vessels, thereby increasing blood flow which results in better cognitive function and a decrease in the risk of ischemic attacks (strokes).

- *Gilani et al: Antispasmodic and vasodilator activities of Morinda citrifolia root extract are mediated through blockade of voltage dependent calcium channels. BMC Complement Altern Med 2010 Jan 13;10(1):2
- *Hornick et al: Inhibition of angiogenic initiation and disruption of newly established human vascular networks by juice from Morinda citrifolia (noni). Angiogenesis 6(2):143-149
- *Ma et al: Evaluation of the ergogenic potential of noni juice. Phyto Res 2007 Nov;21(11):1100-1101
- *Muto et al: Morinda citrifolia fruit reduces stress-induced impairment of cognitive function accompanied by vasculature improvement in mice. Physiol Behav 2010 Sep 1;101(2):211-7
- *Samoylenko et al: New constituents from noni (Morinda citrifolia) fruit juice. J Agric Food Chem 2006;54(17):6398-6402
- *West et al: A double-blind clinical safety study of noni fruit juice. Pac Health Dialog 2009 Nov;15(2):21-32

Omega fatty acids help protect the arteries from developing peripheral disorders involving circulation.

- *Leng et al: A combination of GLA and EPA may have therapeutic value in peripheral arterial disease. Clin Nutr 1998 Dec;17(6):265-71
- *Madden et al: Fish oil induced increase in walking distance, but not ankle brachial pressure index, in peripheral arterial disease is dependent on both body mass index and inflammatory genotype. Prostaglandin Leukot Ess Fat Acids 2007 Jun;76(6):331-40

Policosanols is a potent antioxidant that is superior to ticlopidine, statins, and aspirin for improving blood flow and preventing arterial disease.

- *Castaño et al: A long-term study of policosanols in the treatment of intermittent claudication. J Nutr 2009 Nov;139(11):2061-6
- *Castaño et al: Effects of policosanols and ticlopidine in patients with intermittent claudication: a double-blinded pilot comparative study. Angiol 2004 Jul-Aug;55(4):361-71
- *Castaño et al: Policosanols is superior to lovastatin in patients with intermittent claudication. Angiol 2003 Jan;54(1):25-38
- *Illnait et al: Effects of policosanols (10 mg/d) versus aspirin (100 mg/d) in patients with intermittent claudication: a 10-week, randomized, comparative study. Angiol 2008 Jun-Jul;59(3):269-77
- *Vinciguerra et al: Cramps and muscular pain: prevention with pycnogenol in normal subjects, venous patients, athletes, claudicants and in diabetic microangiopathy. Cancer Lett 2007 Jun 18;251(1):43-52

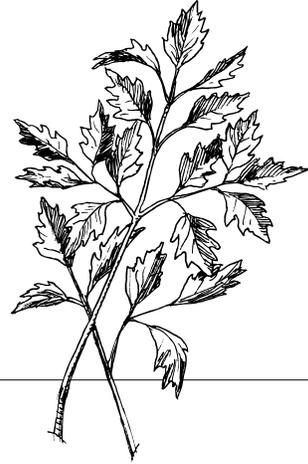
Rosemary is an herb that improves blood circulation.

- *Sagorchev et al: Investigations into the specific effects of rosemary oil at the receptor level. Phytomed 2009 Dec 22

Vitamin E is superior to pentoxifylline in preventing pulmonary fibrosis.

- *Bese et al: Vitamin E protects against the development of radiation-induced pulmonary fibrosis in rats. Clin Oncol (R Coll Radiol) 2007 May;19(4):260-4

DIABETES



(USED TO CONTROL BLOOD SUGAR LEVELS)

COMMON EXAMPLES:

Sulfonylureas

acetoheamide – Dymelor

chlorpropamide – Diabinese and others

glimepiride – Amaryl

glipizide – Glucotrol

glyburide – DiaBeta, Glynase, Micronase and others

tolazamide – Tolinase

tolbutamide – Apo-Tolbutamide, Novo-Butamide

Others

diazoxide – Proglycem

exenatide – Byetta

Insulins – Humulin, Humalog, Novolin, PenFill and others

metformin – Glucophage, Glumetza, Fortamet and others

metformin combinations – Actoplus Met, Avandamet, GlucoVance and others

miglitol – Glyset

nateglinide – Starlix

pioglitazone – Actos

repaglinide – Prandin

rosiglitazone – Avandia

DEplete:

B1, B3, B6, B9, B12, magnesium, glucosamine, CoQ10, DHEA

⚠ **Hyperglycemic herbs (increase blood sugar levels):** Celery seed, Gotu kola, Rosemary

⚠ **Hypoglycemic herbs (reduce blood sugar levels):** Alfalfa, Aloe vera, Banaba, Bilberry leaves, Bitter melon, Burdock root, Cinnamon, Curcumin, Dandelion root, Fenugreek seeds, Ginseng (Siberian and Panax), Goldenseal, Gymnema, Holy basil, Myrrh, Marshmallow root, Onions, Prickly pear fruit, Stinging nettle

☞ **Artificial Sweeteners** can increase diabetic and cancer conditions as well as cause a host of other diseases and disorders. These sweeteners contribute to neurotoxicity (destruction of the nervous system) which is common in various diseases including diabetes and cancer. Some commonly used artificial sweeteners include: **Aspartame** (NutraSweet, Equal); **Sucralose** (Splenda); **Saccharin** (Sweet'N Low); **Acesulfame-K** (Sunette, Sweet One); **Sugar Alcohols** (Glycerol, Mannitol, Methanol, Sorbitol, Xylitol). In packaged food, many will be listed as an "E" followed by a number.

- *Abou-Donia et al: Splenda alters gut microflora and increases intestinal p-glycoprotein and cytochrome p-450 in male rats. *J Toxicol Environ Health A* 2008;71(21):1415-29
- *Aston-Mourney et al: Too much of a good thing: why it is bad to stimulate the beta cell to secrete insulin. *Diabetologia* 2008 Apr;51(4):540-5
- *Bandyopadhyay et al: Genotoxicity testing of low-calorie sweeteners: aspartame, acesulfame-K, and saccharin. *Drug Chem Toxicol* 2008;31(4):447-57
- *Goldsmith: Acute and subchronic toxicity of sucralose. *Food Chem Toxicol* 2000;38 Suppl 2:S53-69
- *Humphries et al: Direct and indirect cellular effects of aspartame on the brain. *Eur J Clin Nutr* 2008 Apr;62(4):451-62
- *Karstadt: Inadequate toxicity tests of food additive acesulfame. *Int J Occup Environ Health* 2010 Jan-Mar;16(1):89-96
- *Liang et al: The effect of artificial sweetener on insulin secretion. 1. The effect of acesulfame K on insulin secretion in the rat (studies in vivo). *Horm Metab Res* 1987 Jun;19(6):233-8
- *Liang et al: The effect of artificial sweetener on insulin secretion. II. Stimulation of insulin release from isolated rat islets by Acesulfame K (in vitro experiments). *Horm Metab Res* 1987 Jul;19(7):285-9
- *Lin & Curhan: Associations of sugar and artificially sweetened soda with albuminuria and kidney function decline in women. *Clin J Am Soc Nephrol* 2010 Sep 30
- *Lord & Newberne: Renal mineralization--a ubiquitous lesion in chronic rat studies. *Food Chem Toxicol* 1990 Jun;28(6):449-55
- *Malaisse et al: Effects of artificial sweeteners on insulin release and cationic fluxes in rat pancreatic islets. *Cell Signal* 1998 Nov;10(10):727-33
- *Nettleton et al: Diet soda intake and risk of incident metabolic syndrome and type 2 diabetes in the Multi-Ethnic Study of Atherosclerosis (MESA). *Diabet Care* 2009 Apr;32(4):688-94
- *Simintzi et al: The effect of aspartame metabolites on the suckling rat frontal cortex acetylcholinesterase. An in vitro study. *Food Chem Toxicol* 2007 Dec;45(12):2397-401
- *Simintzi et al: L-Cysteine and glutathione restore the modulation of rat frontal cortex Na⁺, K⁺ -ATPase activity induced by aspartame metabolites. *Food Chem Toxicol* 2008 Jun;46(6):2074-9
- *Soh et al: Fate of sucralose through environmental and water treatment processes and impact on plant indicator species. *Environ Sci Technol* 2011 Jan 14 [ahead of print]
- *Wiklund et al: Sucralose - An ecotoxicological challenger? *Chemosphere* 2012 Jan ;86(1):50-5

☞ **Aspirin** stimulates insulin and glucagon secretion thus increasing glucose tolerance in both diabetics and non-diabetics alike.

- *Micossi et al: Aspirin in normal and diabetic subjects. *Diabetes* 1978 Dec;27(12):1196-1204

☞ **Caffeine** and **Smoking** increase the risk of diabetes.

- *Foy CG et al: Smoking and incidence of diabetes among United States adults: findings from the insulin resistance atherosclerosis study. *Diabetes Care* 2005;28(10):2501-07
- *No authors listed: Caffeine May Hamper Blood Sugar Control: Caffeine at Mealtime May Cause Problems for People With Type 2 Diabetes. *WebMD Health News* July 26, 2004
- *Odegaard et al: Coffee, tea, and incident type 2 diabetes: the Singapore Chinese Health Study. *Food Chem Toxicol* 2000;38 Suppl 2:S71-89

☞ **Diabetic medications** increase the risk of cancer-related mortality, congestive heart failure, and coronary artery disease.

*Bowker et al: Increased cancer-related mortality for patients with type 2 diabetes who use sulfonylureas or insulin. *Diabet Care* 2006 Feb;29(2):254-8

*Pantalone et al: The risk of developing coronary artery disease or congestive heart failure, and overall mortality, in type 2 diabetic patients receiving rosiglitazone, pioglitazone, metformin, or sulfonylureas: a retrospective analysis. *Acta Diabetol* 2009 Jun;46(2):145-54

☞ **Metformin**, in particular, depletes the body of B12 (and the intrinsic factor needed to absorb it) along with folic acid (B9), and CoQ10 (also needed by the heart) (Cass 2007:45). Deficiencies of B12 and B9 increase the risk of certain anemias and raise homocysteine levels which lead to heart disease. Metformin, Glyburide and Sulphonylureas increase the risk of cardiovascular mortality and hypothyroidism.

*Berger: Incidence of severe sideeffects during therapy with sulfonylureas and biguanides. *Horm Metab Res Suppl* 1985;15:111-5

*Campbell: Metformin and the sulphonylureas: the comparative risk. *Horm Metab Res Suppl* 1985;15:105-11

*Fisman et al: Oral antidiabetic treatment in patients with coronary disease: time-related increased mortality on combined glyburide/metformin therapy over a 7.7-year follow-up. *Clin Cardiol* 2001 Feb;24(2):151-8

*Fisman et al: Antihyperglycemic treatment in diabetics with coronary disease: increased metformin-associated mortality over a 5-year follow-up. *Cardiol* 1999;91(3):195-202

*Jatwa & Kar: Amelioration of metformin-induced hypothyroidism by *Withania somnifera* and *Bauhinia purpurea* extracts in Type 2 diabetic mice. *Phytother Res* 2009 Aug;23(8):1140-5

*Olsson et al: Increased mortality in Type II diabetic patients using sulphonylurea and metformin in combination: a population-based observational study. *Diabetologia* 2000 May;43(5):558-60

*Quaille et al: Toxicity and toxicokinetics of metformin in rats. *Toxicol Appl Pharmacol* 2010 Jan 11

*Vella et al: The use of metformin in type 1 diabetes: a systematic review of efficacy. *Diabetologia* 2010 Jan 8

☞ **Microwave cooked Carrots** (as an example of just one food) increases blood glucose and insulin levels; reduces the feeling of being full; and depletes the vitamin A (beta carotene) content as opposed to raw food.

*Gustafsson et al: Influence of processing and cooking of carrots in mixed meals on satiety, glucose and hormonal response. *Int J Food Sci Nutr* 1995 Feb;46(1):3-12

☞ **Neuropathy** is often a painful side effect of diabetes and made worse by other causes including gluten sensitivity **and** the antibiotic isoniazid.

*Bushara: Neurologic presentation of celiac disease. *Gastroenterol* 2005 Apr;128(4 Suppl 1):S92-7

*Hadjivassiliou et al: Neuropathy associated with gluten sensitivity. *Free Radic Biol Med* 2010 Mar 15;48(6):831-838

*Hadjivassiliou et al: Sensory ganglionopathy due to gluten sensitivity. *Neurology* 2010 Sep 14;75(11):1003-8

*Steichen et al: Isoniazid induced neuropathy: consider prevention. *Rev Mal Res* 2006 Apr;23(2 Pt 1):157-60

☞ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of their active constituents) have long been associated with cancer development but they have also been linked to numerous other dangerous health conditions including diabetes and a higher than normal rate of neuropathies.

*Airaksinen et al: Association between type 2 diabetes and exposure to persistent organic pollutants. *Diabetes Care* 2011 Aug 4

*Donato & Zani: Chronic exposure to organochlorine compounds and health effects in adults: diabetes and thyroid diseases. *Ann Ig* 2010 May-Jun;22(3):185-98

- *Lee et al: Low dose organochlorine pesticides and polychlorinated biphenyls predict obesity, dyslipidemia, and insulin resistance among people free of diabetes. PLoS One 2011;6(1):e15977
- *Lee et al: Association of organochlorine pesticides with peripheral neuropathy in patients with diabetes or impaired fasting glucose. Diabetes 2008 Nov;57(11):3108-11

☞ **Rosiglitazone (Avandia) decreases bone mass and strength and increases the risk of heart failure.**

- *Ali et al: Rosiglitazone causes bone loss in mice by suppressing osteoblast differentiation and bone formation. Endocrinol 2005 Mar;146(3):1226-35
- *Graham et al: Risk of acute myocardial infarction, stroke, heart failure, and death in elderly Medicare patients treated with rosiglitazone or pioglitazone. JAMA 2010 Jul 28;304(4):411-8
- *Home et al: Rosiglitazone evaluated for cardiovascular outcomes in oral agent combination therapy for type 2 diabetes (RECORD): a multicentre, randomised, open-label trial. Lancet 2009 Jun 20;373(9681):2125-35
- *Komajda et al: Heart failure events with rosiglitazone in type 2 diabetes: data from the RECORD clinical trial. Eur Heart J 2010 Jan 29
- *Lazarenko et al: Rosiglitazone induces decreases in bone mass and strength that are reminiscent of aged bone. Endocrinol 2007 Jun;148(6):2669-80
- *Singh et al: Long-term risk of cardiovascular events with rosiglitazone: a meta-analysis. JAMA 2007 Sep 12;298(10):1189-95
- *Vanasse et al: Stroke and cardiovascular morbidity and mortality associated with rosiglitazone use in elderly diabetic patients. Diab Vasc Dis Res 2009 Apr;6(2):87-93

☞ **Sulfonylureas and Insulins increase the risk of cancer-related mortality and cardiovascular events.**

- *Bowker et al: Increased cancer-related mortality for patients with type 2 diabetes who use sulfonylureas or insulin. Diabet Care 2006 Feb;29(2):254-8
- *Pantalone et al: The risk of developing coronary artery disease or congestive heart failure, and overall mortality, in type 2 diabetic patients receiving rosiglitazone, pioglitazone, metformin, or sulfonylureas: a retrospective analysis. Acta Diabetol 2009 Jun;46(2):145-54

SUGGESTED ALTERNATIVES:

Acerola fruit, which is high in vitamin C, lowers blood sugar levels.

- *Barbalho et al: Evaluation of glycemic and lipid profile of offspring of diabetic Wistar rats treated with Malpighia emarginata juice. Exp Diabet Res 2011;2011:173647
- *Hanamura et al: Antihyperglycemic effect of polyphenols from Acerola (Malpighia emarginata DC.) fruit. Biosci Biotechnol Biochem 2006 Aug;70(8):1813-20

Agrimony lowers blood sugar levels.

- *Cehn et al: Studies on the lowering blood sugar substances from agrimony (II). Zhong Yao Cai 2010 May;33(5):724-6
- *Gray & Flatt: Actions of the traditional anti-diabetic plant, Agrimony eupatoria (agrimony): effects on hyperglycaemia, cellular glucose metabolism and insulin secretion. Br J Nutr 1998 Jul;80(1):109-14
- *Zhang & Chen: Studies on the lowering blood sugar substances from agrimony. Zhong Yao Cai 2009 Oct;32(10):1537-9

Agrimony, Alfalfa, Coriander, Eucalyptus and Juniper prevent streptozotocin-induced diabetes. Streptozotocin is often used in cancer treatments.

- *Gray & Flatt: Pancreatic and extra-pancreatic effects of the traditional anti-diabetic plant, Medicago sativa (lucerne). Br J Nutr 1997 Aug;78(2):325-34
- *Swanston-Flatt et al: Traditional plant treatments for diabetes. Studies in normal and streptozotocin diabetic mice. Diabetologia 1990 Aug;33(8):462-4

Alfalfa reduces blood sugar while controlling insulin release.

- *Gray & Flatt: Pancreatic and extra-pancreatic effects of the traditional anti-diabetic plant, *Medicago sativa* (lucerne). *Br J Nutr* 1997 Aug;78(2):325-34

Almonds eaten at mealtime help control blood sugar levels.

- *Cohen & Johnston: Almond ingestion at mealtime reduces postprandial glycemia and chronic ingestion reduces hemoglobin A(1c) in individuals with well-controlled type 2 diabetes mellitus. *Metabol* 2011 Apr 11

Aloe vera reduces blood sugar levels and increases the healing of burns as well as diabetic ulcers (in combination with other ingredients). **Mepentol Leche** is a milky emulsion consisting of hyperoxygenated fatty acids, aloe vera and a Mimosa bark.

- *Ghannam et al: The antidiabetic activity of aloes: preliminary clinical and experimental observations. *Horm Res* 1986;24(4):288-94
- *Sánchez et al: Prevention of vascular ulcers and diabetic foot. Non-randomized open clinical evaluation on the effectiveness of "Mepentol Leche". *Rev Enferm* 2006 Oct;29(10):25-30
- *Somboonwong et al: Therapeutic effects of Aloe vera on cutaneous microcirculation and wound healing in second degree burn model in rats. *J Med Assoc Thai* 2000 Apr;83(4):417-25

Aloe, Sea buckthorn, and Turmeric have significant wound-healing abilities for chronic diabetic ulcers.

- *Gupta et al: A poly-herbal formulation accelerates normal and impaired diabetic wound healing. *Wound Repair Regen* 2008 Nov-Dec;16(6):784-90

Alpha-linolenic acid (an essential fatty acid found in plant-based oils) helps lower blood pressure while increasing insulin sensitivity.

- *Ogawa et al: Dietary alpha-linolenic acid inhibits angiotensin-converting enzyme activity and mRNA expression levels in the aorta of spontaneously hypertensive rats. *J Oleo Sci* 2009;58(7):355-60

Alpha-lipoic acid reduces blood pressure and increases insulin sensitivity. It is also effective in treating diabetic neuropathy and reducing risk of cardiovascular events in diabetics. The R form appears to be more bioavailable to the body than the typical L-form.

- *Bureković et al: The role of alpha-lipoic acid in diabetic polyneuropathy treatment. *Bosn J Basic Med Sci* 2008 Nov;8(4):341-5
- *Liu et al: Curative effect of alpha-lipoic acid on peripheral neuropathy in type 2 diabetes: a clinical study. *Zhonghua Yi Xue Za Zhi* 2007 Oct 16;87(38):2706-9
- *Masharani et al: Effects of controlled-release alpha lipoic acid in lean, nondiabetic patients with polycystic ovary syndrome. *J Diabetes Sci Technol* 2010 Mar;4(2):359-64
- *Mittermayer et al: Treatment with alpha-lipoic acid reduces asymmetric dimethylarginine in patients with type 2 diabetes mellitus. *Transl Res* 2010 Jan;155(1):6-9
- *Streeper et al: Differential effects of lipoic acid stereoisomers on glucose metabolism in insulin-resistant skeletal muscle. *Am J Physiol* 1997 Jul;273(1Pt1):E185-91
- *Thirunavukkarasu et al: Lipoic acid attenuates hypertension and improves insulin sensitivity, kallikrein activity and nitrite levels in high fructose-fed rats. *J Comp Physiol B* 2004 Nov;174(8):587-92

Alpha-lipoic acid and GLA (gamma-linolenic acid) improves all forms of neuropathy.

- *Ranieri et al: The use of alpha-lipoic acid (ALA), gamma linolenic acid (GLA) and rehabilitation in the treatment of back pain: effect on health-related quality of life. *Int J Immunopathol Pharmacol* 2009 Jul-Sep;22(3 Suppl):45-50

Alpha-lipoic acid and Benfortiamine (a fat-soluble form of B1) normalizes blood sugar levels and inhibits oxidative stress in type 2 diabetes.

- *Beltramo et al: Effects of thiamine and benfotiamine on intracellular glucose metabolism and relevance in the prevention of diabetic complications. *Acta Diabetol* 2008 Sep;45(3):131-41
- *Du et al: Oral benfotiamine plus alpha-lipoic acid normalises complication-causing pathways in type 1 diabetes. *Diabetologia* 2008 Oct;51(10):1930-2
- *Du et al: Oral benfotiamine plus alpha-lipoic acid normalises complication-causing pathways in type 1 diabetes. *Mol Nutr Food Res* 2010 Jan;54(1):7-16
- *Stirban et al: Benfotiamine prevents macro- and microvascular endothelial dysfunction and oxidative stress following a meal rich in advanced glycation end products in individuals with type 2 diabetes. *Diabetes Care* 2006 Sep;29(9):2064-71

Amaranth is an ancient grain that corrects blood sugar levels and prevents diabetic complications.

- *Kim et al: Antioxidative and anti-diabetic effects of amaranth (*Amaranthus esculantus*) in streptozotocin-induced diabetic rats. *Cell Biochem Funct* 2006 May-Jun;24(3):195-9

Antioxidant Vitamins (C, E) reduce memory deficits in diabetics.

- *Chui & Greenwood: Antioxidant vitamins reduce acute meal-induced memory deficits in adults with type 2 diabetes. *Nutr Res* 2008 Jul;28(7):423-9

Apples, as opposed to many other fruits, improve blood sugar and fat levels. It is advisable to use only **organically** grown apples as the chemicals used to grow non-organic apples significantly increase cancer risks. Apples are #1 on the pesticide list.

- *Apples worst for pesticides on produce list. *CBC News*, Jun 14, 2011
- *Barbosa et al: Varietal influences on antihyperglycemia properties of freshly harvested apples using in vitro assay models. *J Med Food* 2010 Dec;13(6):1313-23
- *DeNoon: Apples Are Top Food With Most Pesticides: 'Dirty Dozen' List Reveals Fruits/Veggies With Most Pesticides. *WebMD Health News* June 13, 2011
- *Sánchez et al: Highly methoxylated pectin improves insulin resistance and other cardiometabolic risk factors in Zucker fatty rats. *J Agric Food Chem* 2008 May 28;56(10):3574-81
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

Arginine, Methionine, and NAC (N-acetyl-cysteine) are all amino acids that have several beneficial effects for obese diabetics.

- *Cestaro: Effects of arginine, S-adenosylmethionine and polyamines on nerve regeneration. *J Appl Physiol* 2008 Jun;104(6):1727-35
- *Fisman et al: The nitric oxide pathway: is L-arginine a gate to the new millennium medicine? A meta-analysis of L-arginine effects. *J Med* 1999;30(3-4):131-48
- *Fu et al: Dietary L-arginine supplementation reduces fat mass in Zucker diabetic fatty rats. *J Nutr* 2005 Apr;135(4):714-21
- *Lucotti et al: Beneficial effects of a long-term oral L-arginine treatment added to a hypocaloric diet and exercise training program in obese, insulin-resistant type 2 diabetic patients. *Am J Physiol Endocrinol Metab* 2006 Nov;291(5):E906-12
- *McConell: Effects of L-arginine supplementation on exercise metabolism. *Curr Opin Clin Nutr Metab Care* 2007 Jan;10(1):46-51
- *Martina et al: Long-term N-acetylcysteine and L-arginine administration reduces endothelial activation and systolic blood pressure in hypertensive patients with type 2 diabetes. *Diabet Care* 2008 May;31(5):940-4
- *Monti et al: Beneficial role of L-arginine in cardiac matrix remodelling in insulin resistant rats. *Eur J Clin Invest* 2008 Nov;38(11):849-56
- *Piatti et al: Long-term oral L-arginine administration improves peripheral and hepatic insulin sensitivity in type 2 diabetic patients. *Diabet Care* 2001 May;24(5):875-80

*Settergren et al: L-arginine and tetrahydrobiopterin protects against ischemia/reperfusion-induced endothelial dysfunction in patients with type 2 diabetes mellitus and coronary artery disease. *Atherosclerosis* 2009 May;204(1):73-8

*Vasiljevic et al: Beneficial effects of L-arginine nitric oxide-producing pathway in rats treated with alloxan. *J Physiol* 2007 Nov 1;584(Pt 3):921-33

*Wu & Meininger: Nitric oxide and vascular insulin resistance. *Biofact* 2009 Jan-Feb;35(1):21-7

Artemisia princeps is an herb that is superior to the drug rosiglitazone for improving the function of fats in diabetics.

*Jung et al: Antilipogenic and hypolipidemic effects of ethanol extracts from two variants of *Artemisia princeps* Pampanini in obese diabetic mice. *J Med Food* 2009 Dec;12(6):1238-44

*Jung et al: The anti-diabetic effects of ethanol extract from two variants of *Artemisia princeps* Pampanini in C57BL/KsJ-db/db mice. *Food Chem Toxicol* 2007 Oct;45(10):2022-29

*Kang et al: Eupatilin, isolated from *Artemisia princeps* Pampanini, enhances hepatic glucose metabolism and pancreatic beta-cell function in type 2 diabetic mice. *Diabet Res Clin Pract* 2008 Oct;82(1):25-32

*Yamamoto et al: Anti-obesity and anti-diabetic effects of ethanol extract of *Artemisia princeps* in C57BL/6 mice fed a high-fat diet. *Food Funct* 2011 Jan;2(1):45-52

Arugula seed oil decreases diabetic symptoms and oxidative stress.

*El-Missiry & Gindy: Amelioration of alloxan induced diabetes mellitus and oxidative stress in rats by oil of *Eruca sativa* seeds. *Ann Nutr Metab* 2000;44(3):97-100

Ashwaganda is an herb often used to support the stress organs (adrenal glands) which can also significantly improve insulin sensitivity.

*Anwer et al: Effect of *Withania somnifera* on insulin sensitivity in non-insulin-dependent diabetes mellitus rats. *Basic Clin Pharmacol Toxicol* 2008 Jun;102(6):498-503

Astaxanthin is a potent antioxidant that compares favourably to the drugs captopril and pioglitazone in lowering blood pressure and blood sugar.

*Nakano et al: Inhibitory effect of astaxanthin combined with Flavangenol on oxidative stress biomarkers in streptozotocin-induced diabetic rats. *Int J Vitam Nutr Res* 2008 Jul-Sep;78(4-5):175-82

*No authors listed: Astaxanthin protects beta-cells against glucose toxicity in diabetic db/db mice. *Redox Rep* 2002;7(5):290-3

*Preuss et al: High dose astaxanthin lowers blood pressure and increases insulin sensitivity in rats: are these effects interdependent? *Int J Med Sci* 2011;8(2):126-38

Astragalus is an adaptogenic herb that strengthens the immune system which can help decrease insulin resistance and glucose intolerance. Plus, it has anti-aging effects and decreases the autoimmune destruction of pancreatic cells in diabetics.

*Astragalus. U Maryland Medical Center online

*Chan et al: Antihyperglycemic and antioxidative effects of a herbal formulation of *Radix Astragali*, *Radix Codonopsis* and *Cortex Lycii* in a mouse model of type 2 diabetes mellitus. *Clin Exp Immunol* 2009 Apr;156(1):78-87

*Hsu & Chiang: Stimulating effects of *Bacillus subtilis* natto-fermented *Radix astragali* on hyaluronic acid production in human skin cells. *J Ethnopharmacol* 2009 Jul 17

*Lau et al: *Radix astragali* and *Radix rehmanniae*, the principal components of two antidiabetic foot ulcer herbal formulae, elicit viability-promoting effects on primary fibroblasts cultured from diabetic foot ulcer tissues. *Phytother Res* 2009 Jun;23(6):809-15

*Lei et al: Anti-aging effect of astragalosides and its mechanism of action. *Acta Pharmacol Sin* 2003 Mar;24(3):230-4

*Li et al: Effect of *Astragalus* polysaccharide on pancreatic cell mass in type 1 diabetic mice. *Zhongguo Zhong Yao Za Zhi* 2007 Oct;32(20):2169-73

- *Wang et al: HDTIC-1 and HDTIC-2, two compounds extracted from Astragali Radix, delay replicative senescence of human diploid fibroblasts. *Mech Ageing Dev* 2003 Dec;124(10-12):1025-34
- *Wang et al: Two isomers of HDTIC isolated from Astragali Radix decrease the expression of p16 in 2BS cells. *Chin Med J (Engl)* 2008 Feb 5;121(3):231-5
- *Wang et al: The two isomers of HDTIC compounds from Astragali Radix slow down telomere shortening rate via attenuating oxidative stress and increasing DNA repair ability in human fetal lung diploid fibroblast cells. *DNA Cell Biol* 2010 Jan;29(1):33-9
- *Xu et al: Selective elevation of adiponectin production by the natural compounds derived from a medicinal herb alleviates insulin resistance and glucose intolerance in obese mice. *Endocrin* 2009 Feb;150(2):625-33

Astragalus, Dang shen (similar to *Panax ginseng*), and **Lychee** have antidiabetic and antioxidant properties.

- *Chan et al: Antihyperglycemic and antioxidative effects of a herbal formulation of Radix Astragali, Radix Codonopsis and Cortex Lycii in a mouse model of type 2 diabetes mellitus. *Clin Exp Immunol* 2009 Apr;156(1):78-87

Avocado seed oil has blood sugar-lowering effects while the flesh effectively contributes to wound healing when applied to diabetic ulcers.

- *Edem et al: Effect of aqueous extracts of alligator pear seed (*Persea americana* mill) on blood glucose and histopathology of pancreas in alloxan-induced diabetic rats. *Transplantation* 2007 Jul 27;84(2):173-9
- *Nayak et al: Wound healing activity of *Persea americana* (avocado) fruit: a preclinical study on rats. *J Wound Care* 2008 Mar;17(3):123-6

Bamboo extract may prevent fat cells from increasing in those with type 2 diabetes.

- *Panee et al: A novel function of bamboo extract in relieving lipotoxicity. *Phytother Res* 2008 May;22(5):675-80

Banaba is an herb long used in the Phillipines to control blood sugar.

- *Klein et al: Antidiabetes and Anti-obesity Activity of *Lagerstroemia speciosa*. *Evid Based Complement Alternat Med* 2007 Dec;4(4):401-7

Banana starch, root, fruit, flowers, and leaves have anti-diabetic effects with the starch helping the obese to lose weight.

- *Adewoye et al: Anti-oxidant and anti-hyperglycemic activities of *Musa sapientum* root extracts in alloxan-induced diabetic rats. *J Med Chem* 2010 Oct 28;53(20):7365-76
- *Ble-Castillo et al: Effects of native banana starch supplementation on body weight and insulin sensitivity in obese type 2 diabetics. *Int J Environ Res Public Health* 2010 May;7(5):1953-62
- *Dhanabal et al: Hypoglycemic effect of ethanolic extract of *Musa sapientum* on alloxan induced diabetes mellitus in rats and its relation with antioxidant potential. *J Nutr* 2010 Aug;140(8):1462-8
- *Kaimal et al: Hypolipidaemic and antioxidant effects of fruits of *Musa AAA* (Chenkadali) in alloxan induced diabetic rats. *Indian J Exp Biol* 2010 Feb;48(2):165-73
- *Pari & Umamaheswari: Antihyperglycaemic activity of *Musa sapientum* flowers: effect on lipid peroxidation in alloxan diabetic rats. *Water Res* 2002 Sep;36(15):3821-33
- *Pérez-Pérez et al: Antioxidant capacity of crude extracts from clones of banana and plane species. *J Med Food* 2006;9(4):517-23
- *Thakorlal et al: Resistant starch in Micronesian banana cultivars offers health benefits. *Pac Health Dialog* 2010 Apr;16(1):49-59
- *Umamaheswari et al: Antihyperglycaemic activity of *Musa sapientum* flowers: effect on lipid peroxidation in alloxan diabetic rats. *Water Res* 2002 Sep;36(15):3821-33

Barley grass improves overall health in diabetics.

- *Barley Grass. Drugs.com

*Ohkawa et al: Three new anti-oxidative saponarin analogs from young green barley leaves. *Chem Pharm Biol* 1998;46:1887-90

*Yu et al: Effects of young barley leaf extract and antioxidative vitamins on LDL oxidation and free radical scavenging activities in type 2 diabetes. *Diabetes Metab* 2002;28:1262

Bay leaves improve blood sugar and fat levels in diabetics.

*Khan et al: Bay leaves improve glucose and lipid profile of people with type 2 diabetes. *J Clin Biochem Nutr* 2009 Jan;44(1):52-6

Bee Propolis helps with diabetic neuropathy and insulin resistance.

*Abo-Salem et al: Experimental diabetic nephropathy can be prevented by propolis: Effect on metabolic disturbances and renal oxidative parameters. *Indian J Exp Biol* 2009 Apr;47(4):264-9

*El-Sayed & El-Sayed: Potential antidiabetic and hypolipidemic effects of propolis extract in streptozotocin-induced diabetic rats. *Pak J Pharm Sci* 2009 Apr;22(2):168-74

Berberine, alone or with **Cinnamon**, **Kudzu**, **Red Yeast Rice**, or **Policosanols**, has potent anti-diabetic properties with beneficial effects on fat metabolism that are better than the drug metformin. Berberine-containing plants include Barberry, Golden-seal, Goldenthrum, and Oregon grape which are also strong anti-microbials.

*Affuso et al: Effects of a nutraceutical combination (berberine, red yeast rice and policosanols) on lipid levels and endothelial function randomized, double-blind, placebo-controlled study. *Nutr Metab Cardiovasc Dis* 2009 Aug 19

*Akilen et al: Glycated haemoglobin and blood pressure-lowering effect of cinnamon in multi-ethnic Type 2 diabetic patients in the UK: a randomized, placebo-controlled, double-blind clinical trial. *Photochem Photobiol* 2004 Nov-Dec;80(3):579-82

*Chen et al: Berberine improves free-fatty-acid-induced insulin resistance in L6 myotubes through inhibiting peroxisome proliferator-activated receptor gamma and fatty acid transferase expressions. *Metabol* 2009 Dec;58(12):1694-702

*Gao et al: Of berberine and puerarin on dexamethasone-induced insulin resistance in porcine ovarian thecal cells. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2009 Jul;29(7):623-7

*Gao et al: Effect of berberine on expression of hepatocyte nuclear factor-4alpha in rats with fructose-induced insulin resistance. *Toxicol Appl Pharmacol* 2006 Oct 1;216(1):11-9

*Hao et al: Amelioration effects of berberine on diabetic microendothelial injury model by the combination of high glucose and advanced glycation end products in vitro. *Eur J Pharmacol* 2011 Jan 13

*Kong et al: Berberine reduces insulin resistance through protein kinase C-dependent up-regulation of insulin receptor expression. *Metabol* 2009 Jan;58(1):109-19

*Liu et al: Berberine modulates insulin signaling transduction in insulin-resistant cells. *Mol Cell Endocrinol* 2010 Apr 12;317(1-2):148-53

*Lu et al: Berberine promotes glucagon-like peptide-1 (7-36) amide secretion in streptozotocin-induced diabetic rats. *J Endocrinol* 2009 Feb;200(2):159-65

*Yin et al: Efficacy of berberine in patients with type 2 diabetes mellitus. *Metabol* 2008 May;57(5):712-7

*Zhang et al: Berberine lowers blood glucose in type 2 diabetes mellitus patients through increasing insulin receptor expression. *Evid Based Complement Alternat Med* 2009 Oct 6

*Zhang et al: Anti-diabetic effects of cinnamaldehyde and berberine and their impacts on retinol-binding protein 4 expression in rats with type 2 diabetes mellitus. *Chin Med J (Engl)* 2008 Nov 5;121(21):2124-8

*Zhou et al: Protective effect of berberine on beta cells in streptozotocin- and high-carbohydrate/high-fat diet-induced diabetic rats. *Eur J Pharmacol* 2009 Mar 15;606(1-3):262-8

Berries contain **anthocyanins** which reduce abdominal fat and help prevent metabolic syndrome which refers to a group of risk factors that lead to coronary artery disease, stroke, and type 2 diabetes. (A.D.A.M. Medical Encyclopedia; PubMed)

- *Tsuda: Regulation of adipocyte function by anthocyanins; possibility of preventing the metabolic syndrome. *J Agric Food Chem* 2008 Feb 13;56(3):642-6

Beta glucans are polysaccharides derived from oats, mushrooms, or yeasts. They are safe and effectively used to prevent various diseases including diabetes. They also possess wound-healing properties.

- *Akramiene et al: Effects of beta-glucans on the immune system. *Medicina (Kaunas)* 2007;43(8):597-606
- *Babineau et al: A phase II multicenter, double-blind, randomized, placebo-controlled study of three dosages of an immunomodulator (PGG-glucan) in high-risk surgical patients. *Arch Surg* 1994 Nov;129(11):1204-10
- *Babineau et al: Randomized phase I/II trial of a macrophage-specific immunomodulator (PGG-glucan) in high-risk surgical patients. *Ann Surg* 1994 Nov;220(5):601-9
- *de Felipe et al: Infection prevention in patients with severe multiple trauma with the immunomodulator beta 1-3 polyglucose (glucan). *Surg Gynecol Obstet* 1993;177(4):383-88
- *Hong et al: Anti-diabetic effect of an alpha-glucan from fruit body of maitake (*Grifola frondosa*) on KK-Ay mice. *J Pharm Pharmacol* 2007 Apr;59(4):575-82
- *Hooda et al: Dietary oat beta-glucan reduces peak net glucose flux and insulin production and modulates plasma incretin in portal-vein catheterized grower pigs. *J Nutr* 2010 Sep;140(9):1564-9
- *Hu et al: Antihyperglycemic effect of polysaccharide from fermented broth of *Pleurotus citrinopileatus*. *Antivir Ther* 2008;13(2):253-62
- *Leibovich & Danon: Promotion of wound repair in mice by application of glucan. *J Reticuloendo Soc* 1980;27:1-11
- *Rondanelli et al: The biological activity of beta-glucans. *Minerva Med* 2009 Jun;100(3):237-45
- *Wakame: Protective effects of active hexose correlated compound (AHCC) on the onset of diabetes in the rat. *Biomed Res* 1999;145-52

Biotin (B7) and Chromium (a mineral) have blood sugar-lowering properties.

- *Singer & Geohas: The effect of chromium picolinate and biotin supplementation on glycemic control in poorly controlled patients with type 2 diabetes mellitus: a placebo-controlled, double-blinded, randomized trial. *Diabetes Technol Ther* 2006 Dec;8(6):636-43
- *Zhang et al: A high biotin diet improves the impaired glucose tolerance of long-term spontaneously hyperglycemic rats with non-insulin-dependent diabetes mellitus. *J Nutr Sci Vitaminol (Tokyo)* 1996 Dec;42(6):517-26

Bitter melon is superior to rosiglitazone in controlling blood sugar levels. Both Bitter Melon and **Maitake mushrooms** possess alpha-glucosidase inhibitors.

- *Higashino et al: Hypoglycemic effects of Siamese *Momordica charantia* and *Phyllanthus urinaria* extracts in streptozotocin-induced diabetic rats (the 1st report). *Nippon Yakurigaku Zasshi* 1992 Nov;100(5):415-21
- *Huang et al: Bitter melon (*Momordica charantia* L.) inhibits adipocyte hypertrophy and down regulates lipogenic gene expression in adipose tissue of diet-induced obese rats. *Br J Nutr* 2008 Feb;99(2):230-9
- *Inayat-ur-Rahman et al: Serum sialic acid changes in non-insulin-dependent diabetes mellitus (NIDDM) patients following bitter melon (*Momordica charantia*) and rosiglitazone (Avandia) treatment. *Phytomed* 2009 May;16(5):401-5
- *Kumar et al: Fruit extracts of *Momordica charantia* potentiate glucose uptake and up-regulate Glut-4, PPAR gamma and PI3K. *Ann N Y Acad Sci* 2006 Nov;1084:391-401
- *Matsuura et al: Alpha-glucosidase inhibitor from the seeds of balsam pear (*Momordica charantia*) and the fruit bodies of *Grifola frondosa*. *Biosci Biotechnol Biochem* 2002 Jul;66(7):1576-8
- *Shih et al: Effects of *Momordica charantia* on insulin resistance and visceral obesity in mice on high-fat diet. *Diabetes Res Clin Pract* 2008 Aug;81(2):134-43
- *Shih et al: *Momordica charantia* extract on insulin resistance and the skeletal muscle GLUT4 protein in fructose-fed rats. *Antioxid Redox Signal* 2005 Nov-Dec;7(11-12):1612-20

- *Singh & Gupta: Regeneration of beta cells in islets of Langerhans of pancreas of alloxan diabetic rats by acetone extract of *Momordica charantia* (Linn.) (bitter melon) fruits. *Indian J Exp Biol* 2007 Dec;45(12):1055-62

Bitter melon, Jambul, Gymnena and Fenugreek have anti-diabetic properties.

- *Yadav et al: Complementary and comparative study on hypoglycemic and antihyperglycemic activity of various extracts of *Eugenia jambolana* seed, *Momordica charantia* fruits, *Gymnema sylvestre*, and *Trigonella foenum graecum* seeds in rats. *Appl Biochem Biotechnol* 2009 Nov 11

Black cumin seed, Myrrh, Boswellia (Frankincense), Asafoetida, and Aloe have blood sugar-lowering properties.

- *Al-Awadi et al: The effect of a plants mixture extract on liver gluconeogenesis in streptozotocin induced diabetic rats. *Diabetes Res* 1991 Dec;18(4):163-8
- *Kavitha et al: Hypoglycemic and other related effects of *Boswellia glabra* in alloxan-induced diabetic rats. *Indian J Physiol Pharmacol* 2007 Jan-Mar;51(1):29-39

Black pepper and Periwinkle protect against alloxan-induced diabetes. Alloxan is a chemical used to whiten flour and as an agent to induce diabetes in lab rats. Paring it with Aspartame causes multi-organ damage.

- *Kaleem et al: Protective effects of *Piper nigrum* and *Vinca rosea* in alloxan induced diabetic rats. *Indian J Physiol Pharmacol* 2005 Jan;49(1):65-71
- *Szkudelski: The mechanism of alloxan and streptozotocin action in B cells of the rat pancreas. *Physiol Res* 2001;50(6):537-46

Blueberries (fruit and leaves) have anti-diabetic effects.

- *Abidov et al: Effect of Blueberin on fasting glucose, C-reactive protein and plasma aminotransferases, in female volunteers with diabetes type 2: double-blind, placebo controlled clinical study. *Georgian Med News* 2006 Dec;(141):66-72
- *Draelos et al: An evaluation of the effect of a topical product containing C-xyloside and blueberry extract on the appearance of type II diabetic skin. *J Cosmet Dermatol* 2009 Jun;8(2):147-51
- *Seymour et al: Blueberry intake alters skeletal muscle and adipose tissue peroxisome proliferator-activated receptor activity and reduces insulin resistance in obese rats. *J Med Food* 2011 Aug 23
- *Stull et al: Bioactives in blueberries improve insulin sensitivity in obese, insulin-resistant men and women. *J Nutr* 2010 Aug 19
- *Vuong et al: Antiobesity and antidiabetic effects of biotransformed blueberry juice in KKA(y) mice. *Int J Obes (Lond)* 2009 Oct;33(10):1166-73

Buckwheat (which is not related to wheat) has blood sugar-lowering effects.

- *Kawa et al: Buckwheat concentrate reduces serum glucose in streptozotocin-diabetic rats. *J Agric Food Chem* 2003 Dec 3;51(25):7287-91

Calamus plants prove to scientists their traditional use for diabetes control.

- *Si et al: Insulin releasing and alpha-glucosidase inhibitory activity of ethyl acetate fraction of *Acorus calamus* in vitro and in vivo. *J Ethnopharmacol* 2010 Jan 4
- *Wu et al: Insulin sensitizing activity of ethyl acetate fraction of *Acorus calamus* L. in vitro and in vivo. *J Ethnopharmacol* 2009 Jun 22;123(2):288-92

Calcium reverses vitamin B12 malabsorption caused by metformin.

- *Bauman et al: Increased intake of calcium reverses vitamin B12 malabsorption induced by metformin. *Diabetes Care* 2000 Sep;23(9):1227-31

Calendula is a safe and effective healing herb for venous leg ulcers.

- *Duran et al: Results of the clinical examination of an ointment with marigold (*Calendula officinalis*) extract in the treatment of venous leg ulcers. *Int J Tissue React* 2005;27(3):101-6

Capsaicin (found in hot peppers) helps regulate blood sugar levels.

- *Ahuja et al: Effects of chili consumption on postprandial glucose, insulin, and energy metabolism. *Am J Clin Nutr* 2006 Jul;84(1):63-9
- *Chaiyasit et al: Pharmacokinetic and the effect of capsaicin in *Capsicum frutescens* on decreasing plasma glucose level. *J Med Assoc Thai* 2009 Jan;92(1):108-13

Carnitine (made in the body from the amino acids lysine and methionine) lowers cholesterol in diabetics better than simvastatin and reduces painful neuropathy.

- *Ghelardini et al: Acetyl-L-carnitine induces muscarinic antinociception in mice and rats. *Neuropharma* 2002 Dec;43(7):1180-7
- *Solfrizzi et al: Efficacy and tolerability of combined treatment with L-carnitine and simvastatin in lowering lipoprotein(a) serum levels in patients with type 2 diabetes mellitus. *Atheroscler* 2006 Oct;188(2):455-61

Citrus fruits reduce oxidative stress that contributes to diabetes and thyroid irregularities.

- *Parmar & Kar: Medicinal values of fruit peels from *Citrus sinensis*, *Punica granatum*, and *Musa paradisiaca* with respect to alterations in tissue lipid peroxidation and serum concentration of glucose, insulin, and thyroid hormones. *J Med Food* 2008 Jun;11(2):376-81
- *Ramful et al: Citrus fruit extracts reduce Advanced Glycation End Products (AGEs)- and H₂O₂-induced oxidative stress in human adipocytes. *J Agric Food Chem* 2010 Sep 30

Clove has potent insulin-like activity. Clove, Jamaican allspice and Cinnamon exhibited the most effective results out of the 24 herbs and spices tested.

- *Dearlove et al: Inhibition of protein glycation by extracts of culinary herbs and spices. *J Med Food* 2008 Jun;11(2):275-81
- *Prasad et al: An extract of *Syzygium aromaticum* represses genes encoding hepatic gluconeogenic enzymes. *J Ethnopharmacol* 2005 Jan 4;96(1-2):295-301

Coconut oil has a long history of traditional use for healing wounds and burns.

- *Sachs et al: Wound management with coconut oil in Indonesian folk medicine. *Chirurg* 2002 Apr;73(4):387-92
- *Srivastava & Durgaprasad: Burn wound healing property of *Cocos nucifera*: An appraisal. *Indian J Pharmacol* 2008 Aug;40(4):144-6

CoQ10, depleted by many medications, improves diabetic myopathy (a weakening of muscle tissues).

- *Miyake et al: Effect of treatment with 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors on serum coenzyme Q10 in diabetic patients. *Arzneimittelforschung* 1999 Apr;49(4):324-9

Cornsilk has long been used as a diuretic but it also has blood-sugar-lowering properties.

- *Guo et al: The effects of corn silk on glycaemic metabolism. *Nutr Metab (Lond)* 2009 Nov 23;6:47

Cranberries reduce cholesterol in Type 2 diabetics.

- *Lee et al: Effect of cranberry extracts on lipid profiles in subjects with Type 2 diabetes. *Diab Med* 2008 Dec;25(12):1473-7

Creatine has long been used by body builders but it is a supplement that is safely taken for overall improvement in muscle quality for the diabetic, those on hemodialysis or suffering from dystrophies, the aged as well as the athlete. It enhances muscle endurance and reduces muscle cramping but it also improves insulin sensitivity.

- *Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40
- *Hersch et al: Creatine in Huntington disease is safe, tolerable, bioavailable in brain and reduces serum 8OH2'dG. *Neurol* 2006 Jan 24;66(2):250-2
- *Hespel & Derave: Ergogenic effects of creatine in sports and rehabilitation. *Subcell Biochem* 2007;46:245-59
- *Walter et al: Creatine monohydrate in muscular dystrophies: A double-blind, placebo-controlled clinical study. *Neurol* 2000 May 9;54(9):1848-50

Cumin seed is more effective than glibenclamide for blood sugar control.

- *Dhandapani et al: Hypolipidemic effect of *Cuminum cyminum* L. on alloxan-induced diabetic rats. *Pharmacol Res* 2002 Sep;46(3):251-5

Curcumin lowers cholesterol in diabetics.

- *Babu & Srinivasan: Hypolipidemic action of curcumin, the active principle of turmeric (*Curcuma longa*) in streptozotocin induced diabetic rats. *Mol Cell Biochem* 1997 Jan;166(1-2):169-75

Dates, although high in natural sugars, do not have detrimental effects on blood sugar or cholesterol levels.

- *Rock et al: Effects of date (*Phoenix dactylifera* L, Medjool or Hallawi Variety) consumption by healthy subjects on serum glucose and lipid levels and on serum oxidative status: a pilot study. *J Agric Food Chem* 2009 Sep 9;57(17):8010-7

Diet low in carbohydrates reduces abdominal fat and adverse changes in blood lipids especially in diabetics.

- *Sasakabset al: Effects of a moderate low-carbohydrate diet on preferential abdominal fat loss and cardiovascular risk factors in patients with type 2 diabetes. *Diab Metab Syndr Obes* 2011 ;4:167-74

Echinacea contains chicoric acid which has anti-diabetic action.

- *Tousch et al: Chicoric acid, a new compound able to enhance insulin release and glucose uptake. *Biochem Biophys Res Commun* 2008 Dec 5;377(1):131-5

Eggplant inhibits key enzymes associated with the development of diabetes and hypertension.

- *Kwon et al: In vitro studies of eggplant (*Solanum melongena*) phenolics as inhibitors of key enzymes relevant for type 2 diabetes and hypertension. *Bioresour Technol* 2008 May;99(8):2981-8

Fiber decreases weight gain and enhances insulin sensitivity.

- *Delzenne & Cani: A place for dietary fibre in the management of the metabolic syndrome. *Curr Opin Clin Nutr Metab Care* 2005 Nov;8(6):636-40
- *Wang et al: Effects of dietary fibers on weight gain, carbohydrate metabolism, and gastric ghrelin gene expression in mice fed a high-fat diet. *Metabolism* 2007 Dec;56(12):1635-42

Fish Oil and Moroccan Argan oil display insulin resistance and glucose intolerance.

- *Samane et al: Fish oil and argan oil intake differently modulate insulin resistance and glucose intolerance in a rat model of dietary-induced obesity. *Metabol* 2009 Jul;58(7):909-19

Fructose consumption increases risk of diabetes. The small amounts found in fresh fruits and vegetables are not necessarily the problem. It is the commercially-made fructose added to processed foods, especially HFCS (high fructose corn syrup), that becomes a significant liability for diabetics and non-diabetics alike. It is on the list of Obesogens – chemicals that cause weight gain.

- *Mohr: The dangers of high fructose corn syrup: is this disguised sugar affecting your diabetes? *Diabetes Health* Aug 20, 2008

- *Shahraki et al: Prevention of high fructose-induced metabolic syndrome in male wistar rats by aqueous extract of tamarindus indica seed. *Acta Med Iran* 2011 May;49(5):277-83
- *Stanhope & Havel: Fructose consumption: potential mechanisms for its effects to increase visceral adiposity and induce dyslipidemia and insulin resistance. *Curr Opin Lipidol* 2008 Feb;19(1):16-24
- *Suzuki: Programmed to be Fat. *CBC Nature of Things* aired January 12, 2012

Fruit and Vegetable consumption reduces AGEs (advanced glycation end products) which lead to various age-related diseases including cardiovascular, cataracts, diabetes, and Alzheimer's. They also protect against cancer cell formation.

- *Pashikanti et al: Rutin metabolites: novel inhibitors of nonoxidative advanced glycation end products. *Free Radic Biol Med* 2009 Dec 4
- *Platt et al: Fruits and vegetables protect against the genotoxicity of heterocyclic aromatic amines activated by human xenobiotic-metabolizing enzymes expressed in immortal mammalian cells. *Mutat Res* 2010 Aug 14
- *Ramful et al: Citrus Fruit Extracts Reduce Advanced Glycation End Products (AGEs)- and H₂O₂-Induced Oxidative Stress in Human Adipocytes. *J Agric Food Chem* 2010 Sep 30

Garlic lowers blood sugar and blood pressure.

- *Eidi et al: Antidiabetic effect of garlic (*Allium sativum* L.) in normal and streptozotocin-induced diabetic rats. *Phytomed* 2006 Nov;13(9-10):624-9

Goji berries/Wolfberry are potent antioxidants that improve diabetic retinopathy and other eyesight diseases.

- *Potterat: Goji (*Lycium barbarum* and *L. chinense*): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19
- *Song et al: *Lycium barbarum* (Goji Berry) extracts and its taurine component inhibit PPAR- γ -dependent gene transcription in human retinal pigment epithelial cells: Possible implications for diabetic retinopathy treatment. *Biochem Pharmacol* 2011 Nov 1;82(9):1209-18
- *Wu et al: Antioxidant activities of some common ingredients of traditional chinese medicine, *Angelica sinensis*, *Lycium barbarum* and *Poria cocos*. *Phytother Res* 2004 Dec;18(12):1008-12

Grape pumace (waste product of the wine industry) has anti-inflammatory and anti-hyperglycemic effects.

- *Hogan et al: Effects of grape pomace antioxidant extract on oxidative stress and inflammation in diet induced obese mice. *J Agric Food Chem* 2010 Oct 7
- *Hogan et al: Antioxidant rich grape pomace extract suppresses postprandial hyperglycemia in diabetic mice by specifically inhibiting alpha-glucosidase. *Nutr Metab (Lond)* 2010;7:71

Grape skins have wound-healing properties.

- *Nayak et al: Wound-healing activity of the skin of the common grape (*Vitis Vinifera*) variant, Cabernet Sauvignon. *Phytother Res* 2010 Jan 11

Grapefruit seed extract is comparable to metformin without the side effects.

- *Adeneye et al: Hypoglycemic and hypolipidemic effects of methanol seed extract of *Citrus paradisi* Macfad (Rutaceae) in alloxan-induced diabetic Wistar rats. *Nig Q J Hosp Med* 2008 Oct-Dec;18(4):211-5
- *Adeneye: Methanol seed extract of *Citrus paradisi* Macfad lowers blood glucose, lipids and cardiovascular disease risk indices in normal Wistar rats. *Nig Q J Hosp Med* 2008 Jan-Mar;18(1):16-20

Guava leaf extract has anti-diabetic effects.

- *Cheng et al: Effect of guava (*Psidium guajava* L.) leaf extract on glucose uptake in rat hepatocytes. *J Food Sci* 2009 Jun;74(5):H132-8

Hibiscus improves blood pressure and cholesterol levels in diabetics.

- *Mozaffari-Khosravi et al: Effects of sour tea (*Hibiscus sabdariffa*) on lipid profile and lipoproteins in patients with type II diabetes. *J Altern Complement Med* 2009 Aug;15(8):899-903
- *Mozaffari-Khosravi et al: The effects of sour tea (*Hibiscus sabdariffa*) on hypertension in patients with type II diabetes. *J Hum Hypertens* 2008 Aug 7

High fiber, low sodium, low fat diet is superior to metoprolol (Blood Pressure) in hypertensive type 2 diabetics.

- *Pacy et al: Comparison of the hypotensive and metabolic effects of metoprolol therapy with a high fibre, low sodium, low fat diet in hypertensive type 2 diabetic subjects. *Diabetes Res* 1984 Nov;1(4):201-7

Holy Basil reduces painful neuropathy.

- *Muthuraman et al: Ameliorative effects of *Ocimum sanctum* in sciatic nerve transection-induced neuropathy in rats. *J Ethnopharmacol* 2008 Oct 30;120(1):56-62

Honey is safe and effective for healing diabetic foot ulcers but use only Manuka honey or a raw unpasteurized honey. The average “grocery store honey” does not have any healing components.

- *Abdelatif et al: Safety and efficacy of a new honey ointment on diabetic foot ulcers: a prospective pilot study. *J Wound Care* 2008 Mar;17(3):108-10
- *Al-Waili et al: Honey and Microbial Infections: A Review Supporting the Use of Honey for Microbial Control. *J Med Food* 2011 Aug 22
- *Alandejani et al: Effectiveness of honey on *Staphylococcus aureus* and *Pseudomonas aeruginosa* biofilms. *Otolaryngol Head Neck Surg* 2009 Jul;141(1):114-8
- *Eyarefe et al: Small bowel responses to enteral honey and glutamine administration following massive small bowel resection in rabbit. *Afr J Med Med Sci* 2008 Dec;37(4):309-14
- *Gethin & Cowman: Manuka honey vs. hydrogel--a prospective, open label, multicentre, randomised controlled trial to compare desloughing efficacy and healing outcomes in venous ulcers. *J Clin Nurs* 2009 Feb;18(3):466-74
- *Gollu et al: Effect of honey on intestinal morphology, intraabdominal adhesions and anastomotic healing. *Phytother Res* 2008 Sep;22(9):1243-7
- *Hon: Using honey to heal a chronic wound in a patient with epidermolysis bullosa. *Br J Nurs* 2005 Oct 27;14(19 Suppl):S4-S12
- *Khoo et al: Wound contraction effects and antibacterial properties of Tualang honey on full-thickness burn wounds in rats in comparison to hydrofibre. *BMC Complement Altern Med* 2010;10:48
- *Louis: Don't Waste Your Money and Risk Your Health with “funny honey” Illegally Imported From China. *NaturalNews* Nov 11, 2011
- *Natarajan et al: Healing of an MRSA-colonized, hydroxyurea-induced leg ulcer with honey. *J Dermatolog Treat* 2001 Mar;12(1):33-6
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- *van den Berg et al: An in vitro examination of the antioxidant and anti-inflammatory properties of buckwheat honey. *Br J Pharmacol* 2009 Jul;157(5):844-53
- *Visavadia et al: Manuka honey dressing: An effective treatment for chronic wound infections. *Br J Oral Maxillofac Surg* 2008 Jan;46(1):55-6

Inositol (B8) deficiency and high blood sugar levels are found in those with POS (polycystic ovary syndrome). With inositol supplementation, blood sugar levels were reduced and ovary function improved. A good food source of inositol is found in buckwheat.

- *Nestler et al: Ovulatory and metabolic effects of D-chiro-inositol in the polycystic ovary syndrome. *N Engl J Med* 1999 Apr 29;340(17):1314-20

Lignans from Flaxseed improve type 2 diabetic conditions and conditions involving the kidneys.

- *Cornish et al: A randomized controlled trial of the effects of flaxseed lignan complex on metabolic syndrome composite score and bone mineral in older adults. *Appl Physiol Nutr Metab* 2009 Apr;34(2):89-98
- *Pan et al: Effects of a flaxseed-derived lignan supplement in type 2 diabetic patients: a randomized, double-blind, cross-over trial. *PLoS One* 2007 Nov 7;2(11):e1148
- *Velasquez et al: Dietary flaxseed meal reduces proteinuria and ameliorates nephropathy in an animal model of type II diabetes mellitus. *Kidney Int* 2003 Dec;64(6):2100-7

Lion's Mane mushroom stimulates nerve regeneration.

- *Kenmoku et al: Erinacine Q, a new erinacine from *Hericium erinaceum*, and its biosynthetic route to erinacine C in the basidiomycete. *Biosci Biotechnol Biochem* 2002 Mar;66(3):571-5
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- *Mori et al: Nerve growth factor-inducing activity of *Hericium erinaceus* in 1321N1 human astrocytoma cells. *Colorectal Dis* 2007 Jul;9(6):549-52

Magnesium-deficiency contributes to diabetes and hypertension.

- *Kaya et al: Magnesium sulfate attenuates increased blood-brain barrier permeability during insulin-induced hypoglycemia in rats. *Can J Physiol Pharmacol* 2001 Sep;79(9):793-8
- *Ma et al: Associations of serum and dietary magnesium with cardiovascular disease, hypertension, diabetes, insulin, and carotid arterial wall thickness: the ARIC study. *Atherosclerosis Risk in Communities Study. J Clin Epidemiol* 1995 Jul;48(7):927-40
- *Olatunji & Soladoye: Effect of increased magnesium intake on plasma cholesterol, triglyceride and oxidative stress in alloxan-diabetic rats. *Afr J Med Med Sci* 2007 Jun;36(2):155-61
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Mango may help treat painful neuropathy.

- *Garrido-Suárez et al: A *Mangifera indica* L. extract could be used to treat neuropathic pain and implication of mangiferin. *Molecules* 2010;15(12):9035-45

Mangosteen has anti-diabetic and anti-inflammatory properties.

- *Bumrungpert et al: Xanthones from mangosteen inhibit inflammation in human macrophages and in human adipocytes exposed to macrophage-conditioned media. *J Nutr* 2010 Apr;140(4):842-7
- *Udani et al: Evaluation of mangosteen juice blend on biomarkers of inflammation in obese subjects: a pilot, dose finding study. *Nutr J* 2009;8:48

Medicinal mushrooms (*Cordyceps*, *Maitake*, *Oyster*, *Shiitake*) reduce glucose and cholesterol levels in diabetics and may even prevent the conditions in the first place.

- *Khatun et al: Oyster mushroom reduced blood glucose and cholesterol in diabetic subjects. *Mymensingh Med J* 2007 Jan;16(1):94-9
- *Lo et al: Submerged culture mycelium and broth of *Grifola frondosa* improve glycaemic responses in diabetic rats. *Am J Chin Med* 2008;36(2):265-85
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- *Manohar et al: Effects of a water-soluble extract of maitake mushroom on circulating glucose/insulin concentrations in KK mice. *Diabetes Obes Metab* 2002 Jan;4(1):43-8
- *Preuss et al: Enhanced insulin-hypoglycemic activity in rats consuming a specific glycoprotein extracted from maitake mushroom. *Nat Med (Tokyo)* 2008 Jul;62(3):284-93
- *Shin et al: Cordycepin suppresses expression of diabetes regulating genes by inhibition of lipopolysaccharide-induced inflammation in macrophages. *Immune Netw* 2009 Jun;9(3):98-105
- *Yang et al: Hypoglycemic effect of a *Lentinus edodes* exo-polymer produced from a submerged mycelial culture. *Biosci Biotechnol Biochem* 2002 May;66(5):937-42
- *Zhang et al: Prevention of type 1 diabetes by immature dendritic cells treated with an ethanol extract of *Paecilomyces hepiali* Chen mycelium. *J Clin Oncol* 2005 Oct 20;23(30):7467-74

Muscadine grapes improve overall health in diabetics and non-diabetics alike.

- *Banini et al: Muscadine grape products intake, diet and blood constituents of non-diabetic and type 2 diabetic subjects. *J Int Med Res* 2004 May-Jun;32(3):258-62

Myrrh, Frankincense, Aloe, Asafoetida combination lowers blood sugar levels.

- *al-Awadi et al: The effect of a plants mixture extract on liver gluconeogenesis in streptozotocin induced diabetic rats. *Diabetes Res* 1991 Dec;18(4):163-8

Nettle reduces blood sugar levels.

- *Domola et al: Insulin mimetics in *Urtica dioica*: structural and computational analyses of *Urtica dioica* extracts. *Fitoterapia* 2004 Jan;75(1):74-6

Noni fruit is a safe remedy for improving glucose function; protecting the liver; and preventing neural damage. The leaves increase wound-healing.

- *Au et al: *Morinda citrifolia* fruit juice augments insulin action in Sprague-Dawley rats with experimentally induced diabetes. *Nig Quart J Hosp Med* 2008;18(3):162-5
- *Chan-Blanco et al: The noni fruit (*Morinda citrifolia* L.): A review of agricultural research, nutritional and therapeutic properties. *J Food Comp Anal* 2006 Sept-Nov;19(6-7):645-654
- *Dixon et al: Ferment this: The transformation of Noni, a traditional polynesian medicine (*Morinda Citrifolia*, Rubiaceae). *Econ Bot* 53(1):51-68
- *Harada et al: *Morinda citrifolia* fruit juice prevents ischemic neuronal damage through suppression of the development of post-ischemic glucose intolerance. *J Nat Med* 2010 Oct;64(4):468-73
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- *Nayak et al: Hypoglycemic and hepatoprotective activity of fermented fruit juice of *Morinda citrifolia* (Noni) in diabetic rats. *Evid Base Comple Alter Med* 2011;2011:875293
- *Nayak et al: Evaluation of the wound-healing activity of ethanolic extract of *Morinda citrifolia* L. leaf. *Evid Based Complement Alternat Med* 2009 Sep;6(3):351-6
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- *West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Oats is one of only a few grains that have therapeutic effects for diabetics mainly because it contains Beta glucans which are polysaccharides derived from oats, mushrooms or yeasts. Beta glucans are valuable in controlling diabetes and cholesterol as well as for Cancer and the immune system as a whole.

- *Butt et al: Oat: unique among the cereals. *Eur J Nutr* 2008 Mar;47(2):68-79

- *Rondanelli et al: The biological activity of beta-glucans. *Minerva Med* 2009 Jun;100(3):237-45
- *Tapola et al: Glycemic responses of oat bran products in type 2 diabetic patients. *Nutr Metab Cardio-vasc Dis* 2005 Aug;15(4):255-61

Olive leaf and Olive oil are superior to glibenclamide in helping with painful neuropathy.

- *Eidi et al: Antidiabetic effect of *Olea europaea* L. in normal and diabetic rats. *Phytother Res.* 2009 Mar;23(3):347-50 and *Br J Nutr* 2007 Oct;98(4):720-6
- *El & Karakaya: Olive tree (*Olea europaea*) leaves: potential beneficial effects on human health. *Nutr Rev* 2009 Nov;67(11):632-8
- *Jemai et al: Antidiabetic and antioxidant effects of hydroxytyrosol and oleuropein from olive leaves in alloxan-diabetic rats. *J Agric Food Chem* 2009 Oct14;57(19):8798-804
- *Kaeidi et al: Olive (*Olea europaea* L.) leaf extract attenuates early diabetic neuropathic pain through prevention of high glucose-induced apoptosis: In vitro and in vivo studies. *J Ethnopharma* 2011 Apr 22
- *Rigacci et al: Oleuropein aglycon prevents cytotoxic amyloid aggregation of human amylin. *J Nutr Biochem* 2009 Jul 17
- *Rafferty et al: In vitro and in vivo effects of natural putative secretagogues of glucagon-like peptide-1 (GLP-1). *Sci Pharm* 2011 Sep ;79(3):615-621

Omega-3 fatty acids help lower high blood sugar levels.

- *Grassi et al: Blood pressure is reduced and insulin sensitivity increased in glucose-intolerant, hypertensive subjects after 15 days of consuming high-polyphenol dark chocolate. *J Nutr* 2008 Sep;138(9):1671-6
- *Huang et al: Amelioration of insulin resistance and hypertension in a fructose-fed rat model with fish oil supplementation. *Metabolism* 1997 Nov;46(11):1252-8

Papaya has significant wound-healing and anti-bacterial properties. It has even been used successfully on children who have been burned.

- *Dawkins et al: Antibacterial effects of *Carica papaya* fruit on common wound organisms. *Molecules* 2007;12(8):1829-35
- *Hewitt et al: Topical use of papaya in chronic skin ulcer therapy in Jamaica. *West Indian Med J* 2000 Mar;49(1):32-3
- *Nayak et al: Wound healing activity of *Carica papaya* L. in experimentally induced diabetic rats. *Indian J Exp Biol* 2007 Aug;45(8):739-43
- *Starley et al: The treatment of paediatric burns using topical papaya. *Burns* 1999 Nov;25(7):636-9

Persimmons have anti-diabetic effects.

- *Lee et al: Inhibitory activities of proanthocyanidins from persimmon against oxidative stress and digestive enzymes related to diabetes. *J Nutr Sci Vitaminol (Tokyo)* 2007 Jun;53(3):287-92

Phellodendron and **Citrus peel** improve blood pressure, cholesterol and blood sugar levels.

- *Oben et al: Phellodendron and Citrus extracts benefit cardiovascular health in osteoarthritis patients: a double-blind, placebo-controlled pilot study. *Nutr J* 2008;7:16

Pineapple leaf extract has anti-diabetic effects.

- *Xie et al: Effect of ethanolic extracts of *Ananas comosus* L. leaves on insulin sensitivity in rats and HepG2. *Comp Biochem Physiol C Toxicol Pharmacol* 2006 Aug;143(4):429-35
- *Xie et al: The effects of *Ananas comosus* L. leaves on diabetic-dyslipidemic rats induced by alloxan and a high-fat/high-cholesterol diet. *Am J Chin Med* 2005;33(1):95-105

Polyphenols (plant antioxidants) have therapeutic value in a variety of diseases, increasing a potentially reduced lifespan because of diabetes, obesity, and hypertension.

- *Hwang et al: AMP-activated protein kinase: a potential target for the diseases prevention by natural occurring polyphenols. *N Biotechnol* 2009 Oct 1;26(1-2):17-22

Pomegranates regulate blood sugar; improve learning memory in diabetics; contribute to weight loss; speed wound healing; and increase the effects of tolbutamide.

- *Cambay et al: Pomegranate (*Punica granatum* L.) flower improves learning and memory performances impaired by diabetes mellitus in rats. *Acta Physiol Hung* 2011 Dec;98(4):409-20
- *González-Ortiz et al: Effect of pomegranate juice on insulin secretion and sensitivity in patients with obesity. *Ann Nutr Metab* 2011;58(3):220-3
- *Hidaka et al: Effects of pomegranate juice on human cytochrome p450 3A (CYP3A) and carbamazepine pharmacokinetics in rats. *Drug Metab Dispos* 2005 May; 33(5):644-8
- *Kim et al: Inhibitory effect of pomegranate on intestinal sodium dependent glucose uptake. *Am J Chin Med* 2011;39(5):1015-27
- *Murthy et al: Study on wound healing activity of *Punica granatum* peel. *J Med Food* 2004 Summer;7(2):256-9
- *Nagata et al: Effects of Pomegranate juice on human cytochrome P450 2C9 and tolbutamide pharmacokinetics in rats. *Drug Metab Dispos* 2007 Feb;35(2):302-5

Potato fiber decreases diabetic symptoms.

- *Jakob et al: The influence of potato fibre on exocrine pancreatic secretions and on plasma levels of insulin, secretin and cholecystokinin in growing pigs. *Arch Tierernahr* 2000;53(3):273-91
- *Singh et al: Attenuation of hyperglycemia and associated biochemical parameters in STZ-induced diabetic rats by dietary supplementation of potato peel powder. *Clin Chim Acta* 2005 Mar;353(1-2):165-75

Psyllium is a soluble fiber that reduces blood sugar.

- *Hannan et al: Aqueous extracts of husks of *Plantago ovata* reduce hyperglycaemia in type 1 and type 2 diabetes by inhibition of intestinal glucose absorption. *Br J Nutr* 2006 Jul;96(1):131-7
- *Sierra et al: Therapeutic effects of psyllium in type 2 diabetic patients. *Eur J Clin Nutr* 2002 Sep;56(9):830-42

Pycnogenol improves diabetic and hypertensive conditions.

- *Zibadi et al: Reduction of cardiovascular risk factors in subjects with type 2 diabetes by Pycnogenol supplementation. *Nutr Res* 2008 May;28(5):315-20

Red Yeast Rice significantly lowers all-cause mortality in type 2 diabetics with heart disease.

- *Zhao et al: Xuezhikang, an extract of cholestin, reduces cardiovascular events in type 2 diabetes patients with coronary heart disease: subgroup analysis of patients with type 2 diabetes from China coronary secondary prevention study (CCSPS). *Nan Fang Yi Ke Da Xue Xue Bao* 2010 Aug;30(8):1874-6

Resveratrol and **Pterostilbene** (which is related to Resveratrol and found in blueberries and red grapes) are potent antioxidants that help lower blood sugar and cholesterol. Pterostilbene is proving to be more effective than ciprofibrate in lowering cholesterol in diabetics.

- *Braslavsky: Blueberries May Be King of the Hill for Those Over the Hill. *WebMD Med News* Sept 16, 1999
- *DeNoon: Blueberries May Lower Blood Fat/Cholesterol. *WebMD* Aug 23, 2004
- *Pari L & Satheesh: Effect of pterostilbene on hepatic key enzymes of glucose metabolism in streptozotocin- and nicotinamide-induced diabetic rats. *Life Sci* 2006;79(7):641-5

Roibos tea improves glucose tolerance and insulin secretion.

*Kawano et al: Hypoglycemic effect of aspalathin, a roibos tea component from *Aspalathus linearis*, in type 2 diabetic model db/db mice. *Invest New Drugs* 2010 Dec;28(6):766-82

Royal Jelly helps decrease insulin resistance.

*Zamami et al: Royal jelly ameliorates insulin resistance in fructose-drinking rats. *Biol Pharm Bull* 2008 Nov;31(11):2103-7

Sage has metformin-like effects making it an effective treatment for diabetes.

*Lima et al: Metformin-like effect of *Salvia officinalis* (common sage): is it useful in diabetes prevention? *Br J Nutr* 2006 Aug;96(2):326-33

Sesame oil can help painful neuropathy.

*Chopra et al: Sesamol suppresses neuro-inflammatory cascade in experimental model of diabetic neuropathy. *J Pain* 2010 Oct ;11(10):950-7

Spirulina or any Chlorophyll-containing (green) food can significantly lower the blood sugar even to dangerous levels if taken with diabetic medication.

*Cohen 2011;46

Stevia is an herb that is some 200 times sweeter than table sugar. It possesses anti-diabetic, antioxidant, antiviral effects. Stevia improves beta-cell function and prevents diabetes-associated kidney changes that often occur with artificial sweeteners. Although it can have some effect on blood sugar levels (any sweetener can), it does not cause the potential health hazards associated with artificial sweeteners.

*Chang et al: Increase of insulin sensitivity by stevioside in fructose-rich chow-fed rats. *J Neuroimmunol* 2009 Feb 15;207(1-2):111-6

*Chen et al: Stevioside improves pancreatic beta-cell function during glucotoxicity via regulation of acetyl-CoA carboxylase. *Am J Physiol Endocrinol Metab* 2007 Jun;292(6):E1906-16

*Chen et al: Stevioside counteracts the glyburide-induced desensitization of the pancreatic beta-cell function in mice: studies in vitro. *Metabol* 2006 Dec;55(12):1674-80

*Chen et al: Mechanism of the hypoglycemic effect of stevioside, a glycoside of *Stevia rebaudiana*. *Planta Med* 2005 Feb;71(2):108-13

*Curi et al: Effect of *Stevia rebaudiana* on glucose tolerance in normal adult humans. *Biol Pharm Bull* 2002 Nov;25(11):1488-90

*Dyrskog et al: Preventive effects of a soy-based diet supplemented with stevioside on the development of the metabolic syndrome and type 2 diabetes in Zucker diabetic fatty rats. *Metabol* 2005 Sep;54(9):1181-8

*Gregersen et al: Antihyperglycemic effects of stevioside in type 2 diabetic subjects. *Metabol* 2004 Jan;53(1):73-6

*Guens: Stevioside. *Phytochem* 2003 Nov;64(5):913-21

*Jeppesen et al: Antihyperglycemic and blood pressure-reducing effects of stevioside in the diabetic Goto-Kakizaki rat. *Metabol* 2003 Mar;52(3):372-8

*Jeppesen et al: Stevioside induces antihyperglycaemic, insulinotropic and glucagonostatic effects in vivo: studies in the diabetic Goto-Kakizaki (GK) rats. *Phytomed* 2002 Jan;9(1):9-14

*Jeppesen et al: Stevioside acts directly on pancreatic beta cells to secrete insulin: actions independent of cyclic adenosine monophosphate and adenosine triphosphate-sensitive K⁺-channel activity. *Metabol* 2000 Feb;49(2):208-14

*Kujur et al: Antidiabetic activity and phytochemical screening of crude extract of *Stevia rebaudiana* in alloxan-induced diabetic rats. *Pharmacognosy Res* 2010 Jul;2(4):258-63

*Misra et al: Antidiabetic activity of medium-polar extract from the leaves of *Stevia rebaudiana* Bert. (Bertonii) on alloxan-induced diabetic rats. *J Pharm Bioallied Sci* 2011 Apr;3(2):242-8

- *Ozbayer et al: Effects of Stevia rebaudiana (Bertoni) extract and N-nitro-L-arginine on renal function and ultrastructure of kidney cells in experimental type 2 diabetes. *J Med Food* 2011 Jun 11
- *Shukla et al: Antioxidant ability and total phenolic content of aqueous leaf extract of Stevia rebaudiana Bert. *Exp Toxicol Pathol* 2011 Mar 4

Tart Cherries reduce oxidative stress and several other abnormalities associated with diabetes.

- *Connolly et al: Efficacy of a tart cherry juice blend in preventing the symptoms of muscle damage. *J Nat Prod* 2003 Feb;66(2):263-8
- *Seymour et al: Altered hyperlipidemia, hepatic steatosis, and hepatic peroxisome proliferator-activated receptors in rats with intake of tart cherry. *J Med Food* 2008 Jun;11(2):252-9
- *Traustadóttir et al: Tart cherry juice decreases oxidative stress in healthy older men and women. *J Nutr* 2009 Oct;139(10):1896-900

Vitamin B12 proves to be better than the drug nortriptyline in treating diabetic neuropathy.

- *Talaie et al: Vitamin B12 may be more effective than nortriptyline in improving painful diabetic neuropathy. *Atheroscler* 2005 Jul;181(1):131-5

Vitamin C plus a daily intake of fresh fruit and vegetables lower the risk of diabetes.

- *Harding et al: Plasma vitamin C level, fruit and vegetable consumption, and the risk of new-onset type 2 diabetes mellitus: the European prospective investigation of cancer - Norfolk prospective study. *Arch Intern Med* 2008 Jul 28;168(14):1493-9

Vitamin D is crucial in preventing and treating diabetes. Since it becomes a hormone in the body, it can greatly improve insulin sensitivity.

- *Brekke & Ludvigsson: Vitamin D supplementation and diabetes-related autoimmunity in the ABIS study. *Pediatr Diabet* 2007 Feb;8(1):11-4
- *Chiu et al: Hypovitaminosis D is associated with insulin resistance and beta cell dysfunction. *Mol Cancer Ther* 2008 Oct;7(10):3318-29
- *Cohen, 2011:46
- *Kumar et al: Improvement in glucose tolerance and beta-cell function in a patient with vitamin D deficiency during treatment with vitamin D. *Anticancer Res* 2006 Jan-Feb;26(1A):203-9
- *Palomer et al: Role of vitamin D in the pathogenesis of type 2 diabetes mellitus. *Diabetes Obes Metab* 2008 Mar;10(3):185-97

Vitamin D, Quercetin and ascorbyl palmitate (a fat-soluble form of Vitamin C) is a safe and effective combination for diabetic neuropathy.

- *Valensi et al: A multicenter, double-blind, safety study of QR-333 for the treatment of symptomatic diabetic peripheral neuropathy. A preliminary report. *J Diabetes Complicat* 2005 Sep-Oct;19(5):247-53

Watermelon reduces metabolic syndrome symptoms in obese diabetics and increases some amino acid levels.

- *Collins et al: Watermelon consumption increases plasma arginine concentrations in adults. *Nutrition* 2007 Mar;23(3):261-6
- *Wu et al: Dietary supplementation with watermelon pomace juice enhances arginine availability and ameliorates the metabolic syndrome in Zucker diabetic fatty rats. *J Nutr* 2007 Dec;137(12):2680-5

White button mushrooms lower cholesterol and blood sugar in diabetics.

- *Jeong et al: White button mushroom (*Agaricus bisporus*) lowers blood glucose and cholesterol levels in diabetic and hypercholesterolemic rats. *Nutr Res* 2010 Jan;30(1):49-56

Yacon is a tuber, with significant antioxidant activity. It is related to the sunflower and Jerusalem artichoke. Yacon root speeds transit time through the bowel and,

because it has blood-sugar-lowering capacity, it is particularly good for diabetics. It is more effective when combined with Maca and Milk Thistle. Pre-menopausal women with insulin resistance also benefit from yacon.

- *Alvarez et al: Prebiotic inulin/oligofructose in Yacón root (*Smallanthus sonchifolius*), phytochemistry and standardization as basis for clinical and pre-clinical research. *Rev Gastroenterol Peru* 2008 Jan-Mar;28(1):22-7
- *Genta et al: Yacon syrup: beneficial effects on obesity and insulin resistance in humans. *Clin Nutr* 2009 Apr;28(2):182-7
- *Valentová et al: Maca (*Lepidium meyenii*) and yacon (*Smallanthus sonchifolius*) in combination with silymarin as food supplements: in vivo safety assessment. *Food Chem Toxicol* 2008 Mar;46(3):1006-13
- *Valentová et al: Induction of glucokinase mRNA by dietary phenolic compounds in rat liver cells in vitro. *J Agric Food Chem* 2007 Sep 19;55(19):7726-31
- *Valentová et al: Radical scavenging and anti-lipoperoxidative activities of *Smallanthus sonchifolius* leaf extracts. *J Agric Food Chem* 2005 Jul 13;53(14):5577-82
- *Valentová et al: The effect of *Smallanthus sonchifolius* leaf extracts on rat hepatic metabolism. *Cell Biol Toxicol* 2004 Mar;20(2):109-20



DIURETICS

(USED TO TREAT WATER RETENTION [EDEMA], HEART FAILURE, AND PRENATAL HYPERTENSION [PREECLAMPSIA])

COMMON EXAMPLES:

Loop

bumetanide – Bumex and others
furosemide – Lasix and others
torsemide – Demadex

Osmotics

mannitol – Osmitrol, Resectisol
urea – Ureaphil

Potassium-sparing

amiloride – Midamor
spironolactone – Aldactone, Novo-spiroton
triamterene – Maxzide, Dyazide, Dyrenium

Thiazides

chlorothiazide – Diuril
chlorthalidone – Hygroton, Thalitone, Uridon and others
hydrochlorothiazide (HCTZ) – Microzide and others
indapamide – Lozide, Lozol
metolazone – Zaroxolyn

Others

acetazolamide – Acetazolam and others

DEplete:

A, B1, B2, B3, B6, B9, C, D, calcium, chloride, iron, magnesium, potassium, sodium, zinc, CoQ10

⚠ **Diuretics** used in combination with **Calcium channel blockers** (Blood Pressure) increases the risk of heart failure and heart attacks more than any other two medication-combinations.

*Boger-Megiddo et al: Myocardial infarction and stroke associated with diuretic based two drug antihypertensive regimens: population based case-control study. BMJ 2010;340:c103

*Shibata et al: Do calcium channel blockers increase the diagnosis of heart failure in patients with hypertension? *Am J Cardiol* 2010 Jul 15;106(2):228-35

☞ **Loop Diuretics** decrease bone density thereby increasing the risk of fractures.

*Rejnmark et al: Fracture risk in patients treated with loop diuretics. *J Intern Med* 2006 Jan;259(1):117-24

*Rejnmark et al: Loop diuretics increase bone turnover and decrease BMD in osteopenic postmenopausal women: results from randomized controlled study with bumetanide. *J Bone Min Res* 2006 Jan;21(1):163-70

SUGGESTED ALTERNATIVES:

Arginine (an amino acid) is a safe and efficient treatment for preeclampsia, improving fetal growth and increasing endurance in heart failure patients.

*Altun et al: Effects of oral L-arginine supplementation on blood pressure and asymmetric dimethylarginine in stress-induced preeclamptic rats. *Cell Biochem Funct* 2008 Sep-Oct;26(5):648-53

*Doutreleau et al: Chronic L-arginine supplementation enhances endurance exercise tolerance in heart failure patients. *Int J Sports Med* 2006 Jul;27(7):567-72

*Facchinetti et al: L-arginine supplementation in patients with gestational hypertension: a pilot study. *Hypertens Pregn* 2007;26(1):121-30

*Fisman et al: The nitric oxide pathway: is L-arginine a gate to the new millennium medicine? A meta-analysis of L-arginine effects. *J Med* 1999;30(3-4):131-48

*Neri et al: Effect of L-arginine on blood pressure in pregnancy-induced hypertension: a randomized placebo-controlled trial. *J Matern Fetal Neonatal Med* 2006 May;19(5):277-81

*Neri et al: Effects of acute L-arginine infusion on non-stress test in hypertensive pregnant women. *J Matern Fetal Neonatal Med* 2004 Jul;16(1):23-6

*Rytlewski et al: Effects of prolonged oral supplementation with L-arginine on blood pressure and nitric oxide synthesis in preeclampsia. *Eur J Clin Invest* 2005 Jan;35(1):32-7

*Zhang et al: Effect and mechanism of L-arginine therapy for fetal growth retardation due to pregnancy-induced hypertension. *Nan Fang Yi Ke Da Xue Xue Bao* 2007 Feb;27(2):198-200

Arginine and **Citrulline** (amino acids) improve heart failure.

*Orea-Tejeda et al: The effect of L-arginine and citrulline on endothelial function in patients in heart failure with preserved ejection fraction. *Cardiol J* 2010;17(5):464-70

*Orozco-Gutiérrez et al: Effect of L-arginine or L-citrulline oral supplementation on blood pressure and right ventricular function in heart failure patients with preserved ejection fraction. *Cardiol J* 2010;17(6):612-8

Arjuna is an Ayurvedic herb with an ancient history of improving the conditions of those with severe heart failure.

*Bharani et al: Salutary effect of Terminalia Arjuna in patients with severe refractory heart failure. *Int J Cardiol* 1995 May;49(3):191-9

Astragalus has a diurectic effect while improving heart function.

*Ai et al: Aqueous extract of Astragal Radix induces human natriuresis through enhancement of renal response to atrial natriuretic peptide. *J Ethnopharmacol* 2008 Mar 28;116(3):413-21

*Ma et al: Mechanisms of the therapeutic effect of astragalus membranaceus on sodium and water retention in experimental heart failure. *Chin Med J (Engl)* 1998 Jan;111(1):17-23

*Zhang et al: Effect of Astragalus injection on plasma levels of apoptosis-related factors in aged patients with chronic heart failure. *Chin J Integr Med* 2005 Sep;11(3):187-90

*Zhou et al: Study on effect of Astragalus injection in treating congestive heart failure. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2001 Oct;21(10):747-9

B-complex deficiency is common in heart failure patients and a **B1 deficiency** plays an important role in the deterioration of heart function.

- *Hanninen et al: The prevalence of thiamin deficiency in hospitalized patients with congestive heart failure. *J Am Coll Cardiol* 2006 Jan 17;47(2):354-61
- *Keith et al: B-vitamin deficiency in hospitalized patients with heart failure. *J Am Diet Assoc* 2009;109(8):1406-10
- *Mendoza et al: Reversal of refractory congestive heart failure after thiamine supplementation: report of a case and review of literature. *J Cardiovasc Pharmacol Ther* 2003 Dec;8(4):313-6

Bromelain is an enzyme derived from Pineapple and often used as an anti-inflammatory but it is also an effective treatment for swelling after dental surgery.

- *Inchingolo et al: Clinical trial with bromelain in third molar exodontia. *Eur Rev Med Pharmacol Sci* 2010 Sep;14(9):771-4

Buckwheat herb tea improves leg edema in those with chronic venous insufficiency.

- *Ihme et al: Leg oedema protection from a buckwheat herb tea in patients with chronic venous insufficiency: a single-centre, randomised, double-blind, placebo-controlled clinical trial. *Eur J Clin Pharmacol* 1996;50(6):443-7

Calcium reduces risk of preeclampsia and fetal mortality.

- *Atallah et al: Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems. *Cochrane Datab Syst Rev* 2002;(1):CD001059
- *Imdad et al: Role of calcium supplementation during pregnancy in reducing risk of developing gestational hypertensive disorders: a meta-analysis of studies from developing countries. *BMC Public Health* 2011;11 Suppl 3:S18

Carnitine (an amino acid), alone or with **CoQ10**, is a vital treatment for heart failure.

- *Kobayashi et al: L-carnitine treatment for congestive heart failure--experimental and clinical study. *Jpn Circ J* 1992 Jan;56(1):86-94
- *Kumar et al: Effect of carnitine Q-gel (ubiquinol and carnitine) on cytokines in patients with heart failure in the Tishcon study. *Acta Cardiol* 2007 Aug;62(4):349-54

Chlorella (sea algae) reduces the risk of anemia, proteinuria and edema in pregnant women.

- *Nakano et al: Chlorella pyrenoidosa supplementation reduces the risk of anemia, proteinuria and edema in pregnant women. *Plant Foods Hum Nutr* 2010 Mar;65(1):25-30

CoQ10 is a vital nutrient for heart health, especially congestive heart failure.

- *Adarsh et al: Coenzyme Q10 (CoQ10) in isolated diastolic heart failure in hypertrophic cardiomyopathy (HCM). *Biofact* 2008;32(1-4):145-9
- *Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure (interim analysis). The CoQ10 Drug Surveillance Investigators. *Forsch Komplementarmed Klass Naturheilkd* 2005 Apr;12(2):77-83
- *Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure. CoQ10 Drug Surveillance Investigators. *Mol Aspects Med* 1994;15 Suppl:s287-94
- *Berman et al: Coenzyme Q10 in patients with end-stage heart failure awaiting cardiac transplantation: a randomized, placebo-controlled study. *Clin Cardiol* 2004 May;27(5):295-9
- *Langsjoen & Langsjoen: Supplemental ubiquinol in patients with advanced congestive heart failure. *Biofact* 2008;32(1-4):119-28
- *Molyneux et al: Coenzyme Q10; an adjunctive therapy for congestive heart failure? *N Z Med J* 2009 Oct 30;122(1305):74-9
- *Morisco et al: Effect of coenzyme Q10 therapy in patients with congestive heart failure: a long-term multicenter randomized study. *Clin Investig* 1993;71(8 Suppl):S134-6
- *Mortensen et al: Long-term coenzyme Q10 therapy: a major advance in the management of resistant

myocardial failure. *Wien Klin Wochenschr* 2005 Aug;117(15-16):558-60

*Soja & Moretensen: Treatment of congestive heart failure with coenzyme Q10 illuminated by meta-analyses of clinical trials. *Mol Aspects Med* 1997;18 Suppl:S159-68

Curcumin improves cardiac function in heart failure and may prevent heart attacks.

*Epstein: Currying favor for the heart. *Lab Invest* 2009 Oct 19

*Morimoto et al: The dietary compound curcumin inhibits p300 histone acetyltransferase activity and prevents heart failure in rats. *J Clin Invest* 2008 Mar;118(3):868-78

*Morimoto et al: Novel heart failure therapy targeting transcriptional pathway in cardiomyocytes by a natural compound, curcumin. *J Food Sci* 2007 Oct;72(8):S612-7

*Zhang et al: Effects of curcumin on sarcoplasmic reticulum Ca²⁺-ATPase in rabbits with heart failure. *Zhonghua Xin Xue Guan Bing Za Zhi* 2010 Apr;38(4):369-73

D-Ribose is a cellular “sugar” necessary for energy production which, in turn, improves cardiac function.

*Brookman & Cyr: Metabolic supplementation with enhanced external counterpulsation improves myocardial function in acquired cardiomyopathy: a case report. *J Altern Complement Med* 2010 Mar;16(3):323-5

*Clay et al: Chronic alcoholic cardiomyopathy. Protection of the isolated ischaemic working heart by ribose. *Biochem Int* 1988 Nov;17(5):791-800

*Omran et al: D-Ribose improves diastolic function and quality of life in congestive heart failure patients: a prospective feasibility study. *Cancer Lett* 1992 Apr 30;63(3):237-41

*Wagner et al: D-ribose, a metabolic substrate for congestive heart failure. *Prog Cardiovasc Nurs* 2009 Jun;24(2):59-60

Dandelion has long been used for its blood-cleansing and diuretic effects.

*Clare et al: The diuretic effect in human subjects of an extract of *Taraxacum officinale* folium over a single day. *J Altern Complement Med* 2009 Aug;15(8):929-34

*Schütz et al: *Taraxacum*--a review on its phytochemical and pharmacological profile. *J Ethnopharmacol* 2006 Oct 11;107(3):313-23

Folic acid (B9) reduces the risk of preeclampsia. Take with a B-complex as taking just one B vitamin can increase the risk of deficiency in one or more of the other family members.

*Manizheh et al: Comparison study on the effect of prenatal administration of high dose and low dose folic acid. *Saudi Med J* 2009 Jan;30(1):88-97

Ginseng is an ancient herb used for its overall health effects which includes an improvement in strengthening the heart and overcoming congestive heart failure.

*Dai et al: Effect of ginseng injection in treating congestive heart failure and its influence on thyroid hormones. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 1999 Apr;19(4):209-11

Ginseng and **Berberine-containing plants** (Barberry, Goldenseal, Goldentthread, Oregon grape) improve the conditions of those with heart failure.

*Lau et al: Cardiovascular actions of berberine. *Cardiovasc Drug Rev* 2001 Fall;19(3):234-44

*Li et al: Effects of ginseng total saponins with berberine on plasma brain natriuretic peptide and Ca²⁺ concentration in experimental rats with chronic congestive heart failure. *Zhongguo Zhong Yao Za Zhi* 2009 Feb;34(3):324-7

*Qi et al: CPU86017, a berberine derivative, attenuates cardiac failure through normalizing calcium leakage and downregulated phospholamban and exerting antioxidant activity. *Acta Pharmacol Sin* 2010 Feb;31(2):165-74

Gotu Kola improves venous insufficiency, lowering the risk of edema.

*Incandela et al: Total triterpenic fraction of *Centella asiatica* in chronic venous insufficiency and in

high-perfusion microangiopathy. *Angiology* 2001 Oct;52 Suppl 2:S9-13

Hawthorn improves strength and endurance in those with heart failure.

- *Degenring et al: A randomised double blind placebo controlled clinical trial of a standardised extract of fresh *Crataegus* berries (*Crataegisan*) in the treatment of patients with congestive heart failure NYHA II. *JAMA* 2007 Sep 26;298(12):1420-8
- *Holubarsch et al: The efficacy and safety of *Crataegus* extract WS 1442 in patients with heart failure: the SPICE trial. *Eur J Heart Fail* 2008 Dec;10(12):1255-63
- *Hwang et al: Effects of hawthorn on the progression of heart failure in a rat model of aortic constriction. *Pharmacother* 2009 Jun;29(6):639-48
- *Pittler et al: Hawthorn extract for treating chronic heart failure. *Cochrane Datab Syst Rev* 2008 Jan 23;(1):CD005312
- *Pittler et al: Hawthorn extract for treating chronic heart failure: meta-analysis of randomized trials. *Am J Med* 2003 Jun 1;114(8):665-74
- *Rietbrock et al: Actions of standardized extracts of *Crataegus* berries on exercise tolerance and quality of life in patients with congestive heart failure. *Arzneimittelforschung* 2001 Oct;51(10):793-8

Herbal Diuretics include: apple cider vinegar, artichoke, asparagus, celery seeds, cornsilk, cranberry juice (unsweetened), cucumber, dandelion leaf, fennel, golden-seal, green tea, hawthorn, parsley, stinging nettle, watermelon, watercress.

Horny Goat Weed is an herb used to improve circulation and shown to improve left ventricular dysfunction and cardiac remodeling in those with congestive heart failure.

- *Song et al: Ethanol extract from *Epimedium brevicornum* attenuates left ventricular dysfunction and cardiac remodeling through down-regulating matrix metalloproteinase-2 and -9 activity and myocardial apoptosis in rats with congestive heart failure. *Int J Mol Med* 2008 Jan;21(1):117-24

Magnesium plays an important role in heart health.

- *Cohen et al: Metabolic and clinical effects of oral magnesium supplementation in furosemide-treated patients with severe congestive heart failure. *J Ethnopharmacol* 2005 Oct 3;101(1-3):249-57
- *Fuentes et al: Acute and chronic oral magnesium supplementation: effects on endothelial function, exercise capacity, and quality of life in patients with symptomatic heart failure. *J Periodontal Res* 1996 Aug;31(6):408-13

Minerals (Calcium, Copper, Magnesium, Potassium, Selenium, Sodium, Zinc) are important in preventing or reversing edema as well as treating heart failure and atrial fibrillation. Diuretics often worsen edema or heart problems simply by depleting the very minerals needed to prevent the condition in the first place. Instead of avoiding salt, which is often the first suggested protocol, doing the opposite usually obtains better results. A full mineral sea salt is suggested – one that is coloured and not white even if it says “Sea salt”. This provides a good balance of minerals whereas white salt is only sodium with no other minerals that compensate for the imbalance that sodium, by itself, causes.

- *Alsafwah et al: Congestive heart failure is a systemic illness: a role for minerals and micronutrients. *Clin Med Res* 2007 Dec;5(4):238-43
- *Constant: Pearls and pitfalls in the use and abuse of diuretics for chronic congestive heart failure. *Cardiology* 1999;92(3):156-61
- *Ghaemian et al: Zinc and Copper levels in severe heart failure and the effects of atrial fibrillation on the zinc and copper status. *Int J Oncol* 2008 May;32(5):1085-90
- *Han & Zhou: Selenium supplement in the prevention of pregnancy induced hypertension. *Chin Med J (Engl)* 1994 Nov;107(11):870-1

*Newman et al: The importance of lost minerals in heart failure. *Cardiovasc Hematol Agents Med Chem* 2007 Oct;5(4):295-9

Omega-3 fatty acids reduce the risk of preeclampsia. Fish must be baked or boiled but not fried.

*Belin et al: Fish intake and the risk of incident heart failure: the Women's Health Initiative. *Circ Heart Fail* 2011 Jul 1;4(4):404-13

*Duda et al: Fish oil, but not flaxseed oil, decreases inflammation and prevents pressure overload-induced cardiac dysfunction. *Immunopharmacol Immunotoxicol* 2009;31(2):209-13

*Mozaffarian et al: Fish intake and risk of incident heart failure. *J Am Coll Cardiol* 2005 Jun 21;45(12):2015-21

*Williams et al: Omega-3 fatty acids in maternal erythrocytes and risk of preeclampsia. *Epidem* 1995 May;6(3):232-7

Pycnogenol controls edema in hypertensive patients.

*Belcaro et al: Control of edema in hypertensive subjects treated with calcium antagonist (nifedipine) or angiotensin-converting enzyme inhibitors with Pycnogenol. *Clin Appl Thromb Hemost* 2006 Oct;12(4):440-4

Resveratrol is a potent antioxidant that improves cardiac function.

*Tanno et al: Induction of manganese superoxide dismutase by nuclear translocation and activation of SIRT1 promotes cell survival in chronic heart failure. *J Biol Chem* 2010 Mar 12;285(11):8375-82

Testosterone deficiency may contribute to congestive heart failure and raising levels often improves the condition.

*Han et al: Neuroprotective effects of testosterone upon cardiac sympathetic function in rats with induced heart failure. *Eur J Pharmacol* 2009 Oct 1;619(1-3):68-74

*Sun et al: Testosterone modulation of cardiac β -adrenergic signals in a rat model of heart failure. *Gen Comp Endocrinol* 2011 Apr 28

*Wehr et al: Low free testosterone is associated with heart failure mortality in older men referred for coronary angiography. *Eur J Heart Fail* 2011 May;13(5):482-8

Vitamin Supplements improve vascular-related pregnancy complications. Avoid synthetic supplements which are often found in mass market stores. The body views these as toxins and receives very little value as opposed to natural-sourced nutrients.

*Bibi et al: Hyperhomocysteinaemia, vascular related pregnancy complications and the response to vitamin supplementation in pregnant women of Pakistan. *J Pak Med Assoc* 2010 Sep;60(9):741-5

Vitamin C decreases the risk of heart failure.

*Pfister et al: Plasma vitamin C predicts incident heart failure in men and women in European Prospective Investigation into Cancer and Nutrition-Norfolk prospective study. *Am Heart J* 2011 Aug ;162(2):246-53

Vitamin D3 reduces inflammation associated with congestive heart failure and a deficiency leads to a number of cardiovascular diseases.

*Kim et al: Prevalence of hypovitaminosis D in cardiovascular diseases (from the National Health and Nutrition Examination Survey 2001 to 2004). *Am J Cardiol* 2008 Dec 1;102(11):1540-4

*Schleithoff et al: Vitamin D supplementation improves cytokine profiles in patients with congestive heart failure: a double-blind, randomized, placebo-controlled trial. *Am J Clin Nutr* 2006 Apr;83(4):754-9



ERECTILE DYSFUNCTION/IMPOTENCY

COMMON EXAMPLES:

sildenafil – Revatio, Viagra

tadalafil – Adcirca, Cialis

vardenafil – Levitra, Nuviva

DEplete:

no studies found

☞ **Ashwaganda** is a remarkable herb that helps improve almost any disorder including sperm count. However, when it comes to erectile dysfunction, it should not be used as it interferes with libido.

*Ilayperuma et al: Effect of Withania somnifera root extract on the sexual behaviour of male rats. *Asian J Androl* 2002 Dec;4(4):295-8

*Mahdi et al: Withania somnifera Improves Semen Quality in Stress-Related Male Fertility. *Evid Based Complement Alternat Med* 2009 Sep 29

☞ **Cholesterol-lowering drugs**, especially **Statins**, have been associated with ED.

*Blanker & Verhagen: Lipid-lowering drugs and erectile dysfunction. *Fam Pract* 2002 Oct;19(5):567

*Bruckert et al: Men treated with hypolipidaemic drugs complain more frequently of erectile dysfunction. *J Clin Pharm Ther* 1996 Apr;21(2):89-94

*Corona et al: The effect of statin therapy on testosterone levels in subjects consulting for erectile dysfunction. *J Sex Med* 2010 Apr;7(4 Pt 1):1547-56

*Do et al: Statins and erectile dysfunction: results of a case/non-case study using the French Pharmacovigilance System Database. *Drug Saf* 2009;32(7):591-7

*Rizvi et al: Do lipid-lowering drugs cause erectile dysfunction? A systematic review. *Fam Pract* 2002 Feb ;19(1):95-8

*Solomon et al: Erectile dysfunction and statin treatment in high cardiovascular risk patients. *Int J Clin Pract* 2006 Feb;60(2):141-5

☞ **ED is a classic marker** for vascular disease (eg. atherosclerosis).

*Lojanapiwat et al: Erectile dysfunction as a sentinel marker of endothelial dysfunction disease. *Singapore Med J* 2009 Jul;50(7):698-701

☞ **SSRIs** (Antidepressants) are associated with sexual dysfunction in both men and women and have long-term effects even after discontinuing the medication.

*Clayton et al: Burden of phase-specific sexual dysfunction with SSRIs. *J Affect Disord* 2006;91(1):27-32

*Csoka et al: Persistent sexual dysfunction after discontinuation of selective serotonin reuptake inhibitors. *J Sex Med* 2008 Jan;5(1):227-33

SUGGESTED ALTERNATIVES:

Arginine, an amino acid used alone or with **Yohimbe** or **Pycnogenol** improves ED.

- *Chen et al: Effect of oral administration of high-dose nitric oxide donor L-arginine in men with organic erectile dysfunction: results of a double-blind, randomized, placebo-controlled study. *BJU Int* 1999 Feb;83(3):269-73
- *Lebret et al: Efficacy and safety of a novel combination of L-arginine glutamate and yohimbine hydrochloride: a new oral therapy for erectile dysfunction. *Eur Urol* 2002 Jun;41(6):608-13
- *Ledda et al: Investigation of a complex plant extract for mild to moderate erectile dysfunction in a randomized, double-blind, placebo-controlled, parallel-arm study. *BJU Int* 2010 Oct;106(7):1030-3
- *Moody et al: Effects of long-term oral administration of L-arginine on the rat erectile response. *J Urol* 1997 Sep;158(3 Pt1):942-7
- *Stanislavov & Nikolova: Treatment of erectile dysfunction with pycnogenol and L-arginine. *J Sex Marital Ther* 2003 May-Jun;29(3):207-13

Citrulline, another amino acid, improves erectile firmness in men with mild ED.

- *Cormio et al: Oral L-citrulline supplementation improves erection hardness in men with mild erectile dysfunction. *Urol* 2011 Jan;77(1):119-22

Clove (alone or with **Nutmeg**) proves its traditional use as an aphrodisiac by producing significant and sustained increase in sexual activity.

- *Tajuddin et al: Effect of 50% ethanolic extract of *Syzygium aromaticum* (L.) Merr.&Perry. (clove) on sexual behaviour of normal male rats. *BMC Complement Altern Med* 2004 Nov 5;4:17
- *Tajuddin et al: Aphrodisiac activity of 50% ethanolic extracts of *Myristica fragrans* Houtt. (nutmeg) and *Syzygium aromaticum* (L.) Merr.&Perry (clove) in male mice: a comparative study. *BMC Complement Altern Med* 2003 Oct 20;3:6

CoQ10 deficiency leads to ED as well as many other unpleasant conditions.

- *Cohen 2011:10

Ginseng (Panax) improves ED.

- *Choi et al: Clinical efficacy of Korean red ginseng for erectile dysfunction. *Int J Impot Res* 1995 Sep;7(3):181-6
- *Jang et al: Red ginseng for treating erectile dysfunction: a systematic review. *Br J Clin Pharmacol* 2008 Oct;66(4):444-50
- *Kim et al: Effects of tissue-cultured mountain ginseng (*Panax ginseng* CA Meyer) extract on male patients with erectile dysfunction. *Asian J Androl* 2009 May;11(3):356-61
- *Wang et al: Ginsenoside Rg1 improves male copulatory behavior via nitric oxide/cyclic guanosine monophosphate pathway. *J Sex Med* 2009 Sep 14

Green Tea has a preventative and therapeutic role in ED.

- *Neves et al: Does regular consumption of green tea influence expression of vascular endothelial growth factor and its receptor in aged rat erectile tissue? Possible implications for vasculogenic erectile dysfunction progression. *Age (Dordr)* 2008 Dec;30(4):217-28

Horny Goat Weed (*Epimedium koreanum*) has long been used in Asian medicine to improve ED. Its effect is attributed to the production of nitric oxide and the ability to relax smooth muscle.

- *Chen & Chiu: Effect of *Epimedium brevicornum* Maxim extract on elicitation of penile erection in the rat. *CNS Neurol Disord Drug Targets* 2008 Feb;7(1):20-7
- *Chiu et al: *Epimedium brevicornum* Maxim extract relaxes rabbit corpus cavernosum through multi-targets on nitric oxide/cyclic guanosine monophosphate signaling pathway. *Int J Impot Res* 2006 Jul-Aug;18(4):335-42

- *Makarova et al: Effect of lipid-based suspension of Epimedium koreanum Nakai extract on sexual behavior in rats. *J Ethnopharmacol* 2007 Dec 3;114(3):412-6
- *Shindel et al: Erectogenic and neurotrophic effects of icariin, a purified extract of horny goat weed (*Epimedium* spp.) in vitro and in vivo. *J Sex Med* 2010 Feb 5

Korean Black Raspberry extract improves the overall function of the male reproductive system.

- *Jeon et al: Fermentation filtrates of *Rubus coreanus* relax the corpus cavernosum and increase sperm count and motility. *J Med Food* 2008 Sep;11(3):474-8

Maca, a Peruvian ginseng-type root, improves physical and mental well-being, fertility, and sexual stamina as well as decreasing an enlarged prostate (see more under Prostate and HRT). It **does not** increase estrogens, progesterone, or testosterone but rather, regulates these hormones.

- *Bogani et al: *Lepidium meyenii* (Maca) does not exert direct androgenic activities. *J Ethnopharmacol* 2006 Apr;104(3):415-7
- *Chung et al: Dose-response effects of *Lepidium meyenii* (Maca) aqueous extract on testicular function and weight of different organs in adult rats. *J Ethnopharmacol* 2005 Apr;98(1-2):143-7
- *Cicero et al: Hexanic maca extract improves rat sexual performance more effectively than methanolic and chloroformic maca extracts. *Androl* 2002;34(3):177-79
- *Cicero et al: *Lepidium meyenii* Walp. improves sexual behaviour in male rats independently from its action on spontaneous locomotor activity. *J Ethnopharmacol* 2001;75(2-3):225-29
- *Gonzales et al: Red maca (*Lepidium meyenii*) reduced prostate size in rats. *Repro Biol Endocrinol* 2005 Jan 20;3:5
- *Gonzales et al: Effect of alcoholic extract of *Lepidium meyenii* (Maca) on testicular function in male rats." *Asian J. Androl* 2003 Dec;5(4):349-52
- *Gonzales et al: Effect of *Lepidium meyenii* (Maca), a root with aphrodisiac and fertility-enhancing properties, on serum reproductive hormone levels in adult healthy men. *J Endocrinol* 2003 Jan 1;176:163-8
- *Gonzales et al: Effect of *Lepidium meyenii* (MACA) on sexual desire and its absent relationship with serum testosterone levels in adult healthy men. *Andrologia* 2002 Dec;34(6):367-72
- *Gonzales et al: Effect of *Lepidium meyenii* (maca) roots on spermatogenesis of male rats. *Asian J Androl* 2001 Sep;3:231-33
- *Gonzales et al: *Lepidium meyenii* (Maca) improved semen parameters in adult men. *Asia J Androl* 2001 Dec;3:301-3
- *León: The "Maca" (*Lepidium meyenii*), a little known food plant of Peru. *Econ Bot* 18(2):122-7
- *Piacente et al: Investigation of the tuber constituents of maca (*Lepidium meyenii* Walp). *J Agric Food Chem* 2002;50(20):5621-25
- *Valerio & Gonzales: Toxicological aspects of the South American herbs cat's claw (*Uncaria tomentosa*) and maca (*Lepidium meyenii*): A critical synopsis. *Toxicol Rev* 2005;24(1):11-35(25)
- *Zenico et al: Subjective effects of *Lepidium meyenii* (Maca) extract on well-being and sexual performances in patients with mild erectile dysfunction: a randomised, double-blind clinical trial. *Andrologia* 2009 Apr;41(2):95-9
- *Zheng et al: Effect of a lipidic extract from *Lepidium meyenii* on sexual behavior in mice and rats. *Urol* 2000 Apr;55(4):598-602

Mediterranean Diet improves ED, especially in those with metabolic syndrome (diabetes, cardiovascular disease). The Mediterranean Diet is based on foods and drinks consumed by people in countries surrounding the Mediterranean Sea.

- *Esposito et al: Mediterranean diet improves erectile function in subjects with the metabolic syndrome. *Int J Impot Res* 2006 Jul-Aug;18(4):405-10

Olive and Coconut oils increase testosterone and antioxidant levels in men.

*Hurtado de Catalfo et al: Dietary lipids modify redox homeostasis and steroidogenic status in rat testis. *Phytother Res* 2010 Feb;24(2):163-8

Passionflower lives up to its name by improving libido and overall sexual function.

*Dhawan et al: Beneficial effects of chrysin and benzoflavone on virility in 2-year-old male rats. *J Med Food* 2002 Spring;5(1):43-8

Resveratrol enhances testosterone levels, sperm quality and nitric oxide production.

*Fukuhara et al: Vardenafil and resveratrol synergistically enhance the nitric oxide/cyclic guanosine monophosphate pathway in corpus cavernosal smooth muscle cells and its therapeutic potential for erectile dysfunction in the streptozotocin-induced diabetic rat: preliminary findings. *J Sex Med* 2011 Jan 26

*Sin et al: trans-Resveratrol relaxes the corpus cavernosum ex vivo and enhances testosterone levels and sperm quality in vivo. *Arch Pharm Res* 2008 Jan;31(1):83-7

*Soner et al: Evaluation of vascular smooth muscle and corpus cavernosum on hypercholesterolemia. Is resveratrol promising on erectile dysfunction? *Indian J Exp Biol* 2008 Aug;46(8):583-90

Saffron has a positive effect on sexual function.

*Shamsa et al: Evaluation of *Crocus sativus* L. (saffron) on male erectile dysfunction: a pilot study. *Phytomed* 2009 Aug;16(8):690-3

Tribulus improves erection in mild to moderate cases of ED.

*Adaikan et al: Proerectile pharmacological effects of *Tribulus terrestris* extract on the rabbit corpus cavernosum. *Ann Acad Med Singapore* 2000 Jan;29(1):22-6

*Gauthaman & Ganesan: The hormonal effects of *Tribulus terrestris* and its role in the management of male erectile dysfunction--an evaluation using primates, rabbit and rat. *Phytomed* 2008 Jan;15(1-2):44-54

Zinc improves testosterone and erectile function.

*Dissanayake et al: Effects of zinc supplementation on sexual behavior of male rats. *J Hum Reprod Sci* 2009 Jul;2(2):57-61

*Cohen 2011:9



EYESIGHT/DROPS/INJECTIONS

(USED TO TREAT GLAUCOMA, MACULAR DEGENERATION, DIABETIC MACULOPATHY)

COMMON EXAMPLES:

Alpha-agonists (AA)

apraclonidine - Iopidine
brimonidine - Alphagan

Angiogenesis inhibitors (anti-VEGF - Vascular Endothelial Growth Factor)

afibercept - Eylea
bevacizumab - Avastin
pegaptanib - Macugen
ranibizumab - Lucentis

Beta Blockers (BB) (see also Blood Pressure)

atenolol - Tenormin
betaxolol - Betoptic, Kerlone, Lokren
carteolol - Cartrol, Ocupress
labetalol - Normodyne
levobunolol - AK-Beta, Betagan, Liquifilm
metipranolol - Betanol, Disorat, Optipranolol, Trimepranol
propranolol - Inderal
timolol - Betimol, Timoptic

Carbonic anhydrase inhibitors (CAIs)

acetazolamide - Acetazolam, Diamox, and others
brinzolamide - Azopt
dichlorphenamide/diclofenamide - Daranide, Oratrol, and others
dorzolamide - Trusopt and others
methazolamide - Neptazane and others

Cholinergics (Miotics)

carbachol - Isopto Carbachol
pilocarpine - Isopto Carpine, Pilocar, Pilopine

Combinations

brimonidine (AA) and timolol (BB) = Combigan
dorzolamide (CAI) and timolol (BB) = Cosopt

Epinephrine

dipivefrin (Propine)

Prostaglandin Analogs

bimatoprost (Lumigan)
latanoprost (Xalatan)
travoprost (Travatan Z)

DEplete:

CoQ10, calcium, magnesium, potassium, sodium

- ⌘ Although these are the only nutrients known to be depleted, many more are suspected. More depletions can be found under Blood Pressure (Beta Blockers).
- ⌘ Many of these medications are also used as Cancer treatments.
- ⌘ **Blood Thinners** and **Statin drugs** (Cholesterol) are linked to massive intraocular hemorrhage in age-related macular degeneration.
 - *Fraunfelder et al: Ocular hemorrhage possibly the result of HMG-CoA reductase inhibitors. J Ocul Pharmacol Ther 2004 Apr;20(2):179-82
 - *Kiernan et al: Epidemiology of the association between anticoagulants and intraocular hemorrhage in patients with neovascular age-related macular degeneration. Retina 2010 Nov-Dec;30(10):1573-8
 - *Tilanus et al: Relationship between anticoagulant medication and massive intraocular hemorrhage in age-related macular degeneration. Graefes Arch Clin Exp Ophthalmol 2000 Jun;38(6):482-5
- ⌘ **Blood Pressure** and **Cholesterol-lowering medications** increase the risk of macular degeneration.
 - *Etminan et al: Use of statins and angiotensin converting enzyme inhibitors (ACE-Is) and the risk of age-related macular degeneration: nested case-control study. Curr Drug Saf 2008 Jan;3(1):24-6
- ⌘ **Caffeine** increases intraocular pressure.
 - *Avisar et al: Effect of coffee consumption on intraocular pressure. Ann Pharmacother 2002 Jun;36(6):992-5
 - *Chandrasekaran et al: Effects of caffeine on intraocular pressure: The Blue Mountains Eye Study. J Glaucoma 2005 Dec;14(6):504-7
 - *Higginbotham et al: The effect of caffeine on intraocular pressure in glaucoma patients. Ophthalmol 1989 May;96(5):624-6
- ⌘ **Smoking** depletes nutrients especially ones needed to prevent macular degeneration.
 - *Snodderly: Evidence for protection against age-related macular degeneration by carotenoids and antioxidant vitamins. Am J Clin Nutr 1995 Dec;62(6):1448S-1461S
- ⌘ **Timolol** may cause severe adverse cardiovascular and respiratory effects.
 - *Volotinen et al: Metabolism of ophthalmic timolol: new aspects of an old drug. Basic Clin Pharmacol Toxicol 2011 Mar 8

SUGGESTED ALTERNATIVES:

Amla (Indian Gooseberry) contains tannins which delay the development of cataracts and may stimulate lens regeneration.

*Banot et al: Effect of Emblica officinalis (Gaertn) on lens regeneration in the frog, Rana cyanophlyctis (Schneider). Indian J Exp Biol 2009 Mar;47(3):157-62

- *Suryanarayana et al: Emblica officinalis and its enriched tannoids delay streptozotocin-induced diabetic cataract in rats. *Mol Vis* 2007 Jul 24;13:1291-7

Antioxidants are plant-based substances that protect cells from damage which would lead to disease including eyesight degeneration.

- *Coleman et al: Glaucoma risk and the consumption of fruits and vegetables among older women in the study of osteoporotic fractures. *Am J Ophthalmol* 2008 Jun;145(6):1081-9
- *Karazhaeva et al: The use of flavonoid antioxidants in the complex treatment of patients with peripheral vitreo-chorioretinal dystrophies and dystrophic retinal detachment. *Inflamm Res* 2009 Aug;58(8):513-21
- *Moriarty-Craige et al: Antioxidant supplements prevent oxidation of cysteine/cystine redox in patients with age-related macular degeneration. *Am J Ophthalmol* 2005 Dec;140(6):1020-6
- *Mozaffarieh et al: The potential value of natural antioxidative treatment in glaucoma. *Surv Ophthalmol* 2008 Sep-Oct;53(5):479-505

Astaxanthin is the most potent known carotenoid antioxidant. Among its many benefits is that it protects retinal cells against oxidative damage and increases ocular blood flow.

- *Cort et al: Suppressive effect of astaxanthin on retinal injury induced by elevated intraocular pressure. *Regul Toxicol Pharmacol* 2010 Oct;58(1):121-30
- *Nakajima et al: Astaxanthin, a dietary carotenoid, protects retinal cells against oxidative stress in-vitro and in mice in-vivo. *J Phys Chem B* 2010 May 20;114(19):6601-7
- *Nakano et al: Inhibitory effect of astraxanthin combined with Flavangenol on oxidative stress biomarkers in streptozotocin-induced diabetic rats. *Int J Vitam Nutr Res* 2008 Jul-Sep;78(4-5):175-82
- *Parisi et al: Carotenoids and antioxidants in age-related maculopathy italian study: multifocal electroretinogram modifications after 1 year. *Ophthalmol* 2008 Feb;115(2):324-333.e2
- *Saito et al: Astaxanthin increases choroidal blood flow velocity. *Graefes Arch Clin Exp Ophthalmol* 2011 Nov 10
- *Sun et al: Protective actions of microalgae against endogenous and exogenous advanced glycation endproducts (AGEs) in human retinal pigment epithelial cells. *Food Funct* 2011 May 25 ;2(5):251-8

B-complex, especially B5, B6, B9, and B12 help prevent various eye disorders. (see the Appendix for a list of B vitamins according to name and number)

- *Christen et al: Folic acid, pyridoxine, and cyanocobalamin combination treatment and age-related macular degeneration in women: the Women's Antioxidant and Folic Acid Cardiovascular Study. *Arch Intern Med* 2009 Feb 23;169(4):335-41
- *Horváth & Vécsei: Current medical aspects of pantethine. *Ideggyogy Sz* 2009 Jul 30;62(7-8):220-9
- *Roedl et al: Increased homocysteine levels in tear fluid of patients with primary open-angle glaucoma. *Ophthalmic Res* 2008;40(5):249-56

Bael fruit extract reduces intraocular pressure.

- *Agarwal et al: Intraocular pressure-lowering activity of topical application of Aegle marmelos fruit extract in experimental animal models. *Ophthalmic Res* 2009;42(2):112-6

Bee Propolis contains caffeic acid which helps prevent cataract formation.

- *Doganay et al: Use of caffeic acid phenethyl ester to prevent sodium-selenite-induced cataract in rat eyes. *J Cataract Refract Surg* 2002 Aug;28(8):1457-62

Berries contain ellagic acid which prevent the formation of cataracts.

- *Sakthivel et al: Prevention of selenite-induced cataractogenesis in Wistar rats by the polyphenol, ellagic acid. *Exp Eye Res* 2008 Feb;86(2):251-9

Bilberry and **Pycnogenol** (a pine bark extract and potent antioxidant) reduce intraocular pressure and the risk of cataracts and macular degeneration.

*Fursova et al: Dietary supplementation with bilberry extract prevents macular degeneration and cataracts in senesce-accelerated OXYS rats. *Adv Gerontol* 2005;16:76-9

*Steigerwalt et al: Effects of Mirtogenol on ocular blood flow and intraocular hypertension in asymptomatic subjects. *Mol Vis* 2008;14:1288-92

Cacao (unsweetened raw chocolate) has high antioxidant content that can prevent numerous disorders including the formation of cataracts.

*Osakabe et al: Ingestion of proanthocyanidins derived from cacao inhibits diabetes-induced cataract formation in rats. *J Pharmacol Exp Ther* 2010 Oct;335(1):149-54

Carnitine is an amino acid that reduces age-related eye diseases.

*Geraldine et al: Prevention of selenite-induced cataractogenesis by acetyl-L-carnitine: an experimental study. *Exp Eye Res* 2006 Dec;83(6):1340-9

*Kocer et al: The effect of L-carnitine in the prevention of ionizing radiation-induced cataracts: a rat model. *Graefes Arch Clin Exp Ophthalmol* 2007 Apr;245(4):588-94

*Pescosolido et al: The aging eye and the role of L-carnitine and its derivatives. *Drugs RD* 2008;9 Suppl 1:3-14

Carnitine, Omega-3 fatty acids, and CoQ10 improve visual function in macular degeneration.

*Feher et al: Improvement of visual functions and fundus alterations in early age-related macular degeneration treated with a combination of acetyl-L-carnitine, n-3 fatty acids, and coenzyme Q10. *Ophthalmolog* 2005 May-Jun;2 19(3):154-66

Carnosine eyedrops may prevent vision loss from senile cataracts, primary open-angle glaucoma, macular degeneration, diabetic retinopathy, and aging.

*Babizhayev et al: N-acetylcarnosine lubricant eyedrops possess all-in-one universal antioxidant protective effects of L-carnosine in aqueous and lipid membrane environments, aldehyde scavenging, and transglycation activities inherent to cataracts: a clinical study of the new vision-saving drug N-acetylcarnosine eyedrop therapy in a database population of over 50,500 patients. *Am J Ther* 2009 Nov-Dec;16(6):517-33

Chinese skullcap is an herb that reduces diabetic retinopathy inflammation.

*Yang et al: Baicalein reduces inflammatory process in a rodent model of diabetic retinopathy. *Invest Ophthalmol Vis Sci* 2009 May;50(5):2319-27

Chlorella is a green algae with strong antioxidant properties that prevents cataract formation.

*Shibata et al: Antioxidant and anti-cataract effects of Chlorella on rats with streptozotocin-induced diabetes. *J Nutr Sci Vitaminol (Tokyo)* 2003 Oct;49(5):334-9

Coleus Forskohlii (an Ayurvedic mint plant) contains a compound called forskolin which lowers intraocular pressure. It is also used to improve thyroid function.

*Caprioli et al: Forskolin lowers intraocular pressure by reducing aqueous inflow. *Invest Ophthalmol Vis Sci* 1984 Mar;25(3):268-77

CoQ10 improves blood pressure, cardiac function and protects against Parkinson's disease. The ubiquinol form functions better than the cheaper ubiquinone.

*Burke et al: Randomized, double-blind, placebo-controlled trial of coenzyme Q10 in isolated systolic hypertension. *Appl Psychophysiol Biofeedback* 2009 Jun;34(2):71-91

*Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9

*Rosenfeldt et al: Coenzyme Q10 in the treatment of hypertension: a meta-analysis of the clinical trials. *J Hum Hypertens* 2007 Apr;21(4):297-306

- *Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17

Cumin helps prevent cataract formation.

- *Kumar et al: Delay of diabetic cataract in rats by the antiglycating potential of cumin through modulation of alpha-crystallin chaperone activity. *J Nutr Biochem* 2008 Sep 10

Curcumin is a safe and effective treatment for recurrent anterior uveitis, eye inflammation and such degenerative conditions as dry eye, maculopathy, glaucoma, and diabetic retinopathy.

- *Allegri et al: Management of chronic anterior uveitis relapses: efficacy of oral phospholipidic curcumin treatment. Long-term follow-up. *Clin Ophthalmol* 2010;4:1201-6
- *Awasthi et al: Curcumin protects against 4-hydroxy-2-trans-nonenal-induced cataract formation in rat lenses. *Am J Clin Nutr* 1996 Nov;64(5):761-6
- *Balasubramanyam et al: Curcumin-induced inhibition of cellular reactive oxygen species generation: novel therapeutic implications. *J Biosci* 2003 Dec;28(6):715-21
- *Kowluru & Kanwar: Effects of curcumin on retinal oxidative stress and inflammation in diabetes. *Nutr Metab (Lond)* 2007;4:8
- *Kumar et al: Modulation of alpha-crystallin chaperone activity in diabetic rat lens by curcumin. *Mol Vis* 2005;11:561-8
- *Mandal et al: Curcumin protects retinal cells from light-and oxidant stress-induced cell death. *Free Radic Biol Med* 2009 Mar 1;46(5):672-9
- *Manikandan et al: Curcumin prevents free radical-mediated cataractogenesis through modulations in lens calcium. *Free Radic Biol Med* 2010 Feb 15;48(4):483-92
- *Manikandan et al: Effect of curcumin on selenite-induced cataractogenesis in Wistar rat pups. *Curr Eye Res* 2010 Feb;35(2):122-9
- *Manikandan et al: Anti-cataractogenic effect of curcumin and aminoguanidine against selenium-induced oxidative stress in the eye lens of Wistar rat pups: An in vitro study using isolated lens. *Chem Biol Interact* 2009 Oct 7;181(2):202-9
- *Mrudula et al: Effect of curcumin on hyperglycemia-induced vascular endothelial growth factor expression in streptozotocin-induced diabetic rat retina. *Biochem Biophys Res Commun* 2007 Sep 21;361(2):528-32
- *Padmaja & Raju: Antioxidant effect of curcumin in selenium induced cataract of Wistar rats. *Indian J Exp Biol* 2004 Jun;42(6):601-3
- *Pandya et al: Dietary curcumin prevents ocular toxicity of naphthalene in rats. *Toxicol Lett* 2000 Jun 5;115(3):195-204
- *Suryanarayana et al: Curcumin and turmeric delay streptozotocin-induced diabetic cataract in rats. *Nutr J* 2008;7:3
- *Suryanarayana et al: Effect of curcumin on galactose-induced cataractogenesis in rats. *Mol Vis* 2003 Jun 9;9:223-30

Curcumin, Resveratrol and EGCG (a green tea extract) may have a therapeutic role in proliferative vitreoretinopathy (PVR), a common retinal detachment complication.

- *Alex et al: Inhibitory effect of epigallocatechin gallate (EGCG), resveratrol, and curcumin on proliferation of human retinal pigment epithelial cells in vitro. *Curr Eye Res* 2010 Nov;35(11):1021-33

Eggplants help reduce intraocular pressure.

- *Igwe et al: Effects of *Solanum melongena* (garden egg) on some visual functions of visually active Igbos of Nigeria. *J Ethnopharmacol* 2003 Jun;86(2-3):135-8

Fennel helps prevent glaucoma and is potent enough to rival the effects of timolol.

- *Agarwal et al: Oculohypotensive effects of *foeniculum vulgare* in experimental models of glaucoma. *J Altern Complement Med* 2009 Jan;15(1):53-7

*Agarwal et al: Oculohypotensive effects of foeniculum vulgare in experimental models of glaucoma. Indian J Physiol Pharmacol 2008 Jan-Mar;52(1):77-83

Fenugreek helps prevent the formation of cataracts.

*Gupta et al: Trigonella foenum-graecum (Fenugreek) protects against selenite-induced oxidative stress in experimental cataractogenesis. Biol Trace Elem Res 2009 Oct 13

*Vats et al: Anti-cataract activity of Pterocarpus marsupium bark and Trigonella foenum-graecum seeds extract in alloxan diabetic rats. J Ethnopharmacol 2004 Aug;93(2-3):289-94

Fruit and Vegetable consumption reduces AGEs (advanced glycation end products) which lead to various age-related diseases including cardiovascular, cataracts, diabetes, and Alzheimer's. They also protect against cancer cell formation.

*Coleman et al: Glaucoma risk and the consumption of fruits and vegetables among older women in the study of osteoporotic fractures. Am J Ophthalmol 2008 Jun;145(6):1081-9

*Pashikanti et al: Rutin metabolites: novel inhibitors of nonoxidative advanced glycation end products. Free Radic Biol Med 2009 Dec 4

*Platt et al: Fruits and vegetables protect against the genotoxicity of heterocyclic aromatic amines activated by human xenobiotic-metabolizing enzymes expressed in immortal mammalian cells. Mutat Res 2010 Aug 14

*Ramful et al: Citrus Fruit Extracts Reduce Advanced Glycation End Products (AGEs)- and H(2)O(2)-Induced Oxidative Stress in Human Adipocytes. J Agric Food Chem 2010 Sep 30

Garlic, a natural antimicrobial, also prevents cataract formation.

*Javadzadeh et al: Prevention of selenite-induced cataractogenesis in Wistar albino rats by aqueous extract of garlic. J Ocul Pharmacol Ther 2009 Oct;25(5):395-400

Ginkgo biloba improves glaucoma and macular degeneration.

*Chung et al: Ginkgo biloba extract increases ocular blood flow velocity. J Ocul Pharmacol Ther 1999;15(3):233-40

*Ertekin et al: Effects of oral Ginkgo biloba supplementation on cataract formation and oxidative stress occurring in lenses of rats exposed to total cranium radiotherapy. Jpn J Ophthalmol 2004 Sep-Oct;48(5):499-502

*Lebuisson et al: Treatment of senile macular degeneration with Ginkgo biloba extract. A preliminary double-blind drug vs. placebo study. Presse Med 1986 Sep 25;15(31):1556-8

*Quaranta et al: Effect of Ginkgo biloba extract on preexisting visual field damage in normal tension glaucoma. Ophthalmol 2003 Feb;110(2):359-62; discussion 362-4

*Ritch: Potential role for Ginkgo biloba extract in the treatment of glaucoma. Med Hypoth 2000 Feb;54(2):221-35

Ginseng improves visual light and color perception and short term memory.

*Arushanian & Shikina: Improvement of light and color perception in humans upon prolonged administration of eleutherococcus. Eksp Klin Farmakol 2004 Jul-Aug;67(4):64-6

*Arushanian et al: Effect of eleutherococcus on short-term memory and visual perception in healthy humans. Eksp Klin Farmakol 2003 Sep-Oct;66(5):10-3

Goji berries/Wolfberry are a safe antioxidant fruit that protect the retina. They have a significant therapeutic effect on glaucoma and macular degeneration as well as eyesight in general.

*Amagase et al: Immunomodulatory effects of a standardized Lycium barbarum fruit juice in Chinese older healthy human subjects. J Med Food 2009 Oct;12(5):1159-65

*Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized Lycium barbarum (Goji) Juice, GoChi. J Altern Complement Med 2008 May;14(4):403-12

- *Bucheli et al: Goji berry effects on macular characteristics and plasma antioxidant levels. *Optom Vis Sci* 2011 Feb ;88(2):257-62
- *Chan et al: Neuroprotective effects of Lycium barbarum Lynn on protecting retinal ganglion cells in an ocular hypertension model of glaucoma. *Exp Neurol* 2007 Jan;203(1):269-73
- *Chang & So: Use of anti-aging herbal medicine, Lycium barbarum, against aging-associated diseases. What do we know so far? *Cell Mol Neurobiol* 2008 Aug;28(5):643-52
- *Potterat: Goji (Lycium barbarum and L. chinense): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19
- *Song et al: Lycium barbarum (Goji Berry) extracts and its taurine component inhibit PPAR- γ -dependent gene transcription in human retinal pigment epithelial cells: Possible implications for diabetic retinopathy treatment. *Biochem Pharmacol* 2011 Nov 1 ;82(9):1209-18

Grapeseed extract helps prevent cataracts.

- *Durukan et al: Ingestion of IH636 grape seed proanthocyanidin extract to prevent selenite-induced oxidative stress in experimental cataract. *J Cataract Refract Surg* 2006 Jun;32(6):1041-5

Hazelnuts prevent cataracts caused by the cancer drug doxorubicin.

- *Bayer et al: Doxorubicin-induced cataract formation in rats and the inhibitory effects of hazelnut, a natural antioxidant: a histopathological study. *Med Sci Monit* 2005 Aug;11(8):BR300-4

Holy Basil helps prevent cataract formation.

- *Gupta et al: Ocimum sanctum modulates selenite-induced cataractogenic changes and prevents rat lens opacification. *Curr Eye Res* 2005 Jul;30(7):583-91

Lutein and/or Zeaxanthin are potent carotenoid antioxidants that are vital for good eye health.

- *Arnal et al: Lutein prevents cataract development and progression in diabetic rats. *Graefes Arch Clin Exp Ophthalmol* 2008 Sep 3
- *Connolly et al: Augmentation of macular pigment following supplementation with all three macular carotenoids: an exploratory study. *Curr Eye Res* 2010 Apr;35(4):335-51
- *Kowluru et al: Beneficial effect of zeaxanthin on retinal metabolic abnormalities in diabetic rats. *Eur J Med Res* 1998 Nov 17;3(11):511-4
- *Kvansakul et al: Supplementation with the carotenoids lutein or zeaxanthin improves human visual performance. *Ophthalmic Physiol Opt* 2006 Jul;26(4):362-71
- *Olmedilla et al: Lutein, but not alpha-tocopherol, supplementation improves visual function in patients with age-related cataracts: a 2-y double-blind, placebo-controlled pilot study. *Nutr* 2003 Jan;19(1):21-4
- *Richer et al: Double-masked, placebo-controlled, randomized trial of lutein and antioxidant supplementation in the intervention of atrophic age-related macular degeneration: the Veterans LAST study (Lutein Antioxidant Supplementation Trial. *Optomet* 2004 Apr;75(4):216-30
- *Semba & Dagnelie: Are lutein and zeaxanthin conditionally essential nutrients for eye health? *Med Hypoth* 2003 Oct;61(4):465-72
- *Yagi et al: The effect of lutein supplementation on visual fatigue: a psychophysiological analysis. *Appl Ergon* 2009 Nov;40(6):1047-54

Lycopene is an antioxidant carotenoid that helps prevent oxidative stress-damage. It is found in such bright red fruit and vegetables as tomatoes.

- *Gupta et al: Lycopene attenuates oxidative stress induced experimental cataract development: an in vitro and in vivo study. *Nutr* 2003 Sep;19(9):794-9

Melatonin is significantly protective of the retina; has calming effects; and protects against glaucoma and radiation-induced cataract formation.

- *Karslioglu et al: Radioprotective effects of melatonin on radiation-induced cataract. *J Radiat Res (Tokyo)* 2005 Jun;46(2):277-82

- *Lundmark et al: Melatonin in the eye: implications for glaucoma. *Canc Caus Cont* 2003 Nov;14(9):859-70
- *Ovanesov et al: Effects of melatonin and motherwort tincture on the emotional state and visual functions in anxious subjects. *Eksp Klin Farmakol* 2006 Nov-Dec;69(6):17-9
- *Rastmanesh: Potential of melatonin to treat or prevent age-related macular degeneration through stimulation of telomerase activity. *Med Hypoth* 2011 Jan;76(1):79-85
- *Yi et al: Effects of melatonin in age-related macular degeneration. *Ann N Y Acad Sci* 2005 Dec;1057:384-92

Melatonin and Bee Propolis protect against electromagnetic radiation-induced oxidation to the retina associated with long-term mobile phone use.

- *Ozguner et al: Protective effects of melatonin and caffeic acid phenethyl ester against retinal oxidative stress in long-term use of mobile phone: a comparative study. *Mol Cell Biochem* 2006 Jan;282(1-2):83-8

Omega-3 fatty acids (DHA and EPA) improve ocular blood flow, blepharitis, and meibomian gland dysfunction.

- *Chong et al: Fat consumption and its association with age-related macular degeneration. *Arch Ophthalmol* 2009 May;127(5):674-80
- *Connor et al: Increased dietary intake of omega-3-polyunsaturated fatty acids reduces pathological retinal angiogenesis. *Nat Med* 2007 Jul;13(7):868-73
- *Macasai: The role of omega-3 dietary supplementation in blepharitis and meibomian gland dysfunction (an AOS thesis). *Trans Am Ophthalmol Soc* 2008;106:336-56
- *Ren et al: Primary open-angle glaucoma patients have reduced levels of blood docosahexaenoic and eicosapentaenoic acids. *Prostaglan Leukot Ess Fatty Acids* 2006 Mar;74(3):157-63
- *Suzuki et al: Eicosapentaenoic acid suppresses ocular inflammation in endotoxin-induced uveitis. *Mol Vis* 2010;16:1382-8

Onions help prevent cataract formation.

- *Javadzadeh et al: Preventive effect of onion juice on selenite-induced experimental cataract. *Indian J Ophthalmol* 2009 May-Jun;57(3):185-9

Oyster mushroom extract helps prevent cataracts.

- *Isai & Elanchezian: Anticataractogenic effect of an extract of the oyster mushroom, *Pleurotus ostreatus*, in an experimental animal model. *J Trop Pediatr* 2000 Apr;46(2):92-6

Potassium is an important part of the acid-base balance in the body, nerve transmission, digestion and blood pressure.

- *Sabboh et al: Effects of plant food potassium salts (citrate, galacturonate or tartrate) on acid-base status and digestive fermentations in rats. *Br J Nutr* 2007 Jul;98(1):72-7
- *Brancati et al: Effect of potassium supplementation on blood pressure in African Americans on a low-potassium diet. A randomized, double-blind, placebo-controlled trial. *Arch Inter Med* 1996 Jan 8;156(1):61-7
- *Frassetto et al: Diet, evolution and aging--the pathophysiologic effects of the post-agricultural inversion of the potassium-to-sodium and base-to-chloride ratios in the human diet. *Eur J Nutr* 2001 Oct;40(5):200-13
- *Gu et al: Effect of potassium supplementation on blood pressure in Chinese: a randomized, placebo-controlled trial. *J Hypertens* 2001 Jul;19(7):1325-31

Resveratrol is a potent antioxidant that prevents various eye disorders.

- *Doganay et al: The effect of resveratrol in experimental cataract model formed by sodium selenite. *Curr Eye Res* 2006 Feb;31(2):147-53
- *Dugas et al: Effects of oxysterols on cell viability, inflammatory cytokines, VEGF, and reactive oxygen species production on human retinal cells: cytoprotective effects and prevention of VEGF secretion by resveratrol. *Eur J Nutr* 2010 Oct;49(7):435-46

- *Kim et al: Resveratrol inhibits neuronal apoptosis and elevated Ca²⁺/calmodulin-dependent protein kinase II activity in diabetic mouse retina. *Diabet* 2010 Jul;59(7):1825-35
- *Luna et al: Resveratrol prevents the expression of glaucoma markers induced by chronic oxidative stress in trabecular meshwork cells. *Food Chem Toxicol* 2009 Jan;47(1):198-204

Sulforaphane is an antioxidant that protects against oxidative damage to the eyes. It is found in such cruciferous vegetables as broccoli, cauliflower, cabbage and kale. The richest source is broccoli sprouts.

- *del V Cano et al: Demonstration by redox fluorometry that sulforaphane protects retinal pigment epithelial cells against oxidative stress. *Invest Ophthalmol Vis Sci* 2008 Jun;49(6):2606-12
- *Vibin et al: Broccoli regulates protein alterations and cataractogenesis in selenite models. *Curr Eye Res* 2010 Feb;35(2):99-107

Tea (green or black) helps prevent cataract formation.

- *Gupta et al: Green tea (*Camellia sinensis*) protects against selenite-induced oxidative stress in experimental cataractogenesis. *Ophthalmic Res* 2002 Jul-Aug;34(4):258-63
- *Thiagarajan et al: Antioxidant properties of green and black tea, and their potential ability to retard the progression of eye lens cataract. *Exp Eye Res* 2001 Sep;73(3):393-401

Various Natural Substances prove useful in treating glaucoma: **Magnesium** for vascular regulation; **Dark Chocolate and Omega-3** improve blood flow; **Ginkgo** reduces oxidative stress; **Flavonoids, Anthocyanosides, CoQ10, and Melatonin** have antioxidant properties – and so on.

- *Mozaffarieh & Flammer: A novel perspective on natural therapeutic approaches in glaucoma therapy. *Expert Opin Emerg Drugs* 2007 May;12(2):195-8

Vitamins, Minerals and Antioxidants (astaxanthin, beta-carotene, C, E, zinc, copper, lutein, vanadium, zeaxanthin) significantly reduce the development of vision loss and macular degeneration.

- *Christen et al: Dietary carotenoids, vitamins C and E, and risk of cataract in women: a prospective study. *Arch Ophthalmol* 2008 Jan;126(1):102-9
- *No authors listed: A randomized, placebo-controlled, clinical trial of high-dose supplementation with vitamins C and E, beta carotene, and zinc for age-related macular degeneration and vision loss: AREDS report no. 8. *Arch Ophthalmol* 2001 Oct;119(10):1417-36
- *Parisi et al: Carotenoids and antioxidants in age-related maculopathy italian study: multifocal electroretinogram modifications after 1 year. *Ophthalmol* 2008 Feb;115(2):324-333.e2
- *Preet et al: Efficacy of lower doses of vanadium in restoring altered glucose metabolism and antioxidant status in diabetic rat lenses. *J Biosci* 2005 Mar;30(2):221-30
- *Shui et al: The gel state of the vitreous and ascorbate-dependent oxygen consumption: relationship to the etiology of nuclear cataracts. *Arch Ophthalmol* 2009 Apr;127(4):475-82

Zinc and Copper deficiency contributes to age-related macular degeneration and supplementation improves the condition.

- *Erie et al: Reduced zinc and copper in the retinal pigment epithelium and choroid in age-related macular degeneration. *Am J Ophthalmol* 2009 Feb;147(2):276-282.e1
- *Moriarty-Craige et al: Effects of long-term zinc supplementation on plasma thiol metabolites and redox status in patients with age-related macular degeneration. *Am J Ophthalmol* 2007 Feb;143(2):206-211
- *Newsome: A randomized, prospective, placebo-controlled clinical trial of a novel zinc-monocysteine compound in age-related macular degeneration. *Curr Eye Res* 2008 Jul;33(7):591-8



FAT BLOCKERS AND SUBSTITUTES

(USED TO PREVENT THE DIGESTION AND ABSORPTION OF FAT IN FOOD)

COMMON EXAMPLES:

Olestra – Olean

Orlistat – Xenical, Alli

kidney bean extract

starch neutralizer

DEplete:

A, D, E, K, lipase enzymes

☞ **Fat soluble vitamins** (A,D,E,K) are blocked by these drugs and supplements. When used for an extended period of time, they significantly contribute to the risk of developing various disorders.

*Balch 2006:602-3

*Cohen 2011:81,103

*Haas 2006:469

*Nursing Spectrum Drug Handbook, 2008, orlistat

*U Maryland Med Center: "Vitamin A Retinol", "Possible Interactions with D", "Possible Interactions with: Vitamin E", "Vitamin K",

☞ **Lipase** is an enzyme that breaks down fats (lipids) in the body. By blocking this important enzyme, dietary fats are not digested or absorbed, which is pleasing to people wanting to lose weight. However, the downside of that supposed benefit is that the fats are delivered straight to the bowel to be eliminated – without warning, no matter where you are – or with whom. According to the Alli website, fat blockers only stop about 25% of the fat you eat with the rest passing “harmlessly” into the bowel – in a most disconcerting fashion. This involuntary action may be considered harmless to the company but it is decidedly embarrassing to the consumer which led to a “Bitter Pill” award being given to the makers: “With Allies Like This, Who Needs Enemas?”

*A bitter pill for slimmers? by Deborah Cohen, The Guardian, September 25, 2007

*Alli website - www.myalli.com/

*Dieters snap up new drug alli despite nasty side effects. By Carla Hall, LA Times June 17, 2007

*Dipiro et al: Pharmacotherapy: A Pathophysiologic Approach; 2008

*Fox et al: The effects of loperamide on continence problems and anorectal function in obese subjects taking orlistat. Dig Dis Sci 2005 Sept;50(9):1575-83

*McNeely & Benfield: Orlistat. Drugs 1998;56(2):241-9 disc 250

*Prescription Access Litigation (PAL): "PAL Announces First Bitter Pill Award of 2007 to GlaxoSmithKline: 'With Allies Like This, Who Needs Enemas?' Award", June 27, 2007

⌘ **Orlistat ingredients list: Active:** Orlistat (60 Mg); **Inactive:** Fd&c blue no. 2, edible ink, gelatin, iron oxide, microcrystalline cellulose, povidone, sodium lauryl sulfate, sodium starch glycolate, talc, titanium dioxide

*RxList - www.rxlist.com/alli-drug.htm

⌘ **Olestra** "is a non-digestible plastic" behaving much "like a mineral oil". I was unable to find a definitive list of ingredients; just a lot of hype about the supposed benefits.

*Barlam & McCloud: Severe gastrointestinal illness associated with olestra ingestion. J Ped Gastroenterol Nutr Lett 2003 July;37(1):95-96

*The Problems with Olestra. Center for Science in the Public Interest - www.cspinet.org/olestra/

*Health Canada rejects Olestra as a food additive, June 22, 2000

*Science Toys – <http://sci-toys.com/ingredients/olestra.html>

*Time Magazine lists Olestra as one of the 50 Worst Inventions, May 27, 2010

⌘ **Chemicals** are now considered to be a direct cause of weight gain and the inability to lose weight. At least 20 have been identified as hormone-disrupters that program the body's fat cells into creating more. They have been dubbed **Obesogens** and so far include: Pthalates, BPA/BPS, DES, Tributyltin, PBDE, PFOA, PCB, Dioxins, Organophosphates, Atrazine, Lead, DDT, Benzopyrene, Nicotine, Genistein, Fructose, and MSG. Chemicals lodge in fat cells and disrupt the endocrine system which, in turn, causes other health issues including male and female reproductive problems, various cancers, cardiovascular diseases and diabetes. The key is to try to eliminate as many chemicals as possible that can be found in such things as non-organic, processed and canned foods, tap water, body care and cleaning products, some plastic food containers, some cooking utensils, drugs of all types, synthetic vitamin supplements, and so on.

*Baillie-Hamilton: Chemical Toxins: A Hypothesis to Explain the Global Obesity Epidemic. J Alt Compl Med 2002 Apr;8(2):185-192

*Diamanti-Kandarakis et al: Endocrine-disrupting chemicals: an Endocrine Society scientific statement. Endocr Rev 2009;30(4):293-342

*Dirinck et al: Obesity and persistent organic pollutants: Possible obesogenic effect of organochlorine pesticides and polychlorinated biphenyls. Obesity 2011 Apr;19:709-14

*Dirinck et al: Obesity and persistent organic pollutants: possible obesogenic effect of organochlorine pesticides and polychlorinated biphenyls. Obesity (Silver.Spring) 2010;19(4):709-14

*Djordjevic et al: Assessment of chlorinated pesticides and polychlorinated biphenyls in adipose breast tissue using a supercritical fluid extraction method. Carcinogen 1994 Nov;15(11):2581-5

*Grün: Obesogens. Endocrin Diabet Obesity 2010 Oct;17(5):453-59

*Grün & Blumberg Minireview: The Case for Obesogens. Molec Endocrin 2009 Aug 1;23(8):1127-34

*Grün & Blumberg: Endocrine disruptors as obesogens. Molec Cell Endocrin 2009 May;304(1-2):19-29

*Grün & Blumberg: Environmental Obesogens: Organotins and endocrine disruption via nuclear receptor signaling. Endocrin 2006 June 1;147(6):s50-s55

*Heindel & vom Saal: Role of nutrition and environmental endocrine disrupting chemicals during the perinatal period on the aetiology of obesity. Molec Cell Endocrinol 2009 May;304(1-2):90-96

*Heindel: Endocrine disruptors and the obesity epidemic. Toxicol Sci 2003;76(2):247-49

*Hoppe & Carey: Polybrominated diphenyl ethers as endocrine disruptors of adipocyte metabolism. Obesity (Silver Spring) 2007;15(12):2942-50

- *Janesick & Blumberg: The role of environmental obesogens in the obesity epidemic. *Endocrine Updates* 2011;30(4):383-99
- *Janesick & Blumberg: Endocrine disrupting chemicals and the developmental programming of adipogenesis and obesity. *Birth Defects Research. Part C, Embryo Today: Reviews* 2011;93(1):34-50
- *Karamaus et al: Maternal levels of dichlorodiphenyl-dichloroethylene (DDE) may increase weight and body mass index in adult female offspring. *Occup Environ Med* 2009;66:143-49
- *Kirchner et al: Prenatal exposure to the environmental obesogen tributyltin predisposes multipotent stem cells to become adipocytes. *Molec Endocrin* 2010 Mar1;24(3):526-39
- *Lee et al: Low dose organochlorine pesticides and polychlorinated biphenyls predict obesity, dyslipidemia, and insulin resistance among people free of diabetes. *PLoS One* 2011;6(1):e15977
- *Lim et al: Chronic exposure to the herbicide, atrazine, causes mitochondrial dysfunction and insulin resistance. *PLoS One* 2009;4(4):e5186
- *Lu et al: Organic diets significantly lower children's dietary exposure to organophosphorus pesticides. *Enviro Health Perspec* 2006 Feb;114(2):260-3
- *Lyche et al: Natural mixtures of POPs affected body weight gain and induced transcription of genes involved in weight regulation and insulin signaling. *Aquatic Toxicol* 2011;102(3-4):197-204
- *Newbold: Impact of environmental endocrine disrupting chemicals on the development of obesity. *Hormones* 2010;9(3):206-17
- *Porta et al: Transgenerational inheritance of environmental obesogens. *Occup Environ Med* 2009;66:141-142
- *Rönn et al: Circulating levels of persistent organic pollutants associate in divergent ways to fat mass measured by DXA in humans. *Chemosphere* 2011 Jul 16
- *Rubin et al: Perinatal exposure to low doses of bisphenol A affects body weight, patterns of estrous cyclicity, and plasma LH levels. *Enviro Health Perspec* 2001;109(7):675-80
- *Slotkin: Does early-life exposure to organophosphate insecticides lead to prediabetes and obesity? *Reproduc Toxicol* 2011;31(3):297-301
- *Susuki: Programmed to be Fat. *CBC Nature of Things*, aired January 12, 2012
- *Tang-Peronard et al: Endocrine-disrupting chemicals and obesity development in humans: A review. *Obesity Rev* 2011 Aug;12(8):622-36
- *Twum & Wei: The association between urinary concentrations of dichlorophenol pesticides and obesity in children. *Rev Environ Health* 2011;26(3):215-9
- *Xu et al: Effect of early particulate air pollution exposure on obesity in mice: role of p47phox. *Arterioscler Thrombo Vasc Biol* 2010;30(12):2518-27

SUGGESTED ALTERNATIVES:

Coleus forskohlii is an Ayurvedic plant that has several health benefits especially as a fat burner while, at the same time, increasing bone mass.

- *Godard et al: Body composition and hormonal adaptations associated with forskolin consumption in overweight and obese men. *Obes Res* 2005 Aug;13(8):1335-43
- *Han et al: Effects of *Coleus forskohlii* on fat storage in ovariectomized rats. *Yakugaku Zasshi* 2005;125(5):449-53

Fats do play a role in weight gain. However, avoiding hydrogenated trans fats and using good fats that your body needs will automatically adjust a weight problem. The body craves fat because it needs it for proper cell and brain function; but all too often, it is given the unhealthy versions. Good fats include extra virgin olive oil, coconut oil, hempseed oil, avocados, nuts and so on. I do not recommend the popular Canola oil because it is genetically modified and has a very long fatty acid chain which the body cannot fully utilize causing much of it to oxidize. Whichever ones you choose to use, the key is not to over do it. Do not deep fry anything. This is a decidedly

unhealthy practise. **Olive oil**, as part of a Mediterranean diet, is linked to weight reduction and an increase in blood antioxidant levels. **Coconut oil**, a medium-chain saturated fatty acid, increases the effects of CLA to encourage the reduction of belly fat. It also improves brain function.

- *Assunção et al: Effects of dietary coconut oil on the biochemical and anthropometric profiles of women presenting abdominal obesity. *Lipids* 2009 Jul;44(7):593-601
- *Hargrave et al: Dietary coconut oil increases conjugated linoleic acid-induced body fat loss in mice independent of essential fatty acid deficiency. *Biochim Biophys Acta* 2005 Oct 15;1737(1):52-60
- *Hurtado de Catalfo et al: Dietary lipids modify redox homeostasis and steroidogenic status in rat testis. *Phytother Res* 2010 Feb;24(2):163-8
- *Liau et al: An open-label pilot study to assess the efficacy and safety of virgin coconut oil in reducing visceral adiposity. *ISRN Pharmacol* 2011:949686
- *Razquin et al: A 3 years follow-up of a Mediterranean diet rich in virgin olive oil is associated with high plasma antioxidant capacity and reduced body weight gain. *Eur J Clin Nutr* 2009 Dec;63(12):1387-93

Fiber is an important part of the diet that helps with weight loss and prevents other disorders including diabetes and high cholesterol levels.

- *Delzenne & Cani: A place for dietary fibre in the management of the metabolic syndrome. *Curr Opin Clin Nutr Metab Care* 2005 Nov;8(6):636-40

Flaxseed is an insoluble fiber that contains lignans which help prevent organ damage caused by high-fat diets. Flaxseed also reduces the body's tendency to produce fat cells.

- *Fukumitsu et al: Flaxseed lignan attenuates high-fat diet-induced fat accumulation and induces adiponectin expression in mice. *Br J Nutr* 2008 Sep;100(3):669-76

Grapefruit helps fat cells properly store and utilize fats and carbohydrates. As an essential oil, it can be used in a carrier oil and massaged into fatty tissue.

- *Haze et al: Grapefruit oil attenuates adipogenesis in cultured subcutaneous adipocytes. *Zhong Yao Cai* 2008 Oct;31(10):1514-8
- *Higley 2010:380

Mangosteen fruit contains compounds which may have a beneficial effect in treating obesity as well as cancers.

- *Jiang et al: Fatty acid synthase inhibitors of phenolic constituents isolated from *Garcinia mangostana*. *Bioorg Med Chem Lett* 2010 Aug 15

Phosphatidylcholine is a combination of an essential phospholipid (fat) and choline (a B-like vitamin substance). This combination promotes various health aspects including the prevention of cellulite which is caused by various factors including the consumption of unhealthy fats.

- *Sasaki et al: The effectiveness and safety of topical PhotoActiv phosphatidylcholine-based anti-cellulite gel and LED (red and near-infrared) light on Grade II-III thigh cellulite: a randomized, double-blinded study. *J Cosmet Laser Ther* 2007 Jun;9(2):87-96

Seaweeds (brown) contains a carotenoid called Fucoxanthin which helps reduce body weight and improve fat metabolism. Kelp is the most common brown seaweed.

- *Jeon et al: Fucoxanthin-rich seaweed extract suppresses body weight gain and improves lipid metabolism in high-fat-fed C57BL/6J mice. *Biotechnol J* 2010 Sep;5(9):961-9

FLUORIDE



(USED TO PREVENT CAVITIES AND OSTEOPOROSIS)

COMMON EXAMPLES:

Fluotabs
Fluor-a-day
Fluorigard
Fluorinse
Fluoritab
Flura-drops
Pedi-dent
PreviDent
... and others....

DEplete:

calcium, vitamins D, E, zinc

⌘ **Fluoride** may thicken but it does not strengthen bone mass, ultimately resulting in brittle bones. Calcium decreases the absorption of fluoride, but on the other hand, fluoride prevents calcium from being absorbed and yet, fluoride is still prescribed as a means of increasing bone density. Go figure.

*Jowsey & Riggs: Effect of concurrent calcium ingestion on intestinal absorption of fluoride. *Metabol* 1978 Aug;27(8):971-974

*Meunier et al: Fluoride salts are no better at preventing new vertebral fractures than calcium-vitamin D in postmenopausal osteoporosis: The FAVOStudy. *Osteopor Internat* 8(1):4-12

*Riggs et al: Effect of Fluoride Treatment on the Fracture Rate in Postmenopausal Women with Osteoporosis. *New Engl J Med* 1990 Mar;322(12):802-809

⌘ **Fluoride contributes to dental fluorosis** (spotting or pitting on permanent teeth) – among other health problems. While being touted as “safe”, the FDA ironically requires a poison warning on all fluoride toothpaste labels. The problem with toxic consumption is that **fluoride is added to, or hidden in, many items**: baby formula, drinking water, juices and juice-flavoured drinks, beer and wine, salt, soft drinks, soups, tea, toothpaste, processed cereals, teflon cookware, anesthetics, cigarettes, and more.

*Abdel-Latif et al: Serum fluoride ion and renal function after prolonged sevoflurane or isoflurane anaesthesia. *Egypt J Anaesth* 2003;19:79-83

- *Agency for Toxic Substances and Disease Registry (ATSDR) (2001). Toxicological Profile for Fluorides: Draft Profile for Public Comment. U.S. Department of Health & Human Services, Public Health Service.
- *Analysis of government data finds babies over-exposed to fluoride in most major U.S. cities. Environ Work Gr March 22, 2006
- *Behrendt et al: Fluoride concentration and pH of iced tea products. Caries Res 2002;36(6):405-10
- *Burgstahler et al: Fluoride in California wines and raisins. Fluoride 1997;30:142-6
- *Cao et al: Fluoride in newer tea commodities. Fluoride 2004;37: 286-300
- *Chacón et al: Prevalence of dental fluorosis and consumption of hidden fluoride in school children in the municipality of Nezahualcóyotl]. Gac Med Mex 2009 Jul-Aug;145(4):263-7
- *Chan & Koh: Fluoride content in caffeinated, decaffeinated and herbal teas. Caries Res 1996;30:88-92
- *Cohen 2011:316
- *Connett & Connett: Fluoride: The hidden poison in the national organic standards. Pesticides and You 2001;21:18-22
- *Cressey: Dietary fluoride intake for fully formula-fed infants in New Zealand: impact of formula and water fluoride. J Public Health Dent 2010 Jun 2
- *Edwards: Evidence that fluoride in the infant formula causes enamel fluorosis weak. Evid Based Dent 2009;10(3):73
- *Fein & Cerklewski: Fluoride content of foods made with mechanically separated chicken. J Agri Food Chem 2001;49(9):4284-6
- *Fluoride Action Network, Dental Fluorosis
- *Fomon et al: Fluoride intake and prevalence of dental fluorosis: trends in fluoride intake with special attention to infants. J Publ Heal Dent 2000;60(3):131-9
- *Fomon & Ekstrand: Fluoride intake by infants. J Pub Heal Dent 1999;59(4):229-34
- *Goldberg et al: Sevoflurane versus isoflurane for maintenance of anesthesia: are serum inorganic fluoride ion concentrations of concern? Anesthesia and Analgesia 1996;82(6):1268-72
- *Groth: Two Issues of Science and Public Policy: Air Pollution Control in the San Francisco Bay Area, and Fluoridation of Community Water Supplies. PhD Dissertation, Depart Biol Sci, Stanford U, May 1973
- *Heilman et al: Assessing fluoride levels of carbonated soft drinks. J Am Dent Assoc 1999;130(11):1593-9
- *Heilman et al: Fluoride concentrations of infant foods. J Am Dent Assoc 1997;128(7):857-63
- *Heller et al: Dental caries and dental fluorosis at varying water fluoride concentrations. J Pub Heal Dent 1997;57:136-143
- *Kiritsy et al: Assessing fluoride concentrations of juices and juice-flavored drinks. J Am Dent Assoc 1996;127(7):895-902
- *Levy et al: Sources of fluoride intake in children. J Pub Heal Dent 1995;55:39-52
- *Levy et al: Use of the fluorosis risk index in a cohort study: the Iowa fluoride study. J Pub Heal Dent 2006;66(2):92-6
- *Levy & Guha-Chowdhury: Total fluoride intake and implications for dietary fluoride supplementation. J Publ Heal Dent 1999;59:211-23
- *Locker: Benefits and Risks of Water Fluoridation. An Update of the 1996 Federal-Provincial Subcommittee Report. Prepared for Ontario Ministry of Health and Long Term Care 1999
- *Lung et al: Fluoride concentrations in three types of commercially packed tea drinks in Taiwan. J Expos Anal Environ Epidemiol 2003;13(1):66-73
- *Marier & Rose: Environmental Fluoride. National Research Council of Canada. Assoc Comm Sci Crit for Environ Qual 1977 NRCC No 16081
- *Marthaler: Salt fluoridation in Europe, comparisons with Latin America. 2000. Paper available online.
- *Marshall et al: Associations between intakes of fluoride from beverages during infancy and dental fluorosis of primary teeth. J Am Coll Nutr 2004;23:108-16
- *Nuscheler et al: Fluoride-induced nephrotoxicity: fact or fiction?. Anaesthetist 1996;45 Suppl 1:S32-40
- *Pang et al: Fluoride intake from beverage consumption in a sample of North Carolina children. J Dent

Res 1992;71:1382-1388

- *Potentially harmful fluoride levels found in some instant tea. Washington U School of Med Jan 25, 2005
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- *Stannard et al: Fluoride levels and fluoride contamination of fruit juices. J Clin Ped Dent 1991;16(1):38-40
- *Toothpaste: How Safe? by Don Oldenburg, Washington Post, June 16, 1997;C5
- *Turner et al: Impact of imported beverages on fluoridated and nonfluoridated communities. Gen Dent 1998;46(2):190-3
- *Warnakulasuriya et al: Fluoride content of alcoholic beverages. Clinica Chimica Acta 2002;320:1-4
- *Warren & Levy: Current and future role of fluoride in nutrition. Dent Clin N Am 2003;47: 225-43
- *Warren & Levy: Systemic fluoride: Sources, amounts, and effects of ingestion. Dent Clin N Am 1999;43: 695-711

☞ **Fluoride ingested from toothpaste alone** exceeds the recommended minimum level for children and community levels should be monitored before adding fluoride to local drinking water.

- *Bentley et al: Fluoride ingestion from toothpaste by young children. Br Dent J 1999;186(9):460-2
- *Fluorides and Oral Health. WHO Technical Report 1994, Series 846
- *Warren & Levy: Current and future role of fluoride in nutrition. Dent Clin N Am 2003;47:225-43
- *Levy & Guha-Chowdhury: Total fluoride intake and implications for dietary fluoride supplementation. J Pub Heal Dent 1999;59:211-23
- *Pang D, et al. (1992). Fluoride intake from beverage consumption in a sample of North Carolina children. J Dent Rb;24(2):79-87
- *Erciyas & Sarikaya: Genotoxic evaluation of sodium fluoride in the Somatic Mutation and Recombination Test (SMART). Food Chem Toxicol 2009 Nov;47(11):2860-2
- *Guo et al: Study on neurobehavioral function of workers occupationally exposed to fluoride. Indust Health Occupat Dis 2001;27:346-348
- *Gupta et al: The toxic effects of sodium fluoride on the reproductive system of male rats. Toxicol Ind Health 2007 Oct;23(9):507-13
- *Luke: Fluoride deposition in the aged human pineal gland. Caries Res 2001 Mar-Apr;35(2):125-8
- *Savel'ev et al: Human epiphyseal concrements in schizophrenia. Arkh Patol 2004 Jul-Aug;66(4):13-6
- *Zachariassen & Flaten: Is fluoride-induced hyperthyroidism a cause of psychosis among East African immigrants to Scandinavia? Med Hypoth 2009 May;72(5):501-3

☞ **Fluoride in chemicals used to grow your food.** If you do not eat organically, chances are your food is grown with a fertilizer containing sodium aluminum fluoride (cryolite). EPA standards **allow up to 7 ppm** of fluoride (5 times greater than the standards set in 1933) on over 30 fruits and vegetables treated with cryolite which include: apricots, beets, blackberries, broccoli, brussel sprouts, cabbage, cauliflower, citrus fruits, collards, cranberries, cucumbers, eggplants, grapes, kale, lettuce, melons, nectarines, peaches, peppers, plums, pumpkins, radishes, raspberries, squash, strawberries, tomatoes and turnip. On February 15, 2002, Dow Chemical requested that the EPA allow **much greater fluoride levels on foods**: 98 ppm for wheat germ, 40 ppm for wheat bran, 31 ppm for rice bran, 30 ppm for several nuts, 28 ppm for corn meal, 26 ppm for corn flour, 25 ppm for millet, 25 ppm for wild rice, 25 ppm for sorghum, 25 ppm for wheat, and 17 ppm for oats.

- *Sources of Fluoride (with references). Fluoride Action Network - www.fluoridealert.org/fluoride-dangers/sources-of-fluoride.aspx

☞ **Fluoride increases lead levels in the body.**

- *Coplan et al: Confirmation of and explanations for elevated blood lead and other disorders in children exposed to water disinfection and fluoridation chemicals. *Neurotoxicol* 2007 Sep;28(5):1032-42
- *Sawan et al: Fluoride increases lead concentrations in whole blood and in calcified tissues from lead-exposed rats. *Toxicol* 2010 Feb 25

☞ **Fluoride adversely affects the brain, learning memory, and thyroid. Ironically, fluoride (and chlorine) also interferes with iodine supplements taken to offset a thyroid problem.**

- *Basha et al: Fluoride toxicity and status of serum thyroid hormones, brain histopathology, and learning memory in rats: A multigenerational assessment. *Biol Trace Elem Res* 2011 Jul 14
- *Basha et al: Evaluation of fluoride-induced oxidative stress in rat brain: A multigeneration study. *Biol Trace Elem Res* 2010 Jul 24
- *Ge et al: Proteomic analysis of brain proteins of rats exposed to high fluoride and low iodine. *Arch Toxicol* 2010 Apr 3. Epub 2010 Apr 3
- *Luke: The effect of fluoride on the physiology of the pineal gland. PhD Thesis U Surrey Guildford 1997:176
- *Voronych-Semchenko: Characteristics of hypothyroidism correction and lipid metabolism disorder in iodine deficiency. *Fiziol Zh* 2007;53(3):38-42

☞ **Fluoride decreases intelligence and growth in children**

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- *Chen et al: A study of the effects of fluoride on foetal tissue. *Chin J Endemiol* 1990;9:345-46
- *Du: The effect of fluorine on the developing human brain. *Chin J Path* 1992;21(4):218-20
- *Flace et al: Effects of developmental fluoride exposure on rat ultrasonic vocalization, acoustic startle reflex and pre-pulse inhibition. *Eur Rev Med Pharmacol Sci* 2010 Jun;14(6):507-12
- *Han et al: The effects of fluorine on human fetus. *Chin J Contr End Dis* 1989;4:136-138
- *Hong et al: A study of fluorine effects on children's intelligence development under different environments. *Chin Prim Heal Care* 2001;15:56-57
- *Hu et al: Investigation of students' intelligence quotient aged 6-14 years old in the endemic fluorosis area. Collection of papers and abstracts of 4th China Fluoride Research Association. *Quiyang, China* 1989;6:73
- *Huff: Indian study proves that fluoride consumption causes brain, neurological damage. *NaturalNews* Dec 14, 2011
- *Li et al: Effects of high-fluoride on neonatal neurobehavioural development. *Chin J Endem* 2004;23:464-65
- *Li et al: The effects of endemic fluoride poisoning on the intellectual development of children in Baotou. *Chin J Pub Heal Manage* 2003;19(4):337-38
- *Li et al: Effect of excessive fluoride intake on mental work capacity of children and a preliminary study of its mechanism. *J W Chin U Med Sci* 1994;25(2):188-91
- *Nimmo: Study Proves Fluoride Brain Damage. *Prison Planet.com*, Dec 2, 2011
- *No authors listed: Health Effects: Fluoride & the Brain. Fluoride Action Network www.fluoridealert.org/health/brain/#human
- *Qin & Cui: The influence of drinking water fluoride on pupils IQ, as measured by Rui Wen's standards. *Chin J Contr End Dis* 1990;5:203-4
- *Reddy et al: Neurodegenerative changes in different regions of brain, spinal cord and sciatic nerve of rats treated with sodium fluoride. *J Med Allied Sci* 2011;1(1):30-35
- *Ren: An investigation of intelligence development of children aged 8-14 years in high-fluoride and low-iodine areas. *Chin J Contr End Dis* 1989;4:251
- *Sun et al: Effects of high fluoride drinking water on the cerebral functions of mice. *Chin J Epidemiol* 2000;19:262-63
- *Wang et al: Arsenic and fluoride exposure in drinking water: children's IQ and growth in Shanyin county, Shanxi province, China. *Environ Heal Persp* 2007 Apr;115(4):643-47

- *Wang et al: Effects of coal burning related endemic fluorosis on body development and intelligence levels of children. *J App Clin Ped* 2005;20(9):897-98
- *Wang et al: Research on intelligence quotient of 4-7 year-old children in a district with a high level of fluoride. *End Dis Bull* 1996;11:60-62]
- *Wu et al: Research on the abnormal behavior of rats exposed to fluoride. *Chin J Contr End Dis* 1995;14(5):271
- *Yang et al: Effects of high iodine and high fluorine on children's intelligence and the metabolism of iodine and fluorine. *Chin J Pathol* 1994;15(5):296-8
- *Yu et al: Changes in neurotransmitters and their receptors in human foetal brain from an endemic fluorosis area. *Chin J Endemiol* 1996;15:257-259
- *Zhang et al: Effect of fluoride exposure on synaptic structure of brain areas related to learning-memory in mice. [Article in Chinese]. *J Hyg Res* 1999;28(4):210-12

SUGGESTED ALTERNATIVES AND PROTECTANTS:

Acemannan, an Aloe vera polysaccharide, stimulates tooth regrowth.

- *Jittapiromsak et al: Acemannan, an extracted product from Aloe vera, stimulates dental pulp cell proliferation, differentiation, mineralization, and dentin formation. *Tissue Eng Part A* 2010 Jan 20

Aloe vera, Turmeric, and Holy Basil protect the body from fluoride toxicity especially during pregnancy.

- *Madhusudhan et al: Effect of maternal fluoride exposure on developing CNS of rats: protective role of Aloe vera, Curcuma longa and Ocimum sanctum. *Indian J Exp Biol* 2010 Aug;48(8):830-6

Arjuna is an Ayurvedic herb that protects the heart muscle from the toxic effects of fluoride.

- *Sinha et al: Terminalia arjuna protects mouse hearts against sodium fluoride-induced oxidative stress. *J Med Food* 2008 Dec;11(4):733-40

Bee Propolis, especially Brazilian green propolis, has anti-bacterial effects similar to that of Manuka honey, controlling oral bacteria that cause dental decay and in preventing denture stomatitis.

- *Leitão et al: Comparative evaluation of in-vitro effects of Brazilian green propolis and Baccharis dracunculifolia extracts on cariogenic factors of Streptococcus mutans. *Biol Pharm Bull* 2004 Nov;27(11):1834-9
- *Santos et al: Efficacy of Brazilian propolis gel for the management of denture stomatitis: a pilot study. *Phytother Res* 2008 Aug 11

Beta glucans are polysaccharides derived from oats, mushrooms, and yeast. They are important for preventing many diseases including periodontal.

- *Breivik et al: Soluble beta-1,3/1,6-glucan from yeast inhibits experimental periodontal disease in Wistar rats. *J Clin Periodontol* 2005 Apr;32(4):347-52
- *Rondanelli et al: The biological activity of beta-glucans. *Minerva Med* 2009 Jun;100(3):237-45

Bioflavonoids, usually found with a good vitamin C, help prevent dental caries.

- *Wood: The effects of selected dietary bioflavonoid supplementation on dental caries in young rats fed a high-sucrose diet. *J Med Food* 2007 Dec;10(4):694-701

Black berries minimize harmful effects of fluoride.

- *Hassan & Abdel-Aziz: Evaluation of free radical-scavenging and anti-oxidant properties of black berry against fluoride toxicity in rats. *Food Chem Toxicol* 2010 Aug-Sep;48(8-9):1999-2004

*Hassan & Yousef: Mitigating effects of antioxidant properties of black berry juice on sodium fluoride induced hepatotoxicity and oxidative stress in rats. *Food Chem Toxicol* 2009 Sep;47(9):2332-7

Calcium intake during pregnancy is especially important in reducing the risk of dental cavities in children up to 12 years of age.

*Bergel et al: Maternal calcium supplementation during pregnancy and dental caries of children at 12 years of age: follow-up of a randomized controlled trial. *Acta Obstet Gynecol Scand* 2010 Nov;89(11):1396-402

Chinese Skullcap has protective properties against fluoride toxicity.

*Jin et al: Fluoride-induced oxidative stress of osteoblasts and protective effects of baicalein against fluoride toxicity. *Biol Trace Elem Res* 2007 Apr;116(1):81-9

Curcumin minimizes the toxic effects of fluoride and arsenic.

*Tiwari & Rao: Curcumin supplementation protects from genotoxic effects of arsenic and fluoride. *Food Chem Toxicol* 2010 Feb 17

Diet plays a huge role in the prevention of cavities, especially the elimination or severe reduction of sweets and other simple carbohydrates. Evidence to this effect became apparent in the 1930s but is still being ignored today.

*Agnew et al: The production and prevention of dental caries. *J Am Dent Assoc* 1933;20:193-212

*Bennett et al: The influence of diet on caries in children's teeth. *Special Report Series - Med Res Counc UK* 1931;159(19)

*Bowen et al: Influence of sweetening agents in solution on dental caries in desalivated rats. *Arch Oral Biol* 1990;35(10):839-44

*East: Nutrition and dental caries. *Am J Publ Heal* 1938;28:72-6

*Gibson & Williams: Dental caries in pre-school children: associations with social class, toothbrushing habit and consumption of sugars and sugar-containing foods. *Caries Res* 1999;33:101-113

*Heraud: Sucrose and nutritional pathology. *Sucrerie Francaise* 1979;120(24):21-6

*McBeath: Nutrition and diet in relation to preventive dentistry. *NY J Dent* 1938;8:17-21

*Mellanby: The role of nutrition as a factor in resistance to dental caries. *Br Dent J* 1937;62:241-52

*Mellanby & Pattison: The influence of a cereal-free diet rich in vitamin D and calcium on dental caries in children. *Br Med J* 1932;1:507-10

*Nuttall & Gannon: Sucrose and disease. *Diab Care* 1981;4(2):305-10

*Tisdall: The effect of nutrition on the primary teeth. *Child Devel* 1937;8(1):102-4

Essential Oils prevent dental caries and plaque because they are potent antioxidants and strong anti-microbials against a variety of viruses, bacteria, and yeasts. Peppermint, Rosemary, and Cumin oils were better than chlorhexidine in preventing plaque buildup.

*Bonjar: Inhibition of Clotrimazole-resistant *Candida albicans* by plants used in Iranian folkloric medicine. *Fitoterapia* 2004 Jan;75(1):74-6

*Braga et al: Thymol inhibits *Candida albicans* biofilm formation and mature biofilm. *Arch Gen Psych* 2004 Jun;61(6):618-27

*Cai & Wu: Compounds from *Syzygium aromaticum* possessing growth inhibitory activity against oral pathogens. *J Nat Prod* 1996 Oct;59(10):987-90

*Cermelli et al: Effect of eucalyptus essential oil on respiratory bacteria and viruses. *Curr Microbiol* 2008 Jan;56(1):89-92

*Chaieb et al: The chemical composition and biological activity of clove essential oil, *Eugenia caryophyllata* (*Syzygium aromaticum* L. Myrtaceae): a short review. *Phytother Res* 2007 Jun;21(6):501-6

*Chaieb et al: Antioxidant properties of the essential oil of *Eugenia caryophyllata* and its antifungal activity against a large number of clinical *Candida* species. *Mycoses* 2007 Sep;50(5):403-6

- *Chang et al: Antibacterial activity of leaf essential oils and their constituents from *Cinnamomum osmophloeum*. *J Ethnopharmacol* 2001 Sep;77(1):123-7
- *Dalleau et al: In vitro activity of terpenes against *Candida* biofilms. *Int J Antimicrob Agents* 2008 Jun;31(6):572-6
- *Fu et al: Antimicrobial activity of clove and rosemary essential oils alone and in combination. *Med Hypoth* 2001 Aug;57(2):258-75
- *Hayashi et al: Inhibitory effect of cinnamaldehyde, derived from *Cinnamomi* cortex, on the growth of influenza A/PR/8 virus in vitro and in vivo. *Antiviral Res* 2007 Apr;74(1):1-8
- *He et al: In vitro activity of eugenol against *Candida albicans* biofilms. *Mycopathologia* 2007 Mar;163(3):137-43
- *Khan et al: Inhibition of quorum sensing regulated bacterial functions by plant essential oils with special reference to clove oil. *Lett Appl Microbiol* 2009 Sep;49(3):354-60
- *Kulisić et al: The effects of essential oils and aqueous tea infusions of oregano (*Origanum vulgare* L. spp. *hirtum*), thyme (*Thymus vulgaris* L.) and wild thyme (*Thymus serpyllum* L.) on the copper-induced oxidation of human low-density lipoproteins. *Int J Food Sci Nutr* 2007 Mar;58(2):87-93
- *Mayaud et al: Comparison of bacteriostatic and bactericidal activity of 13 essential oils against strains with varying sensitivity to antibiotics. *Lett Appl Microbiol* 2008 Sep;47(3):167-73
- *Mojab et al: Antibacterial activity of *Thymus daenensis* methanolic extract. *Pak J Pharm Sci* 2008 Jul;21(3):210-3
- *Naemura et al: Long-term intake of rosemary and common thyme herbs inhibits experimental thrombosis without prolongation of bleeding time. *Thromb Res* 2008;122(4):517-22
- *Nagata et al: Effect of eucalyptus extract chewing gum on periodontal health: a double-masked, randomized trial. *J Periodontol* 2008 Aug;79(8):1378-85
- *Nuryastuti et al: Effect of cinnamon oil on *icaA* expression and biofilm formation by *Staphylococcus epidermidis*. *Appl Environ Microbiol* 2009 Nov;75(21):6850-5
- *Pawar & Thaker: In vitro efficacy of 75 essential oils against *Aspergillus niger*. *Mycoses* 2006 Jul;49(4):316-23
- *Quale et al: In vitro activity of *Cinnamomum zeylanicum* against azole resistant and sensitive *Candida* species and a pilot study of cinnamon for oral candidiasis. *Am J Chin Med* 1996;24(2):103-9
- *Rasooli et al: Phytotherapeutic prevention of dental biofilm formation. *Phytother Res* 2008 Sep;22(9):1162-7
- *Ravishankar et al: Plant-derived compounds inactivate antibiotic-resistant *Campylobacter jejuni* strains. *J Food Prot* 2008 Jun;71(6):1145-9
- *Salari et al: Antibacterial effects of *Eucalyptus globulus* leaf extract on pathogenic bacteria isolated from specimens of patients with respiratory tract disorders. *Clin Microbiol Infect* 2006 Feb;12(2):194-6
- *Shahverdi et al: Trans-cinnamaldehyde from *Cinnamomum zeylanicum* bark essential oil reduces the clindamycin resistance of *Clostridium difficile* in vitro. *J Food Sci* 2007 Jan;72(1):S055-8
- *Shayegh et al: Phytotherapeutic inhibition of supragingival dental plaque. *Nat Prod Res* 2008 Mar 20;22(5):428-39
- *Tabak et al: Cinnamon extracts' inhibitory effect on *Helicobacter pylori*. *J Ethnopharmacol* 1999 Nov 30;67(3):269-77
- *Taguchi et al: Therapeutic effects on murine oral candidiasis by oral administration of cassia (*Cinnamomum cassia*) preparation. *Nippon Ishinkin Gakkai Zasshi* 2010;51(1):13-21
- *Taguchi et al: Protection of oral or intestinal candidiasis in mice by oral or intragastric administration of herbal food, clove (*Syzygium aromaticum*). *Nippon Ishinkin Gakkai Zasshi* 2005;46(1):27-33
- *Tohidpour et al: Antibacterial effect of essential oils from two medicinal plants against Methicillin-resistant *Staphylococcus aureus* (MRSA). *Phytomed* 2009 Jul 1
- *Warnke et al: The battle against multi-resistant strains: Renaissance of antimicrobial essential oils as a promising force to fight hospital-acquired infections. *J Craniomaxillofac Surg* 2009 May 25
- *Wong et al: Antibacterial activities of naturally occurring compounds against *Mycobacterium avium* subsp. *Paratuberculosis*. *J Cardiopulm Rehabil* 2006 Jan-Feb;26(1):24-9

Garlic helps control bacteria responsible for dental caries and plaque.

- *Bachrach et al: Garlic allicin as a potential agent for controlling oral pathogens. *J Med Food* 2011 May 6
- *Fani et al: Inhibitory activity of garlic (*Allium sativum*) extract on multidrug-resistant *Streptococcus mutans*. *J Indian Soc Pedod Prev Dent* 2007 Oct-Dec;25(4):164-8

Grapeseed extract is proving to be a non-invasive therapy for remineralization of root cavities.

- *Xie et al: In vitro remineralization effects of grape seed extract on artificial root caries. *Indian J Physiol Pharmacol* 2005 Jan;49(1):111-4

Green Tea prevents plaque buildup.

- *Liu & Chi: Experimental study on polyphenol anti-plaque effect in human. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2000 Sep;35(5):383-4

Hops is an herb that reduces dental plaque.

- *Shinada et al: Hop bract polyphenols reduced three-day dental plaque regrowth. *J Dent Res* 2007 Sep;86(9):848-51

Mango and **Neem** have anti-bacterial properties against 4 organisms responsible for dental caries.

- *Prashant et al: The effect of mango and neem extract on four organisms causing dental caries: *Streptococcus mutans*, *Streptococcus salivarius*, *Streptococcus mitis*, and *Streptococcus sanguis*: an in vitro study. *Indian J Dent Res* 2007 Oct-Dec;18(4):148-51

Manuka Honey is as effective as chlorhexidine mouthwash in reducing plaque formation. As an antibacterial, manuka honey is also effective for gingivitis and periodontal disease.

- *English et al: The effects of manuka honey on plaque and gingivitis: a pilot study. *J Int Acad Periodontol* 2004 Apr;6(2):63-7
- *Nayak et al: Effect of Manuka honey, chlorhexidine gluconate and xylitol on the clinical levels of dental plaque. *Contemp Clin Dent* 2010 Oct ;1(4):214-7

Mastic gum has antibacterial activity which helps prevent tooth decay.

- *Aksoy et al: In vitro and in vivo antimicrobial effects of mastic chewing gum against *Streptococcus mutans* and *mutans streptococci*. *Arch Oral Biol* 2006 Jun;51(6):476-81

Melatonin protects against fluoride and arsenic toxicity.

- *Pant & Rao: Evaluation of in vitro anti-genotoxic potential of melatonin against arsenic and fluoride in human blood cultures. *Ecotoxicol Environ Saf* 2010 Sep;73(6):1333-7

Methionine (an amino acid) and **Vitamin E** protect the kidneys from oxidative stress caused by fluoride.

- *Blaszczyk et al: Influence of fluoride on rat kidney antioxidant system: effects of methionine and vitamin E. *Biol Trace Elem Res* 2008 Jan;121(1):51-9

Mulberry lessens the toxic effects of fluoride on the liver.

- *Hassan & Yousef: Mitigating effects of antioxidant properties of black berry juice on sodium fluoride induced hepatotoxicity and oxidative stress in rats. *Food Chem Toxicol* 2009 Jun 21

NAC (N-acetylcysteine – an amino acid) protects against fluoride-induced damaging effects.

*Altıntaş et al: Prophylactic effect of N-acetylcysteine against sodium fluoride-induced blood oxidative stress in mice. *Food Chem Toxicol* 2010 Oct;48(10):2838-41

Protein and Calcium supplements decrease the effects of fluoride-induced thyroid dysfunction.

*Wang et al: Fluoride-induced thyroid dysfunction in rats: roles of dietary protein and calcium level. *Toxicol Ind Health* 2009 Feb;25(1):49-57

Pycnogenol protects the kidneys from fluoride damage.

*Arhima et al: The effect of Pycnogenol on fluoride induced rat kidney lysosomal damage in vitro. *Phytother Res* 2004 Mar;18(3):244-6

Quercetin, a bioflavonoid, protects against fluoride damage.

*Czerny: Effect of quercetin on the course of chronic poisoning with fluorine compounds in rats. *Ann Acad Med Stetin* 1994;40:65-78

Quercetin and **Bee Pollen** reduces fluoride toxicity.

*Humiczewska et al: The effect of the pollen extracts quercitin and cernitin on the liver, lungs, and stomach of rats intoxicated with ammonium fluoride. *Folia Biol (Krakow)* 1994;42(3-4):157-66

Royal Jelly helps overcome the effects of sodium fluoride exposure

*Kanbur et al: Effects of sodium fluoride exposure on some biochemical parameters in mice: evaluation of the ameliorative effect of royal jelly applications on these parameters. *Cancer Epidemiol Biomarkers Prev* 2010 Jan;19(1):18-27

Selenium and **Zinc** protect the kidneys from fluoride toxicity and Selenium lessens the effects of hair loss due to fluoride exposure.

*Wang et al: Fluorine-induced apoptosis and lipid peroxidation in human hair follicles in vitro. *J Biomed Eng* 1993 Mar;15(2):121-6

*Xue et al: Study on antagonistic effects of selenium and zinc on the renal impairments induced by fluoride in rats. *Wei Sheng Yan Jiu* 2000 Jan 30;29(1):21-3

Spices possess strong anti-microbial properties especially Aniseed, Basil, Bay leaves, Black pepper, Clove, Coriander, Cumin, Cinnamon, Garlic, Gum Arabic, Horseradish, Marjoram, Oregano, Rosemary, and Thyme.

*Chaudhry & Tariq: Bactericidal activity of black pepper, against oral isolates. *Pak J Pharm Sci* 2006 Jul;19(3):214-8

*Khan et al: Antimicrobial activity of five herbal extracts against multi drug resistant (MDR) strains of bacteria and fungus of clinical origin. *Molecules* 2009 Feb 4;14(2):586-97

*Mandal et al: In vitro antibacterial activity of three Indian spices against methicillin-resistant staphylococcus aureus. *Oman Med J* 2011 Sep ;26(5):319-23

*Yano et al: Antimicrobial effect of spices and herbs on *Vibrio parahaemolyticus*. *Int J Food Microbiol* 2006 Aug 15;111(1):6-11

Strontium deficiency plays a role in the development of cavities as well as generalized bone deterioration.

*Riyat & Sharma: Analysis of 35 inorganic elements in teeth in relation to caries formation. *J Vasc Surg* 2008 Oct;48(4):897-904

*Riyat & Sharma: Analysis of 35 inorganic elements in teeth in relation to caries formation. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2000 May;20(5):332-4

Tamarind beans increase urinary excretion of fluoride, helping to delay fluorosis.

*Khandare et al: Additional beneficial effect of tamarind ingestion over defluoridated water supply to adolescent boys in a fluorotic area. *Nutr* 2004 May;20(5):433-6

*Khandare et al: Effect of tamarind ingestion on fluoride excretion in humans. Eur J Clin Nutr 2002 Jan;56(1):82-5

Tooth powder: I developed this recipe a few years ago. It has become popular in our household and others with those with whom I have shared; young and old alike. It is easy to make and use and safer than fluoride toothpaste and it prevents plaque. Use all, or a few, of the oils according to your own taste and availability.

Mix together and store in a dark glass jar, putting small amounts in a similar container for everyday use. Pour a small amount into your hand and scoop up with a moist toothbrush.

- 12 tbsp baking soda (to whiten teeth and keep mouth fresh)
- 4 tbsp full-mineral sea salt (grey or pink) (to strengthen gums)
- 5 drops Peppermint oil
- 5 drops Thyme oil
- 4 drops Lemon oil
- 4 drops Cinnamon oil
- 3 drops Eucalyptus oil
- 3 drops Clove oil

Vitamins A, E, and CoQ10 protect the lungs and pancreas from fluoride damage.

*Stawiarska-Pieta et al: The effect of antioxidative vitamins A and E and coenzyme Q on the morphological picture of the lungs and pancreata of rats intoxicated with sodium fluoride. Food Chem Toxicol 2009 Oct;47(10):2544-50

Vitamin C protects against fluoride toxicity especially during pregnancy.

*Verma & Sherlin: Vitamin C ameliorates fluoride-induced embryotoxicity in pregnant rats. Hum Exp Toxicol 2001 Dec;20(12):619-23

Vitamin D prevents cavities. This knowledge was verified in studies dating back to 1928 and a deficiency affects all ages; yet few “modern” studies have followed up on this vital evidence. Vitamin D also decreases toxic effects of fluoride to the embryo during pregnancy.

- * Anderson et al: Influence of vitamin D in the prevention of dental caries. J Am Dent Assoc 1934;21:1349-66
- *Brodsky et al: Prevention of dental caries by massive doses of vitamin D. Am J Dis Children 1941;62:1183-7
- *Chalmers et al: Caries incidence and increments in community-living older adults with and without dementia. Austral Res Cent Pop Oral Health, Dental School, U Adelaide Gerodontol 2002 Dec;19(2):80-94
- *Day & Sedwick: Fat-soluble vitamins and dental caries in children. J Nutr 1934;8:309-28
- *Ellefsen et al: Caries prevalence in older persons with and without dementia. J Am Ger Soc 2008 Jan;56(1):59-67(9)
- *Grant: A review of the role of solar ultraviolet-B irradiance and vitamin D in reducing risk of dental caries. Landes Biosc Dermatoendocrin 2011 July-Sept;3(3):193-198
- *McBeath & Zucker: Role of vitamin D in the control of dental caries in children. J Nutr 1938;15:547-64
- *McBeath: Vitamin D studies, 1933-1934. Am J Pub Health 1934;24:1028-30
- *Mellanby & Pattison: The action of vitamin D in preventing the spread and promoting the arrest of caries in children. BMJ 1928 Dec 15;2(3545):1079-82

*Sherlin & Verma: Vitamin D ameliorates fluoride-induced embryotoxicity in pregnant rats. *Hepato-gastroenterol* 2003 Dec;50 Suppl 2:cclxxix-cclxxx

*Vitamin deficiency underlies tooth decay. *Orthomol Med News Serv* February 19, 2009

Vitamin E protects against the toxic effects of fluoride and arsenic.

*Mittal & Flora: Vitamin E supplementation protects oxidative stress during arsenic and fluoride antagonism in male mice. *Drug Chem Toxicol* 2007;30(3):263-81

Vitamins C, D, and E protect the body from fluoride damage.

*Verma & Sherlin: Sodium fluoride-induced hypoproteinemia and hypoglycemia in parental and F(1)-generation rats and amelioration by vitamins. *Food Chem Toxicol* 2002 Dec;40(12):1781-8

Xylitol (sugar alcohol with a low glycemic index) reduces the chances of developing cavities by controlling oral bacteria.

*Birkhed: Cariologic aspects of xylitol and its use in chewing gum: a review. *Acta Odontol Scand* 1994 Apr;52(2):116-27

*Hildebrandt & Sparks: Maintaining mutans streptococci suppression with xylitol chewing gum. *Phytother Res* 2003 Sep;17(8):938-41

*Mäkinen: Sugar alcohols, caries incidence, and remineralization of caries lesions: a literature review. *Int J Dent* 2010;2010:981072

*Mäkinen et al: Thirty-nine-month xylitol chewing-gum programme in initially 8-year-old school children: a feasibility study focusing on mutans streptococci and lactobacilli. *Int Dent J* 2008 Feb;58(1):41-50

*Mäkinen et al: Similarity of the effects of erythritol and xylitol on some risk factors of dental caries. *Caries Res* 2005 May-Jun;39(3):207-15

*Mäkinen et al: Properties of whole saliva and dental plaque in relation to 40-month consumption of chewing gums containing xylitol, sorbitol or sucrose. *Caries Res* 1996;30(3):180-8

*Mäkinen et al: Conclusion and review of the Michigan Xylitol Programme (1986-1995) for the prevention of dental caries. *Int Dent J* 1996 Feb;46(1):22-34

*Milgrom et al: Xylitol pediatric topical oral syrup to prevent dental caries: a double-blind randomized clinical trial of efficacy. *Arch Pediatr Adolesc Med* 2009 Jul;163(7):601-7

*Nakai et al: Xylitol gum and maternal transmission of mutans streptococci. *J Dent Res* 2010 Jan;89(1):56-60

*Trahan: Xylitol: a review of its action on mutans streptococci and dental plaque--its clinical significance. *Subst Abuse Treat Prev Policy* 2008 Jan 25;3:1

*Twetman: Consistent evidence to support the use of xylitol- and sorbitol-containing chewing gum to prevent dental caries. *Evid Based Dent* 2009;10(1):10-1

*Twetman & Stecksén-Blicks: Effect of xylitol-containing chewing gums on lactic acid production in dental plaque from caries active pre-school children. *Oral Health Prev Dent* 2003;1(3):195-9

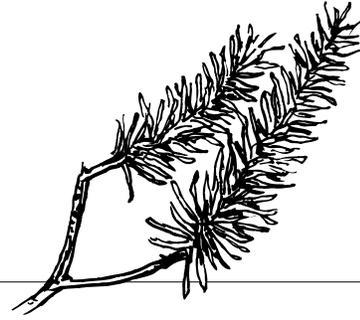
Yogurt consumption is linked to fewer cavities in young children but not so with other dairy products.

*Tanaka et al: Intake of dairy products and the prevalence of dental caries in young children. *J Dent* 2010 Jul;38(7):579-83

Zinc supplementation reduces dental cavities in children.

*Uçkardeş et al: The effect of systemic zinc supplementation on oral health in low socioeconomic level children. *Turk J Pediatr* 2009 Sep-Oct;51(5):424-8

GOUT



(USED TO TREAT SYMPTOMS OF GOUT)

COMMON EXAMPLES:

allopurinol – Zyloprim

colchicine

probenecid – Benemid, Benuryl, and others

sulfinpyrazone – Anturane

DEplete:

A, beta carotene, B3, B6, B9, B12, D, E, K, calcium, copper, iron, magnesium, phosphorus, potassium, sodium, zinc

☞ **Colchicine**, the standard anti-gout medication, apparently is not a clear-cut gout therapeutic.

*Finkelstein et al: Colchicine poisoning: the dark side of an ancient drug. Clin Toxicol (Phila) 2010 Jun;48(5):407-14

☞ **Gout Triggers:** organ meats, seafood, alcohol, soft drinks, fructose, dairy products, soy milk and diuretics.

*Choi et al: Intake of purine-rich foods, protein, and dairy products and relationship to serum levels of uric acid: the Third National Health and Nutrition Examination Survey. Arthritis Rheum 2005 Jan;52(1):283-9

*Dalbeth et al: Acute effect of milk on serum urate concentrations: a randomised controlled crossover trial. Ann Rheum Dis 2010 Sep;69(9):1677-82

*Menghini & Corte: Evaluation of hyperuricemia caused by fructose in a status of altered uric acid metabolism. Quad Sclavo Diagn 1987 Dec;23(4):441-6

*Morozzi et al: Inhibition of fructose-induced hyperuricacidemia by pretreatment with phosphates. Boll Soc Ital Biol Sper 1982 Apr 30;58(8):491-6

*Singh et al: Risk factors for gout and prevention: a systematic review of the literature. Curr Opin Rheumatol 2011 Mar;23(2):192-202

SUGGESTED ALTERNATIVES:

Ashwaganda reverses gout effects.

*Rasool & Varalakshmi: Suppressive effect of Withania somnifera root powder on experimental gouty arthritis: An in vivo and in vitro study. Chem Biol Interact 2006 Dec 15;164(3):174-80

*Sabina et al: Inhibition of monosodium urate crystal-induced inflammation by withaferin A. J Pharm Pharm Sci 2008;11(4):46-55

Cassia Cinnamon suppresses uric acid levels.

*Zhao et al: Effects of cassia oil on serum and hepatic uric acid levels in oxonate-induced mice and xanthine dehydrogenase and xanthine oxidase activities in mouse liver. J Ethnopharmacol 2006 Feb 20;103(3):357-65

Cassia Cinnamon and **Resveratrol** significantly inhibits gout formation.

*Kong et al: Inhibition of xanthine oxidase by some Chinese medicinal plants used to treat gout. J Ethnopharmacol 2000 Nov;73(1-2):199-207

Cherries (juice or extract) suppress inflammation and pain in gout.

*Jacob et al: Consumption of cherries lowers plasma urate in healthy women. J Nutr 2003 Jun;133(6):1826-9

*Kelley et al: Consumption of Bing sweet cherries lowers circulating concentrations of inflammation markers in healthy men and women. J Nutr 2006 Apr;136(4):981-6

*Kuehl et al: Efficacy of tart cherry juice in reducing muscle pain during running: a randomized controlled trial. J Int Soc Sports Nutr 2010;7:17

*Tall et al: Tart cherry anthocyanins suppress inflammation-induced pain behavior in rat. Behav Brain Res 2004 Aug 12;153(1):181-8

Curcumin prevents the formation of gout.

*Shen & Ji: Insights into the inhibition of xanthine oxidase by curcumin. Nutr 2006 Jun;22(6):593-9

Ginger has a strong anti-inflammatory effect.

*Sabina et al: 6-Shogaol inhibits monosodium urate crystal-induced inflammation--an in vivo and in vitro study. Methods Find Exp Clin Pharmacol 2010 Sep;32(7):467-73

Grapeseed lowers uric acid levels.

*Wang et al: Administration of procyanidins from grape seeds reduces serum uric acid levels and decreases hepatic xanthine dehydrogenase/oxidase activities in oxonate-treated mice. Basic Clin Pharma Toxicol 2004 May;94(5):232-7

Noni fruit has anti-gout properties.

*Palu et al: Xanthine oxidase inhibiting effects of noni (*Morinda citrifolia*) fruit juice. Phytother Res 2009 May 12

Orange juice and **Hesperetin** (a bioflavonoid) significantly decrease the risk of gout.

*Ghanim et al: Orange juice neutralizes the proinflammatory effect of a high-fat, high-carbohydrate meal and prevents endotoxin increase and Toll-like receptor expression. Am J Clin Nutr 2010 Apr;91(4):940-9

*Haidari et al: Orange juice and hesperetin supplementation to hyperuricemic rats alter oxidative stress markers and xanthine oxidoreductase activity. J Clin Biochem Nutr 2009 Nov;45(3):285-91

Pycnogenol is a potent antioxidant that helps prevent the formation of gout.

*Moini et al: Enzyme inhibition and protein-binding action of the procyanidin-rich french maritime pine bark extract, pycnogenol: effect on xanthine oxidase. J Agric Food Chem 2000 Nov;48(11):5630-9

Quercetin, Luteolin, Milk Thistle, and Curcumin prevent the formation of uric acid.

*Pauff & Hille: Inhibition studies of bovine xanthine oxidase by luteolin, silibinin, quercetin, and curcumin. J Nat Prod 2009 Apr;72(4):725-31

Siberian ginseng, Angelica, and Chinese skullcap protect against the formation of uric acid (urate crystals)

*Jung et al: Reduction of urate crystal-induced inflammation by root extracts from traditional oriental medicinal plants: elevation of prostaglandin D2 levels. *Cancer Epidemiol Biomarkers Prev* 2008 Aug;17(8):2136-45

Triphala is an Ayurvedic herb that compares favourably to the drug Indomethacin as an anti-inflammatory while also improving antioxidant levels.

*Sabina & Rasool: An in vivo and in vitro potential of Indian ayurvedic herbal formulation Triphala on experimental gouty arthritis in mice. *Vascul Pharmacol* 2008 Jan;48(1):14-20

Vitamin C helps prevent the formation of uric acid crystals.

*Gao et al: Vitamin C intake and serum uric acid concentration in men. *J Rheumatol* 2008 Sep;35(9):1853-1858



HRTs (HORMONES REPLACEMENT THERAPIES)

COMMON EXAMPLES:

androgens

oxandrolone – Oxandrin

methyltestosterone – Android, Testosterone Cypionate, Virilon, and others

estrogen-containing

conjugated/combined – Cenestin, Premarin, and others

bio-identical – Estrace, Delestrogen, and others

esterified – Menest

estradiols – Activella, Climara, Combipatch, Estrace, Estraderm, Estring, EstroGel, Femogex, Femring, Menostar, and many more

oral contraceptives (levonorgestrel – Mirena, Plan B, and others)

growth hormones

somatropin – Genotropin, Nutropin, and others

progestins

medroxyprogesterone – DepoProvera and others

norethindrone – Aygestin

progesterone – Crinone, Prometrium, and others

DEplete:

A, B1, B2, B3, B5, B6, B7, B8. B9, B12, C, D, E, EFAs, quercetin, calcium, iron, magnesium, selenium, zinc and most other minerals, CoQ10, DHEA, beneficial flora

BENEFICIAL FLORA

☞ **Estradiol** and **levonorgestrel** can cause tumors.

*Jänne et al: The roles of estrogen and progestin in producing deciduosarcoma and other lesions in the rabbit. Toxicol Pathol 2001 Jul-Aug;29(4):417-21

☞ **HRTs** are sometimes given to aging men which has an adverse effect on the prostate as well as accelerating the aging process.

*Montico et al: Hormonal therapy in the senescence: Prostatic microenvironment structure and adhesion molecules. Micron 2011 Aug;42(6):642-55

☞ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of

their active constituents) have long been associated with cancers but they can also be linked to numerous other dangerous health conditions including affecting the reproductive systems of both men and women.

*McGlynn et al: Persistent organochlorine pesticides and risk of testicular germ cell tumors. J Natl Cancer Inst 2008 May 7;100(9):663-71

*Porpora et al: Endometriosis and organochlorinated environmental pollutants: a case-control study on Italian women of reproductive age. Environ Health Perspect 2009 Jul;117(7):1070-5

SUGGESTED ALTERNATIVES:

Apples contain a substance that may help treat male baldness. Use only **organically** grown apples as non-organic apples are number one on the list of produce containing pesticides.

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

*Takahashi et al: The first clinical trial of topical application of procyanidin B-2 to investigate its potential as a hair growing agent. Phytother Res 2001 Jun;15(4):331-6

Astaxanthin and **Saw palmetto** increase testosterone and decrease estradiol levels in men.

*Angwafor & Anderson: An open label, dose response study to determine the effect of a dietary supplement on dihydrotestosterone, testosterone and estradiol levels in healthy males. J Cardiovasc Electrophysiol 2009 Sep;20(9):1055-60

Astragalus and a Chinese herb, show promise in treating endometriosis.

*Min et al: Regulatory effect of ligustrazine and Radix astragalus on RANTES and receptor CCR5 expression in the genesis and development process of endometriosis. Zhongguo Zhong Xi Yi Jie He Za Zhi 2008 Nov;28(11):981-5

Berries prevent oxidative damage caused by estrogen-containing drugs.

*Aiyer et al: Prevention of oxidative DNA damage by bioactive berry components. J Am Soc Nephrol 2002 Sep;13(9):2299-308

Beta-sitosterol (a plant sterol) and **Saw palmetto** (an herb) help protect the prostate and reduce hair loss in men.

*Prager et al: A randomized, double-blind, placebo-controlled trial to determine the effectiveness of botanically derived inhibitors of 5-alpha-reductase in the treatment of androgenetic alopecia. J Altern Complement Med 2002 Apr;8(2):143-52

Black cohosh has long been used to treat menopausal symptoms with studies to prove this traditional use. Although there has been some concern that it contributes to breast cancer because of its phytoestrogen content, studies show the opposite, that it inhibits breast and prostate cancer cells. It can, however, interfere with such cancer treatments as radiation and chemotherapy.

*Borrelli & Ernst: Black cohosh (*Cimicifuga racemosa*) for menopausal symptoms: a systematic review of its efficacy. PharmacolRes 2008;58(1):8-14

*Frei-Kleiner et al: *Cimicifuga racemosa* dried ethanolic extract in menopausal disorders: a double-blind placebo-controlled clinical trial. Maturitas 2005;51(4):397-404

*Jacobson et al: Randomized trial of black cohosh for the treatment of hot flashes among women with a history of breast cancer. J Clin Oncol 200;19(10):2739-2745

*Kanady et al: Efficacy and safety of Black cohosh (*Actaea/Cimicifuga racemosa*) in the treatment of vasomotor symptoms--review of clinical trials. Ginekol Pol 2008 Apr;79(4):287-96

- *McKenna et al: Black cohosh: efficacy, safety, and use in clinical and preclinical applications. [Review]. *Altern Ther Health Med* 2001;7(3):93-100
- *Mollá et al: Cimicifuga racemosa treatment and health related quality of life in post-menopausal Spanish women. *Gynecol Endocrinol* 2009 Jan;25(1):21-6
- *Palacio et al: Black cohosh for the management of menopausal symptoms: a systematic review of clinical trials. *Drugs Aging* 2009;26(1):23-36
- *Rachoń et al: Effects of black cohosh extract on body weight gain, intra-abdominal fat accumulation, plasma lipids and glucose tolerance in ovariectomized Sprague-Dawley rats. *Maturitas* 2008 Jul-Aug;60(3-4):209-15
- *Ruediger et al: Efficacy and safety of isopropanolic black cohosh extract for climacteric symptoms. *Obstet Gynecol* 2005;105:1074-1083
- *Seidlová-Wuttke et al: Effects of estradiol-17beta, testosterone and a black cohosh preparation on bone and prostate in orchidectomized rats. *Maturitas* 2005 Jun 16;51(2):177-86
- *Seidlova-Wuttke et al: Evidence for selective estrogen receptor modulator activity in a black cohosh (*Cimicifuga racemosa*) extract: comparison with estradiol-17beta. *Eur J Endocrinol* 2003 Oct;149(4):351-62
- *Tsukamoto et al: Isolation of CYP3A4 inhibitors from the black cohosh (*Cimicifuga racemosa*). *Evid Bas Comple Alt Med* 2005;2(2):223-226
- *U Maryland Med Center article on Black-cohosh
- *Usuki: Effects of herbal components of tokishakuyakusan on progesterone secretion by corpus luteum in vitro. *Am J Chin Med* 1991;19(1):57-60
- *Wang et al: The aqueous extract of a popular herbal nutrient supplement, *Angelica sinensis*, protects mice against lethal endotoxemia and sepsis. *J Nutr* 2006 Feb;136(2):360-5
- *Wuttke et al: Phytoestrogens: endocrine disrupters or replacement for hormone replacement therapy? *Maturitas* 2008 Sep-Oct;61(1-2):159-70
- *Wutte et al: The *Cimicifuga* preparation BNO 1055 vs. conjugated estrogens in a double-blind placebo-controlled study: effects on menopause symptoms and bone markers. *Maturitas* 2003 Mar 14;44 Suppl 1:S67-77

Cat's Claw, an immune strengthening herb, proves to be an effective treatment for endometriosis.

- *Neto et al: Experimental endometriosis reduction in rats treated with *Uncaria tomentosa* (cat's claw) extract. *Eur J Obstet Gynecol Reprod Biol* 2010 Oct 26

Coconut reduces changes in the brain caused by hormonal imbalance in women.

- *Radenahmad et al: Young coconut juice significantly reduces histopathological changes in the brain that are induced by hormonal imbalance: a possible implication to postmenopausal women. *Histol Histopathol* 2009 Jun;24(6):667-74

Coconut and **Olive oils** increase testosterone and antioxidant levels in the testes.

- *Hurtado de Catalfo et al: Dietary lipids modify redox homeostasis and steroidogenic status in rat testis. *Phytother Res* 2010 Feb;24(2):163-8

Cordyceps mushrooms increase testosterone production and improve sperm count and quality.

- *Chang et al: Effect of *Cordyceps militaris* supplementation on sperm production, sperm motility and hormones in Sprague-Dawley rats. *Nutr Cancer* 2008 Mar-Apr;60(2):227-34
- *Hsu et al: In vivo and in vitro stimulatory effects of *Cordyceps sinensis* on testosterone production in mouse Leydig cells. *J Cutan Pathol* 2009 Oct;36(10):1053-62

Dandelion increases and regulates reproductive hormones.

- *Zhi et al: Dandelion T-1 extract up-regulates reproductive hormone receptor expression in mice. *Int J Mol Med* 2007 Sep;20(3):287-92

DHEA (dehydroepiandrosterone) is a hormone produced from cholesterol, resulting in either estrogens or testosterone. Because DHEA levels decline with age, supplementation sometimes helps with menopausal, low adrenal, and lupus symptoms. As a supplement, it is not available in Canada.

- *Barton et al: Dehydroepiandrosterone for the treatment of hot flashes: a pilot study. *Support Cancer Ther* 2006 Jan 1;3(2):91-7
- *Casson et al: Dehydroepiandrosterone supplementation augments ovarian stimulation in poor responders: a case series. *Carcinogen* 1998 Apr;19(4):611-6
- *Chang et al: Dehydroepiandrosterone suppresses interleukin 10 synthesis in women with systemic lupus erythematosus. *Ann Rheum Dis* 2004 Dec;63(12):1623-6
- *Christiansen et al: Dehydroepiandrosterone supplementation in women with adrenal failure: impact on twenty-four hour GH secretion and IGF-related parameters. *Arch Pharm Res* 2005 Apr;28(4):469-75
- *Forsblad-d'Elia et al: Low serum levels of sex steroids are associated with disease characteristics in primary Sjogren's syndrome; supplementation with dehydroepiandrosterone restores the concentrations. *J Clin Endocrinol Metab* 2009 Jun;94(6):2044-51
- *Hardin et al: A new hormonal therapy for estrogen receptor-negative breast cancer. *World J Surg* 2007 May;31(5):1041-6
- *Hunt et al: Improvement in mood and fatigue after dehydroepiandrosterone replacement in Addison's disease in a randomized, double blind trial. *Bioorg Med Chem* 1995 Oct;3(10):1345-8
- *Libè et al: Effects of dehydroepiandrosterone (DHEA) supplementation on hormonal, metabolic and behavioral status in patients with hypoadrenalism. *J Endocrinol Invest* 2004 Sep;27(8):736-41
- *Stomati et al: Six-month oral dehydroepiandrosterone supplementation in early and late postmenopause. *Epidemiol* 2004 Nov;15(6):653-9
- *Szkrobka et al: Adrenopause. *Pol Merkur Lekarski* 2008 Jul;25(145):77-82

Flaxseed manages hot flashes in women not taking estrogen therapy and reduces the risk of breast cancer.

- *Pruthi et al: Pilot evaluation of flaxseed for the management of hot flashes. *J Soc Integr Oncol* 2007 Summer;5(3):106-12
- *Sung et al: Mammalian lignans inhibit the growth of estrogen-independent human colon tumor cells. *Anticancer Res* 1998 May-Jun;18(3A):1405-8
- *Touillaud et al: Dietary lignan intake and postmenopausal breast cancer risk by estrogen and progesterone receptor status. *J Natl Cancer Inst* 2007 Mar 21;99(6):475-86
- *Truan et al: Flaxseed oil reduces the growth of human breast tumors (MCF-7) at high levels of circulating estrogen. *Mol Nutr Food Res* 2010 Oct;54(10):1414-21

Gluten sensitivity can alter hormone levels in men.

- *Fanciulli et al: Serum prolactin levels after administration of the alimentary opioid peptide gluten exorphin B4 in male rats. *Nutr Neurosci* 2004 Feb;7(1):53-5

Goji berries/Wolfberry alter estradiol metabolism in order to prevent breast cancer.

- *Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12
- *Chang & So: Use of anti-aging herbal medicine, *Lycium barbarum*, against aging-associated diseases. What do we know so far? *Cell Mol Neurobiol* 2008 Aug;28(5):643-52
- *Li et al: *Lycium barbarum* inhibits growth of estrogen receptor positive human breast cancer cells by favorably altering estradiol metabolism. *Nutr Canc* 2009;61(3):408-14
- *Potterat: Goji (*Lycium barbarum* and *L. chinense*): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19

Healthy lifestyle reduces the need for HRTs.

*Jones-Shoeman: Choose healthy lifestyle, nutritious food over hormone replacement therapy for menopause symptoms. NaturalNews Sunday, January 22, 2012

Homeopathics help relieve PMS symptoms.

*Yakir et al: Effects of homeopathic treatment in women with premenstrual syndrome: a pilot study. Br Homeopath J 2001 Jul;90(3):148-53

Inositol (B8) helps women with polycystic ovary syndrome.

*Iuorno et al: Effects of d-chiro-inositol in lean women with the polycystic ovary syndrome. Endocr Pract 2002 Nov-Dec;8(6):417-23

Maca is a Peruvian ginseng-type root that produces similar results as other ginsengs. While the maca root can come in various colours determined by growing conditions (black, blue, cream, green, purple, or red). Black is considered best for energy, stamina, fertility, and sperm quality while the red has been more effective for the male prostate. Maca does not increase estrogens, progesterone, or testosterone but rather regulates hormones in both men and women (see more under Prostate and Erectile Dysfunction). In females who have had their ovaries removed, black maca also relieves depression and mental confusion.

*Bogani et al: Lepidium meyenii (Maca) does not exert direct androgenic activities. J Ethnopharmacol 2006 Apr;104(3):415-7

*Bustos-Obregon et al: Lepidium meyenii (Maca) reduces spermatogenic damage induced by a single dose of malathion in mice. Asia J Androl 2005 Mar;7(1):71-6

*Gonzales et al: Effect of Black maca (Lepidium meyenii) on one spermatogenic cycle in rats. Andrologia 2006 Oct;38(5):166-72

*Gonzales et al: Effect of short-term and long-term treatments with three ecotypes of Lepidium meyenii (MACA) on spermatogenesis in rats. J Ethnopharmacol 2006 Feb 20;103(3):448-54

*Gonzales et al: Effect of Lepidium meyenii (Maca) on spermatogenesis in male rats acutely exposed to high altitude (4340 m). J Endocrinol 2004;180(1):87-95

*Gonzales et al: Effect of Lepidium meyenii (maca) roots on spermatogenesis of male rats. Asian J Androl 2001 Sep;3:231-33

*Gonzales et al: Lepidium meyenii (Maca) improved semen parameters in adult men. Asian J Androl 2001 Dec;3:301-3

*León: The "Maca" (Lepidium meyenii) a little known food plant of Peru. Econ Bot 18(2):122-7

*Lopez-Fando et al: Lepidium peruvianum Chacon restores homeostasis impaired by restraint stress. Phytother Res 2004;18(6): 471-4

*Piacente et al: Investigation of the tuber constituents of maca (Lepidium meyenii Walp). J Agric Food Chem 2002;50(20):5621-25

*Raintree Nutrition Tropical Plant Database "Maca" www.rain-tree.com/maca.htm

*Rubio et al: Effect of three different cultivars of Lepidium meyenii (Maca) on learning and depression in ovariectomized mice. BMC Complement Altern Med 2006 Jun 23;6:23

*Ruiz-Luna et al: Lepidium meyenii (Maca) increases litter size in normal adult female mice. Reprod Biol Endocrinol 2005 May;3(1):16

*Taylor 2005:338-44

*Valerio & Gonzales: Toxicological aspects of the South American herbs cat's claw (Uncaria tomentosa) and maca (Lepidium meyenii): A critical synopsis. Toxicol Rev 2005;24(1):11-35(25)

*Zhang et al: Effect of ethanol extract of Lepidium meyenii Walp. on osteoporosis in ovariectomized rat. J Ethnopharmacol 2006 Apr;105(1-2):274-9

*Zheng et al: Effect of a lipidic extract from Lepidium meyenii on sexual behavior in mice and rats. Urol 2000 Apr;55(4):598-602

Magnesium improves glucose tolerance and blood fat levels in those on oral contraceptives.

- *Olatunji et al: Effect of dietary magnesium on glucose tolerance and plasma lipid during oral contraceptive administration in female rats. *Afr J Med Med Sci* 2008 Jun;37(2):135-9

Mangosteen has aromatase inhibitory activity. Aromatase is an enzyme involved in the synthesis of estrogen.

- *Balunas et al: Xanthones from the botanical dietary supplement mangosteen (*Garcinia mangostana*) with aromatase inhibitory activity. *J Nat Prod* 2008 Jul;71(7):1161-6

Melatonin protects against endometriosis and endometrial cancer while significantly reducing lesions.

- *Ciortea et al: Effect of melatonin on intra-abdominal fat in correlation with endometrial proliferation in ovariectomized rats. *Anticancer Res* 2011 Aug;31(8):2637-43
- *Cos et al: Melatonin as a selective estrogen enzyme modulator. *Curr Cancer Drug Targets* 2008 Dec;8(8):691-702
- *Güney et al: Regression of endometrial explants in a rat model of endometriosis treated with melatonin. *Fertil Steril* 2008 Apr;89(4):934-42
- *Paul et al: Melatonin protects against endometriosis via regulation of matrix metalloproteinase-3 and an apoptotic pathway. *J Pineal Res* 2010 Sep;49(2):156-68
- *Paul et al: Melatonin protects against endometriosis via regulation of matrix metalloproteinase-3 and an apoptotic pathway. *Ai Zheng* 2006 May;25(5):582-6

Papaya extract protects the uterus in both women who are pregnant and those who are not. Papaya has antioxidant effects similar to vitamin E.

- *Cherian: Effect of papaya latex extract on gravid and non-gravid rat uterine preparations in vitro. *J Ethnopharmacol* 2000 Jun;70(3):205-12
- *Mehdipour et al: Antioxidant potentials of Iranian *Carica papaya* juice in vitro and in vivo are comparable to alpha-tocopherol. *Phytother Res* 2006 Jul;20(7):591-4

Pomegranates moderate estrogen, helping to improve depression and bone loss in menopausal women. Unlike tamoxifen and estradiol, pomegranates do not have side effects when exerting selective estrogen receptor modulator activity.

- *Mori-Okamoto et al: Pomegranate extract improves a depressive state and bone properties in menopausal syndrome model ovariectomized mice. *J Ethnopharmacol* 2004 May;92(1):93-101
- *Sreeja et al: Pomegranate extract demonstrate a selective estrogen receptor modulator profile in human tumor cell lines and in vivo models of estrogen deprivation. *J Nutr Biochem* 2011 Aug 10
- *Tran et al: Pomegranate (*Punica granatum*) seed linolenic acid isomers: concentration-dependent modulation of estrogen receptor activity. *Atheroscler* 2007 Aug;193(2):277-82

Pomegranates and **Beta-sitosterol** (a plant sterol) are safe and effective in stimulating uterine contractions.

- *Promprom et al: The effects of pomegranate seed extract and beta-sitosterol on rat uterine contractions. *Reprod Sci* 2010 Mar;17(3):288-96

Progesterone affects hormones. When levels are **too low**, the results can lead to painful endometriosis, fibroids, sleep disturbances, melatonin secretion, breast, ovarian and prostate tumors, decreased neuroprotection, and pre-term births.

- *Akoum et al: Secretion of interleukin-6 by human endometriotic cells and regulation by proinflammatory cytokines and sex steroids. *J Med Case Reports* 2010;4:76
- *Bentrari et al: Progesterone enhances cytokine-stimulated nitric oxide synthase II expression and cell death in human breast cancer cells. *Lab Invest* 2005 May;85(5):624-32
- *Caufriez et al: Progesterone prevents sleep disturbances and modulates GH, TSH, and melatonin secretion in postmenopausal women. *J Clin Endocrinol Metab* 2011 Feb 2

- *Formby & Wiley: Progesterone inhibits growth and induces apoptosis in breast cancer cells: inverse effects on Bcl-2 and p53. *Ann Clin Lab Sci* 1998 Nov-Dec;28(6):360-9
- *Ito et al: A new approach to prostate cancer. *J Pharm Pharmacol* 1989 Jul;41(7):488-9
- *Iwaoka et al: Selective stimulation by cinnamaldehyde of progesterone secretion in human adrenal cells. *Life Sci* 2010 Jun 5;86(23-24):894-8
- *Lin et al: Effect of progesterone on the invasive properties and tumor growth of progesterone receptor-transfected breast cancer cells MDA-MB-231. *J Agric Food Chem* 1999 Mar;47(3):840-4
- *Meis & Aleman: Progesterone treatment to prevent preterm birth. *Drugs* 2004;64(21):2463-74
- *Nicola et al: Progesterone neuroprotection in traumatic CNS injury and motoneuron degeneration. *Front Neuroendocrinol* 2009 Jul;30(2):173-87
- *Tariverdian et al: Neuroendocrine circuitry and endometriosis: progesterone derivative dampens corticotropin-releasing hormone-induced inflammation by peritoneal cells in vitro. *J Mol Med* 2010 Mar;88(3):267-78
- *Yamada et al: Progesterone down-regulates insulin-like growth factor-I expression in cultured human uterine leiomyoma cells. *Hum Reprod* 2004 Apr;19(4):815-21
- *Yu et al: Apoptosis induced by progesterone in human ovarian cancer cell line SNU-840. *Diabetes Care* 2010 Feb;33(2):246-51

Reishi mushrooms inhibit androgen production which diminishes the risk of an enlarged prostate or prostate cancer.

- *Liu & Tamura: Anti-androgen effects of extracts and compounds from *Ganoderma lucidum*. *Chem Biodivers* 2009 Feb;6(2):231-43

Sage is as effective as a steroid for treating skin redness or rashes, but less harmful. With antioxidant properties, it is also effective for improving mood and mental performance that often accompany hormonal changes.

- *Kennedy et al: Effects of cholinesterase inhibiting sage (*Salvia officinalis*) on mood, anxiety and performance on a psychological stressor battery. *Neuropsychopharma* 2006 Apr;31(4):845-52
- *Oboh & Henle: Antioxidant and inhibitory effects of aqueous extracts of *Salvia officinalis* leaves on oxidant-induced lipid peroxidation in brain and liver in vitro. *Pediatr Neurol* 2007 Mar;36(3):152-8
- *Reuter et al: Sage extract rich in phenolic diterpenes inhibits ultraviolet-induced erythema in vivo. *Planta Med* 2007 Sep;73(11):1190-1

Sage and **Alfalfa** help reduce menopausal symptoms.

- *Leo et al: Treatment of neurovegetative menopausal symptoms with a phytotherapeutic agent. *Minerva Ginecol* 1998 May;50(5):207-11

Seaweed (brown) modifies estrogen-progesterone metabolism in postmenopausal women and initiates a positive change in gut bacteria. Kelp is the most common brown seaweed.

- *Skibola et al: Brown kelp modulates endocrine hormones in female sprague-dawley rats and in human luteinized granulosa cells. *J Nutr* 2005 Feb;135(2):296-300
- *Skibola: The effect of *Fucus vesiculosus*, an edible brown seaweed, upon menstrual cycle length and hormonal status in three pre-menopausal women: a case report. *BMC Complement Altern Med* 2004 Aug 4;4:10
- *Teas et al: Dietary seaweed modifies estrogen and phytoestrogen metabolism in healthy postmenopausal women. *J Nutr* 2009 May;139(5):939-44

Soy Isoflavones, Lignans (from flaxseed), and **Black cohosh** help alleviate menopausal symptoms including cognitive decline and weight gain. Equol is a substance metabolized from daidzein, a flavonoid found in soybeans. Certain probiotics feed on this compound and in turn, produce hormone-regulating effects including the relief of menopausal symptoms in women and inhibiting prostate growth in men.

Use only non-GMO fermented soy foods as they have the medicinal value. The fermentation process nullifies any hormone-disrupting qualities.

- *Ishiwata et al: New equol supplement for relieving menopausal symptoms: randomized, placebo-controlled trial of Japanese women. *Menopause* 2009 Jan-Feb;16(1):141-8
- *Lund et al: Equol is a novel anti-androgen that inhibits prostate growth and hormone feedback. *Int J Neurosci* 2008 Jan;118(1):59-77
- *Sammartino et al: Short-term effects of a combination of isoflavones, lignans and Cimicifuga racemosa on climacteric-related symptoms in postmenopausal women: a double-blind, randomized, placebo-controlled trial. *Gynecol Endocrinol* 2006;22(11):646-50
- *Sarkaki et al: Preventive effects of soy meal (+/- isoflavone) on spatial cognitive deficiency and body weight in an ovariectomized animal model of Parkinson's disease. *Pak J Biol Sci* 2009 Oct 15;12(20):1338-45

Testosterone levels (higher), **vitamin D** and **Calcium** reduce the risk of falling in older men and women.

- *Bischoff-Ferrari et al: Additive benefit of higher testosterone levels and vitamin D plus calcium supplementation in regard to fall risk reduction among older men and women. *Osteoporos Int* 2008 Sep;19(9):1307-14

Vitex (Chasteberry) is an effective treatment for menopausal symptoms in women and in preventing osteoporosis in men. It has also been used to control post-partum bleeding.

- *Ladeji et al: Activity of aqueous extract of the bark of Vitex doniana on uterine muscle response to drugs. *Phytother Res* 2005 Sep;19(9):804-6
- *Schellenberg: Treatment for the premenstrual syndrome with agnus castus fruit extract: prospective, randomised, placebo controlled study. *BMJ* 2001 Jan 20;322(7279):134-7
- *Sehmisch et al: Vitex agnus castus as prophylaxis for osteopenia after orchidectomy in rats compared with estradiol and testosterone supplementation. *Phytother Res* 2009 Jun;23(6):851-8

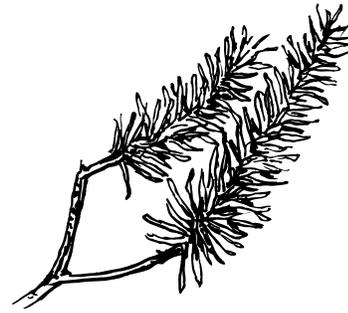
Vitex and **St. John's Wort** decreases PMS-type symptoms in late-perimenopausal women.

- *van Die et al: Effects of a combination of Hypericum perforatum and Vitex agnus-castus on PMS-like symptoms in late-perimenopausal women: findings from a subpopulation analysis. *J Altern Complement Med* 2009;15(9):1045-8

White mustard seeds contain compounds which prevent an enlarged prostate.

- *Wu et al: An experimental study(II) on the inhibition of prostatic hyperplasia by extract of seeds of Brassica alba. *Zhongguo Zhong Yao Za Zhi* 2003 Jul;28(7):643-6

IMMUNOSUPPRESSANTS



(USED TO TREAT AUTOIMMUNE DISORDERS OR PREVENT ORGAN TRANSPLANT REJECTION)

COMMON EXAMPLES:

azathioprine – Imuran
basiliximab – Simulect
cyclophosphamide – Cytoxan, Neosar, Procytox
cyclosporine – Gengraf, Neoral, Sandimmune
daclizumab – Zenapax
glatiramer – Copaxone
methotrexates – amethopterin, MTX
mycophenolate – CellCept, Myfortic
pimecrolimus – Elidel
sirolimus – Rapamune
steroids – Prednisone and others
tacrolimus – Prograf
thalidomide – Thalomid

DEplete:

B6, B9, B12, E, calcium, copper, iron, magnesium, potassium, EFAs, bioflavonoids, L-glutamine

⌘ **Autoimmune diseases** were once thought to be an overactive immune system and thereby needing to be depressed but many are now being considered as a *deficiency* of the immune system.

*Brandt & Gershwin: Common variable immune deficiency and autoimmunity. *Autoimmun Rev* 2006 Aug;5(7):465-70

*Clark 2008:45-46,127-143

*Etzioni: Immune deficiency and autoimmunity. *Autoimmun Rev* 2003 Oct;2(6):364-9

*Knight & Cunningham-Rundles: Inflammatory and autoimmune complications of common variable immune deficiency. *Autoimmun Rev* 2006 Feb;5(2):156-59

*Lehman & Ballou: Immune deficiency disorders with autoimmunity and abnormalities in immune regulation-monogenic autoimmune diseases. *Clin Rev Allergy Immunol* 2008 Apr;34(2):141-5

⌘ **Azathioprine** is a known carcinogen. It is prescribed for such conditions as Crohn's and to inhibit transplant rejection.

*CAS No 446-86-6. Report on Carcinogens, Twelfth Edition (2011)

*Cohen et al: Azathioprine induction of lymphomas and squamous cell carcinomas in rats. *Cancer Res* June 1983;43:2768

*Gombar et al: Carcinogenicity of azathioprine: An S-AR investigation. *Mut Res Lett* 1993 May;302(1):7-12

*Smith et al: Analysis of gene mutations and clastogenicity following short-term treatment with azathioprine in Muta™Mouse. *Enviro Mol Mutagen* 1999;34(2-3):131-39

☞ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of their active constituents) have long been associated with a significant increase in cancers as well as the risk for many other dangerous health problems including the stimulation of immunological abnormalities.

*Thrasher et al: Immunological abnormalities in humans chronically exposed to chlorpyrifos. *Arch Environ Health* 2002 May-Jun;57(3):181-7

☞ **Pimecrolimus, tacrolimus and medium- to high-potency Corticosteroids** are linked to increased lymphoma rates.

*Schneeweiss et al: Topical treatments with pimecrolimus, tacrolimus and medium- to high-potency corticosteroids, and risk of lymphoma. *Dermatol* 2009;219(1):7-21

☞ **Statin drugs for Cholesterol** cause serious side effects for heart and liver transplant patients.

*Marzoa-Rivas et al: Safety of statins when response is carefully monitored: a study of 336 heart recipients. *Transplant Proc* 2005 Nov;37(9):4071-3

*Moreno et al: Severe rhabdomyolysis due to rosuvastatin in a liver transplant subject with human immunodeficiency virus and immunosuppressive therapy-related dyslipidemia. *Liver Transpl* 2011 Mar;17(3):331-3

☞ **More than 80 diseases** come under the Autoimmune heading.

*Silverberg: Pediatric psoriasis: an update. *Ther Clin Risk Manag* 2009;5:849–56

SUGGESTED ALTERNATIVES:

Aloe vera provides a safe and effective treatment for patients with oral lichen planus (an autoimmune disease of the mouth) and vulval lichen planus (an infection affecting the female vulva). Neither one is contagious and not caused by any microbe. Internally, Aloe also effectively treats by decreasing the effects of rheumatoid arthritis and multiple sclerosis.

*Choonhakarn et al: The efficacy of aloe vera gel in the treatment of oral lichen planus: a randomized controlled trial. *Br J Dermatol* 2008 Mar;158(3):573-7

*Choonhakarn et al: The efficacy of aloe vera gel in the treatment of oral lichen planus: a randomized controlled trial. *Lipids Health Dis* 2006;5:24

*Mirshafiey et al: Therapeutic approach by Aloe vera in experimental model of multiple sclerosis. *Immunopharmacol Immunotoxicol* 2010 Mar 17

*Rajar et al: Efficacy of aloe vera gel in the treatment of vulval lichen planus. *J Coll Physicians Surg Pak* 2008 Oct;18(10):612-4

*Salazar-Sánchez et al: Efficacy of topical Aloe vera in patients with oral lichen planus: a randomized double-blind study. *J Oral Pathol Med* 2010 Nov;39(10):735-40

*Yoo et al: Evaluation of antioxidant, antinociceptive, and anti-inflammatory activities of ethanol extracts from Aloe saponaria Haw. *Phytother Res* 2008 Aug 7

Alfalfa can reduce the severity of autoimmune susceptibility.

*Hong et al: The ethyl acetate extract of alfalfa sprout ameliorates disease severity of autoimmune-prone MRL-lpr/lpr mice. *Lupus* 2009 Mar;18(3):206-15

Arnica contains an immunosuppressive compound called Helenalin which deregulates unwanted T-cell responses.

*Berges et al: Helenalin suppresses essential immune functions of activated CD4+ T cells by multiple mechanisms. *Mol Immunol* 2009 Sep;46(15):2892-901

*Lyss et al: Helenalin, an anti-inflammatory sesquiterpene lactone from Arnica, selectively inhibits transcription factor NF-kappaB. *Biol Chem* 1997 Sep;378(9):951-61

*Lyss et al: The anti-inflammatory sesquiterpene lactone helenalin inhibits the transcription factor NF-kappaB by directly targeting p65. *J Biol Chem* 1998 Dec 11;273(50):33508-16

Artemesia (wormwood) significantly improves Crohn's disease.

*Krebs et al: Wormwood (*Artemisia absinthium*) suppresses tumour necrosis factor alpha and accelerates healing in patients with Crohn's disease - A controlled clinical trial. *Phytomed* 2010 Apr;17(5):305-9

*Shahverdi et al: A TLC bioautographic assay for the detection of nitrofurantoin resistance reversal compound. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2007 May 1;850(1-2):528-30

Astragalus significantly reduces auto-antibodies especially in cases of myasthenia gravia and myocarditis.

*Niu et al: Effect of compound astragalus recipe on lymphocyte subset, immunoglobulin and complements in patients with myasthenia gravia. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2009 Apr;29(4):305-8

*Tu et al: Regulatory action of Astragalus saponins and buzhong yiqi compound on synthesis of nicotinic acetylcholine receptor antibody in vitro for myasthenia gravis. *Chin Med J (Engl)* 1994 Apr;107(4):300-3

*Zhao et al: Chinese medicinal herb Radix Astragali suppresses cardiac contractile dysfunction and inflammation in a rat model of autoimmune myocarditis. *Toxicol Lett* 2008 Nov 10;182(1-3):29-35

Banana has immune-regulating activity that is also able to inhibit the HIV virus and cancer cells.

*Cheung et al: *Musa acuminata* (Del Monte banana) lectin is a fructose-binding lectin with cytokine-inducing activity. *Phytomed* 2009 Jun;16(6-7):594-600

Barley grass moderates the immune system especially in those with rheumatoid arthritis.

*Cremer et al: A purified green barley extract with modulatory properties upon TNF alpha and ROS released by human specialized cells isolated from RA patients. *Roum Arch Microbiol Immunol* 1998;57:231-42

Beta glucans are polysaccharides derived from oats, mushrooms, or yeasts. Beta glucans are particularly effective for priming and **normalizing** the immune system while decreasing infections and mortality rates in the severely ill.

*Akramiene et al: Effects of beta-glucans on the immune system. *Medicina (Kaunas)* 2007;43(8):597-606

*Babineau et al: A phase II multicenter, double-blind, randomized, placebo-controlled study of three dosages of an immunomodulator (PGG-glucan) in high-risk surgical patients. *Arch Surg* 1994 Nov;129(11):1204-10

*Babineau et al: Randomized phase I/II trial of a macrophage-specific immunomodulator (PGG-glucan) in high-risk surgical patients. *Ann Surg* 1994 Nov;220(5):601-9

*Chan et al: The effects of beta-glucan on human immune and cancer cells. *J Hematol Oncol* 2009 Jun 10;2:25

*Clayton, Paul MD. *Natural Defences: strengthening your immune system against modern threats.* Booklet by the Sisu company and available online.

- *Czop & Austen: A β -glucan inhibitable receptor on human monocytes: its identity with the phagocytic receptor for particulate activators of the alternative complement pathway. *J Immunol* 1985;134:2588-93
- *de Felipe et al: Infection prevention in patients with severe multiple trauma with the immunomodulator beta 1-3 polyglucose (glucan). *Surg Gyne Obst* 1993;177(4):383-88
- *Dellinger et al: Effect of PGG-glucan on the rate of serious postoperative infection or death observed after high-risk gastrointestinal operations. Betafectin Gastrointestinal Study Group. *Arch Surg* 1999 Sep;134(9):977-83
- *Gao et al: Active hexose correlated compound enhances tumor surveillance through regulating both innate and adaptive immune responses. *Cancer Immunol Immunother* 2006 Oct;55(10):1258-66
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Bromelain has immune-regulating action but appears to be a novel approach in accelerating liver circulation after warm ischemia.

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*Chen et al: Immunological alterations in lupus-prone autoimmune (NZB/NZW) F1 mice by mycelia Chinese medicinal fungus *Cordyceps sinensis*-induced redistributions of peripheral mononuclear T lymphocytes. *West Indian Med J* 2010 Jun;59(3):245-8

*Cheng et al: Effects of compound preparation of *Cordyceps sinensis* and *Tripterygium hypoglaucum* on survival time of pigskin after allogeneic transplantation. *Zhong Xi Yi Jie He Xue Bao* 2006 Mar;4(2):185-8

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*Zhang et al: Prevention of type 1 diabetes by immature dendritic cells treated with an ethanol extract of *Paecilomyces hepiali* Chen mycelium. *J Clin Oncol* 2005 Oct 20;23(30):7467-74

Cordyceps and **Wormwood** prevent the recurrence of lupus nephritis.

*Lu: Study on effect of *Cordyceps sinensis* and artemisinin in preventing recurrence of lupus nephritis. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2002 Mar;22(3):169-71

Curcumin decreases the symptoms of several autoimmune diseases.

*Bright: Curcumin and autoimmune disease. *Adv Exp Med Biol* 2007;595:425-51

*Heng et al: Drug-induced suppression of phosphorylase kinase activity correlates with resolution of psoriasis as assessed by clinical, histological and immunohistochemical parameters. *Br J Dermatol* 2000 Nov;143(5):937-49

*Xie et al: Amelioration of experimental autoimmune encephalomyelitis by curcumin treatment through inhibition of IL-17 production. *Int Immunopharmacol* 2009 May;9(5):575-81

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- *Wong et al: Protective effect of polysaccharides from *Angelica sinensis* on ulcerative colitis in rats. *Inflammopharma* 2008 Aug;16(4):162-7
- *Ye et al: Effect of polysaccharides from *Angelica sinensis* on gastric ulcer healing. *Radiat Res* 2006;165(5):546-52

Elm Bark has a protective and immune-regulating effect.

- *Lee et al: Effects of elm bark (*Ulmus davidiana* var. *japonica*) extracts on the modulation of immunocompetence in mice. *J Med Food* 2007 Mar;10(1):118-25

Enzyme therapy assists in stabilizing the immune system.

- *Bohager 2009:36,37
- *Bohager 2006:99-100
- *Lee & Turner 1998:75-78

Essential Oils prevent cyclophosphamide-induced immunosuppression (Clove, Ginger, Sage). **Oregano oil** is a well-known antimicrobial but it also increases liver regeneration in experiments dealing with partial liver removal.

- *Carrasco et al: Immunomodulatory activity of *Zingiber officinale* Roscoe, *Salvia officinalis* L. and *Syzygium aromaticum* L. essential oils: evidence for humor- and cell-mediated responses. *J Pharm Pharmacol* 2009 Jul;61(7):961-7
- *Uyanoglu et al: Effects of carvacrol upon the liver of rats undergoing partial hepatectomy. *Toxicol Sci* 2007 Sep;99(1):190-202

Figs have antioxidant and immune-boosting properties.

- *Yang et al: Antioxidant and immunity activity of water extract and crude polysaccharide from *Ficus carica* L. Fruit. *Plant Foods Hum Nutr* 2009 Jun;64(2):167-73

Flaxseed protects the kidneys, and ultimately improves blood pressure in those with lupus nephritis, an autoimmune disorder.

- *Clark et al: Flaxseed in lupus nephritis: a two-year nonplacebo-controlled crossover study. *J Am Coll Nutr* 2001 Apr;20(2 Suppl):143-8
- *Clark et al: A novel treatment for lupus nephritis: lignan precursor derived from flax. *Lupus* 2000;9(6):429-36

Goji berries/Wolfberry regulate the immune system and are especially good for a declining eyesight.

- *Amagase et al: Immunomodulatory effects of a standardized *Lycium barbarum* fruit juice in Chinese older healthy human subjects. *J Med Food* 2009 Oct;12(5):1159-65
- *Amagase & Nance: A randomized, double-blind, placebo-controlled, clinical study of the general effects of a standardized *Lycium barbarum* (Goji) Juice, GoChi. *J Altern Complement Med* 2008 May;14(4):403-12
- *Potterat: Goji (*Lycium barbarum* and *L. chinense*): Phytochemistry, pharmacology and safety in the perspective of traditional uses and recent popularity. *Planta Med* 2010;76(1):7-19

Grape seed extract reduces inflammation and oxidative stress in patients with systemic sclerosis.

- *Kalin et al: Activin, a grape seed-derived proanthocyanidin extract, reduces plasma levels of oxidative stress and adhesion molecules (ICAM-1, VCAM-1 and E-selectin) in systemic sclerosis. *Free Radic Res* 2002 Aug;36(8):819-25

Homeopathics improve conditions of those with chronic fatigue syndrome, often a symptom of an improper functioning immune system.

*Weatherley-Jones et al: A randomised, controlled, triple-blind trial of the efficacy of homeopathic treatment for chronic fatigue syndrome. *J Psychosom Res* 2004 Feb;56(2):189-97

Maitake mushrooms stimulate proper immune function.

*Li et al: Anti-tumor effect of polysaccharide from *Grifola frondosa* and its influence on immunological function. *Zhong Yao Cai* 2003 Jan;26(1):31-2

*Wang et al: Oral administration of submerged cultivated *Grifola frondosa* enhances phagocytic activity in normal mice. *J Pharm Pharmacol* 2008 Feb;60(2):237-43

Mangosteen fruit is a potent antioxidant that displays immune-regulating activity that equals some drugs but without the side effects.

*Chanarat et al: Immunopharmacological activity of polysaccharide from the pericarp of mangosteen *garcinia*: phagocytic intracellular killing activities. *J Med Assoc Thai* 1997, Sept;80(1):S149-54

*Tang et al: Effect of a mangosteen dietary supplement on human immune function: a randomized, double-blind, placebo-controlled trial. *J Med Food* 2009 Aug;12(4):755-763

Melatonin safely and effectively treats systemic sclerosis (hardening and scarring of the skin) and pulmonary sarcoidosis (lung inflammation that can turn into fibrosis). Melatonin also reduces oxidative damage to ALS (Amyotrophic lateral sclerosis) patients.

*Hudspith et al: Lack of immune deficiency in sarcoidosis: compartmentalisation of the immune response. *Thorax* 1987 April;42(4):250-5

*Pignone et al: Melatonin is a safe and effective treatment for chronic pulmonary and extrapulmonary sarcoidosis. *J Pineal Res* 2006 Sep;41(2):95-100

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Melatonin, Quercetin and NAC (n-acetyl-cysteine) reduce oxidative damage associated with Grave's Disease, an autoimmune disorder involving the thyroid.

*Tang et al: Oxidative stress in Graves' disease patients and antioxidant protection against lymphocytes DNA damage in vitro. *Pharmazie* 2005 Sep;60(9):696-700

Murill mushrooms have immune regulating effects.

*Liu et al: Immunomodulating activity of *Agaricus brasiliensis* KA21 in mice and in human volunteers. *Evid Based Complement Alternat Med* 2008 Jun;5(2):205-219

Natural substances (Curcumin, ECGC, Green Tea, Milk Thistle, Pomegranate, Quercetin, Resveratrol) may prevent osteoarthritis and rheumatoid arthritis. **Nutritional interventions** (Vitamin E, B9, Alpha lipoic acid, CoQ10, EGCG, Ginkgo biloba, Melatonin, Chelated Copper, Carnitine) are also successful in treating ALS whereas high-intensity exercise and calorie restriction was not.

*Khalifé & Zafarullah: Molecular targets of natural health products in arthritis. *Arthritis Res Ther* 2011 Feb 3;13(1):102

*Patel & Hamadeh: Nutritional and exercise-based interventions in the treatment of amyotrophic lateral sclerosis. *Clin Nutr* 2009 Dec;28(6):604-17

Noni fruit is an immune-regulator that stimulates interferon production as well as T and B lymphocytes.

- *Hirazumi & Furusawa: An immunomodulatory polysaccharide-rich substance from the fruit juice of *Morinda citrifolia* (Noni) with antitumour activity. *Phytother Res* 1999;13:380-387
- *Nayak & Mengi: Immunostimulant activity of noni (*Morinda citrifolia*) on T and B lymphocytes. *Pharm Biol* 2010 Jul;48(7):724-31
- *Palu et al: The effects of *Morinda citrifolia* L. (noni) on the immune system: its molecular mechanisms of action. *J Ethnopharmacol* 2008 Feb 12;115(3):502-6
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- *West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Nutrition has a profound effect on proper functioning of the immune system. Nutrient deficiencies compromise the immune system, in the old and the young, contribute to disease, and put surgery patients at risk for complications.

- *Chandra: Influence of multinutrient supplement on immune responses and infection-related illness in 50-65 year old individuals. *Nutr Res* 2002;22:5-11
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- *Chandra: Nutrition and the immune system: an introduction. *Am J Clin Nutr* 1997 Aug;66(2):460S-63S
- *Chandra: Effect of vitamin and trace-element supplementation on immune responses and infection in elderly subjects. *Lancet* 1992;340:1124-27
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- *Harbige: Nutrition and immunity with emphasis on infection and autoimmune disease. *Nutr Health* 1996;10(4):285-312
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- *Naber et al: Prevalence of malnutrition in nonsurgical hospitalized patients and its association with disease complications. *Am J Clin Nutr* 1997 Nov;66(5):1232-9
- *Rayman: Dietary selenium: time to act. *BMJ* 1997;314:387- 8

Olive leaf decreases the risk of autoimmunity.

- *Cvjetičanin et al: Dried leaf extract of *Olea europaea* ameliorates islet-directed autoimmunity in mice. *Br J Nutr* 2009 Dec 22:1-12

Omega-3 fatty acids and a low carb diet maintains a remission of Crohn's disease.

- *Lorenz-Meyer et al: Omega-3 fatty acids and low carbohydrate diet for maintenance of remission in crohn's disease: a randomized controlled multicenter trial. *Scandin J Gastroenter* 1996;31(8):778-85

Papaya seed extract has immune-regulating properties.

- *Henshaw et al: Possible immunomodulatory actions of *Carica papaya* seed extract. *Clin Hemorheol Microcirc* 2003;29(3-4):219-29

Phytosterols have several health benefits especially for cholesterol and the prostate but they also have immune-regulating properties.

- *Bouc et al: Beta-Sitosterol and beta-sitosterol glucoside stimulate human peripheral blood lymphocyte proliferation: implications for their use as an immunomodulatory combination. *Int J Immunopharmacol* 1996;18(12):693-700

Pomegranates reduce pain and inflammation of the autoimmune disease, rheumatoid arthritis. The seed oil protects against pesticide-induced kidney damage and enhances B-cell formation. B-cells are lymphocytes that play an important part in the humoral immune response.

- *Balbir-Gurman et al: Consumption of pomegranate decreases serum oxidative stress and reduces disease activity in patients with active rheumatoid arthritis: a pilot study. *Isr Med Assoc J* 2011 Aug;13(8):474-9
- *Bouroshaki et al: Protective effect of pomegranate seed oil on hexachlorobutadiene-induced nephrotoxicity in rat kidneys. *Ren Fail* 2010 Jun;32(5):612-7
- *Shukla et al: Consumption of hydrolyzable tannins-rich pomegranate extract suppresses inflammation and joint damage in rheumatoid arthritis. *Nutr* 2008 Jul-Aug;24(7-8):733-43
- *Yamasaki et al: Dietary effect of pomegranate seed oil on immune function and lipid metabolism in mice. *Nutrition* 2006 Jan;22(1):54-9

Probiotics not only strengthen the immune system but have proven to reduce the rate of bacterial infections after liver transplants. Probiotics play an important role in the remission of inflammatory bowel disease and eczema.

- *Anuradha & Rajeshwari: Probiotics in health and disease. *J Indian Acad Clin Med* 2005;6(1):67-72
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- *Kalina: *Lactobacilli* as natural enhancer of cellular immune response. *Discov Med (John Hopkins)* Published on July 25, 2009
- *Larsen et al: Predominant genera of fecal microbiota in children with atopic dermatitis are not altered by intake of probiotic bacteria *Lactobacillus acidophilus* NCFM and *Bifidobacterium animalis* subsp. *lactis* Bi-07. *FEMS Microbiol Ecol* 2011;75(3):482-96
- *Mennigen & Bruwer: Effect of probiotics on intestinal barrier function. *Ann N Y Acad Sci* 2009 May;1165:183-9
- *Pina et al: Improvement of intestinal function in cystic fibrosis patients using probiotics. *An Pediatr (Barc)* 2008 Dec;69(6):501-5
- *Rayes et al: Supply of pre- and probiotics reduces bacterial infection rates after liver transplantation—a randomized, double-blind trial. *Am J Transplant* 2005 Jan;5(1):125-30
- *Resta-Lenert & Barrett: Modulation of intestinal barrier properties by probiotics: role in reversing colitis. *Ann N Y Acad Sci* 2009 May;1165:175-82
- *Sahin et al: Effects of the probiotic agent *Saccharomyces Boulardii* on the DNA damage in acute necrotizing pancreatitis induced rats. *Hum Exp Toxicol* 2007 Aug;26(8):653-61
- *Tursi et al: Mesalazine and/or *Lactobacillus casei* in maintaining long-term remission of symptomatic uncomplicated diverticular disease of the colon. *Hepatogastroentero* 2008 May-Jun;55(84):916-20
- *Vilela et al: Influence of *Saccharomyces boulardii* on the intestinal permeability of patients with Crohn's disease in remission. *Scand J Gastroenterol* 2008;43(7):842-8
- *Wickens et al: A differential effect of 2 probiotics in the prevention of eczema and atopy: a double-blind, randomized, placebo-controlled trial. *J Allergy Clin Immunol* 2008;122(4):788-94
- *Wu & Vallance: *Saccharomyces boulardii* ameliorates *Citrobacter rodentium*-induced colitis through actions on bacterial virulence factors. *Am J Physiol Gastrointest Liver Physiol* 2008 Jan;294(1):G295-306
- *Wullt et al: *Lactobacillus plantarum* 299v enhances the concentrations of fecal short-chain fatty acids in patients with recurrent *clostridium difficile*-associated diarrhea. *Dig Dis Sci.* 2007 Sep;52(9):2082-6

Reishi mushrooms effectively treat Sjogren's syndrome especially when traditional methods have failed and suppress proinflammatory cytokines in rheumatoid arthritis.

- *Ho et al: Ganoderma lucidum polysaccharide peptide reduced the production of proinflammatory cytokines in activated rheumatoid synovial fibroblast. *Mol Cell Biochem* 2007 Jul;301(1-2):173-9
- *Li et al: Safety and efficacy of Ganoderma lucidum (lingzhi) and San Miao San supplementation in patients with rheumatoid arthritis: a double-blind, randomized, placebo-controlled pilot trial. *J Pediatr Gastroenterol Nutr* 2010 Feb;50(2):208-11
- *Qi et al: Effects of Ganoderma lucidum spores on sialoadenitis of nonobese diabetic mice. *Chin Med J (Engl)* 2009 Mar 5;122(5):556-60

Shiitake mushrooms increase intestinal immunity.

- *Shen et al: Potentiation of intestinal immunity by micellary mushroom extracts. *Biomed Res* 2007 Apr;28(2):71-7

Stevia, an herb that is about 200 times sweeter than table sugar, is often used by diabetics and non-diabetics alike because of its health benefits and no calories. Surprisingly, one of its health benefits is that it helps regulate the immune system.

- *Boonkaewwan et al: Anti-Inflammatory and Immunomodulatory Activities of Stevioside and Its Metabolite Steviol on THP-1 Cells. *J Agric Food Chem* 2006 Feb 8;54(3):785-9
- *Sehar et al: Immune up regulatory response of a non-caloric natural sweetener, stevioside. *Chem Biol Interact* 2008 May 28;173(2):115-21
- *Shukla et al: Antioxidant ability and total phenolic content of aqueous leaf extract of *Stevia rebaudiana* Bert. *Exp Toxicol Pathol* 2011 Mar 4

Vitamin C and Selenium prevent tissue damage in patients with Raynaud's and systemic sclerosis.

- *Herrick et al: Micronutrient antioxidant status in patients with primary Raynaud's phenomenon and systemic sclerosis. *J Rheumatol* 1994 Aug;21(8):1477-83

Vitamin D3 alone or with **Beta-sitosterol** benefits such autoimmune conditions as multiple and systemic sclerosis and psoriasis. A deficiency of vitamin D is very high in those with sclerosis.

- *Alappat et al: Effect of vitamin D and β -sitosterol on immune function of macrophages. *Int Immunopharmacol* 2010 Nov;10(11):1390-6
- *Schauber & Gallo: Antimicrobial peptides and the skin immune defense system. *J Allergy Clin Immunol* 2009 Sep;124(3 Suppl 2):R13-8
- *Vacca et al: Vitamin D deficiency and insufficiency in 2 independent cohorts of patients with systemic sclerosis. *J Rheumatol* 2009 Jul 31

Vitamin E enhances beneficial immune responses.

- *Meydani et al: Vitamin E supplementation and in vivo immune response in healthy elderly subjects: a randomized controlled trial. *JAMA* 1997;277:1380-86

Vitamin K2 improves bone status after lung and heart transplantation.

- *Forli et al: Dietary vitamin K2 supplement improves bone status after lung and heart transplantation. *Transplantation* 2010 Feb 27;89(4):458-64

LAXATIVES



(USED TO RELIEVE CONSTIPATION)

COMMON EXAMPLES:

Bulk-forming

polycarbophil – Equalactin, Konsil fiber, Mitrolan, and others
psyllium – Fiberall, Metamucil, and others

Lubricant

mineral oil – Fleet and others

Osmotic

glycerin – Babylax, Ophthalgan, and others
lactulose – Cephulac, Chronulac, and others
polyethylene glycol – GoLYTELY, Peglyte, and others

Saline

magnesiums/aluminums – Maalox, Alumed, and others
sulfate - Epsom salts
phosphate - Fleet, Phospho-Soda

Stimulants

bisacodyl – Carter’s Little Pills, Dulcolax, Fleet, and others

casanthranol/cascara

phenolphthalein – Correctol, Ex-Lax, Feen-a-mint, and others
senna – Castoria, Senokot, and others

Softeners

docusate calcium – Sulfalax and others
potassium – Dialose and others
sodium – Colace and others

DEplete:

A, beta carotene, B2, B3, B9, B12, D, E, K, EFAs, calcium, magnesium, iron, phosphorus, potassium (and most other minerals)

☞ Laxatives speed up the passage of food through the digestive system thus preventing the absorption of nutrients. Those dependent on laxatives rapidly become nutrient-deficient.

☞ Mineral oil is a petroleum-based product that accumulates in body fat and breast milk.

*Concin et al: Mineral oil paraffins in human body fat and milk. *Food Chem Toxicol* 2008 Feb;46(2):544-52

SUGGESTED ALTERNATIVES:

Abdominal massage with or without **essential oils** (Rosemary, Lemon, Peppermint) is effective for relieving constipation in adults, children, and the elderly.

*Ernst: Abdominal massage therapy for chronic constipation: A systematic review of controlled clinical trials. *Forsch Komplementarmed* 1999 Jun;6(3):149-51

*Higley 2010:414

*Jeon & Jung: The effects of abdominal meridian massage on constipation among CVA patients. *Taehan Kanho Hakhoe Chi* 2005 Feb;35(1):135-42

*Kim et al: Effect of aromatherapy massage for the relief of constipation in the elderly. *Taehan Kanho Hakhoe Chi* 2005 Feb;35(1):56-64

*Lämås et al: Abdominal massage for people with constipation: a cost utility analysis. *J Adv Nurs* 2010 Aug;66(8):1719-29

*Lämås et al: Effects of abdominal massage in management of constipation--a randomized controlled trial. *Int J Nurs Stud* 2009 Jun;46(6):759-67

Bamboo shoots are a good fiber food for relieving constipation in young women.

*Park & Jhon: Effects of bamboo shoot consumption on lipid profiles and bowel function in healthy young women. *Exp Biol Med (Maywood)* 2008 Oct;233(10):1242-54

Bromelain from Pineapples is an enzyme that is gentle, effective and safe to be used as a laxative especially for post-operative constipation.

*Wen et al: Bromelain improves decrease in defecation in postoperative rats: modulation of colonic gene expression of inducible nitric oxide synthase. *Pharmacol Res* 2007 Sep;56(3):254-60

Calendula flowers prove their traditional use for relieving abdominal cramps and constipation.

*Bashir et al: Studies on spasmogenic and spasmolytic activities of *Calendula officinalis* flowers. *Phytother Res* 2006 Oct;20(10):906-10

Cascara sacra is safer and more effective than bisacodyl. More importantly, it does not contribute to cancer as does bisacodyl.

*Borrelli et al: Effect of bisacodyl and cascara on growth of aberrant crypt foci and malignant tumors in the rat colon. *Life Sci*. 2001 Sep 7;69(16):1871-7

Diet plays a huge role in constipation or proper elimination – so does exercise. **Plant fiber**, along with plenty of water, improves constipation and various other digestive issues – colitis, hemorrhoids, Barrett's esophagus, diverticular and so on. Fried foods have been linked to bile duct and gallbladder cancer and a "Western" diet contributes to constipation.

*Aldoori et al: A prospective study of diet and the risk of symptomatic diverticular disease in men. *Zhen Ci Yan Jiu* 2009 Jun;34(3):180-2,187

*Aldoori et al: A prospective study of dietary fiber types and symptomatic diverticular disease in men. *Liver Transpl* 2008 Apr;14(4):451-9

*Aldoori et al: A prospective study of dietary fiber types and symptomatic diverticular disease in men. *J Nutr* 1998 Apr;128(4):714-9

- *Aldoori et al: Prospective study of physical activity and the risk of symptomatic diverticular disease in men. *Gut* 1995 Feb;36(2):276-82
- *Aldoori et al: A prospective study of diet and the risk of symptomatic diverticular disease in men. *Am J Clin Nutr* 1994 Nov;60(5):757-64
- *Alonso-Coello et al: Laxatives for the treatment of hemorrhoids. *Cochrane Database Syst Rev* 2005(4):CD004649
- *Fisher et al: Cereal dietary fiber consumption and diverticular disease: a lifespan study in rats. *Am J Clin Nutr* 1985 Nov;42(5):788-804
- *Greenway et al: Fourteen weeks of treatment with Viscofiber increased fasting levels of glucagon-like peptide-1 and peptide-YY. *J Med Food* 2007 Dec;10(4):720-4
- *Hairston et al: Lifestyle Factors and 5-Year Abdominal Fat Accumulation in a Minority Cohort: The IRAS Family Study. *Obesity (Silver Spring)* 2011 Jun 16
- *Howarth et al: Dietary fiber and weight regulation. *Nutr Rev* 2001 May;59(5):129-39
- *Jenkins et al: Effect of dietary fiber on complications of gastric surgery: prevention of postprandial hypoglycemia by pectin. *Gastroentero* 1977 Aug;73(2):215-7
- *Kanauchi et al: Preventive effects of enzyme-treated rice fiber in a restraint stress-induced irritable bowel syndrome model. *Int J Mol Med* 2010 Apr;25(4):547-55
- *Kubo et al: Effects of dietary fiber, fats, and meat intakes on the risk of Barrett's esophagus. *Nutr Cancer* 2009;61(5):607-16
- *Matsuba et al: Overview of epidemiology of bile duct and gallbladder cancer focusing on the JACC Study. *J Epidemiol* 2005 Jun;15 Suppl 2:S150-6
- *Okubo et al: Dietary patterns associated with functional constipation among Japanese women aged 18 to 20 years: a cross-sectional study. *J Nutr Sci Vitaminol (Tokyo)* 2007 Jun;53(3):232-8
- *Perez-Miranda et al: Effect of fiber supplements on internal bleeding hemorrhoids. *Hepatogastroenter* 1996 Nov-Dec;43(12):1504-7
- *Sansbury et al: The effect of strict adherence to a high-fiber, high-fruit and -vegetable, and low-fat eating pattern on adenoma recurrence. *Am J Epidemiol* 2009 Sep 1;170(5):576-84
- *Weisberger & Jamieson: Clinical inquiries: How can you help prevent a recurrence of diverticulitis? *J Fam Pract* 2009 Jul;58(7):381-2

Glucomannan is a fiber from the konjac root which can relieve adult or child constipation and can safely be taken while pregnant – as can any fiber as long as enough water is also consumed.

- *Chen et al: Supplementation of konjac glucomannan into a low-fiber Chinese diet promoted bowel movement and improved colonic ecology in constipated adults: a placebo-controlled, diet-controlled trial. *J Am Coll Nutr* 2008 Feb;27(1):102-8
- *Loening-Baucke et al: Fiber (glucomannan) is beneficial in the treatment of childhood constipation. *Pediatr* 2004 Mar;113(3 Pt 1):e259-64
- *Marzio et al: Mouth-to-cecum transit time in patients affected by chronic constipation: effect of glucomannan. *Am J Gastroenterol* 1989 Aug;84(8):888-91
- *Passaretti et al: Action of glucomannans on complaints in patients affected with chronic constipation: a multicentric clinical evaluation. *Ital J Gastroenterol* 1991 Sep-Oct;23(7):421-5
- *Signorelli et al: A clinical study of the use of a combination of glucomannan with lactulose in the constipation of pregnancy. *Minerva Ginecol* 1996 Dec;48(12):577-82
- *Staiano et al: Effect of the dietary fiber glucomannan on chronic constipation in neurologically impaired children. *J Pediatr* 2000 Jan;136(1):41-5

Guar Gum is a fiber that is safe for hospitalized patients as an effective treatment for constipation and for preventing the dumping syndrome in those who have undergone gastric resection.

- *Belo et al: Effect of partially hidrolized guar-gum in the treatment of functional constipation among hospitalized patients. *Arq Gastroenterol* 2008 Jan-Mar;45(1):93-5

*Harju et al: Effect of guar gum on gastric emptying after gastric resection. JPEN J Parenter Enteral Nutr 1984 Jan-Feb;8(1):18-20

*Harju & Larmi: Efficacy of guar gum in preventing the dumping syndrome. JPEN J Parenter Enteral Nutr 1983 Sep-Oct;7(5):470-2

Hempseed is a safe and nourishing remedy for adults and children in relieving constipation.

*Cheng et al: Efficacy of a Chinese herbal proprietary medicine (Hemp Seed Pill) for functional constipation. Am J Gastroenter 2010 Nov 2

Jujube is an Asian date that safely and effectively treats constipation although other dates are known to do this as well.

*Naftali et al: Ziziphus jujuba extract for the treatment of chronic idiopathic constipation: a controlled clinical trial. Digestion 2008;78(4):224-8

Kiwi fruit relieves constipation.

*Chan et al: Increasing dietary fiber intake in terms of kiwifruit improves constipation in Chinese patients. Eur J Pharmacol 2008 Jun 10;587(1-3):273-80

*Li et al: Animal experimental study of kiwi juice's health function on facilitating bowel movement. J Food Sci Biotech January 2007

Magnesium deficiency not only contributes to constipation but a myriad of other health issues.

*Murakami et al: Association between dietary fiber, water and magnesium intake and functional constipation among young Japanese women. Eur J Clin Nutr 2007 May;61(5):616-22

Oat Bran is a fiber that improves constipation and the bioavailability of vitamin B12.

*Sturtzel et al: The status of vitamins B6, B12, folate, and of homocysteine in geriatric home residents receiving laxatives or dietary fiber. J Nutr Health Aging 2010 Mar;14(3):219-23

Parsley appears to be an effective laxative.

*Kreydiyyeh et al: The mechanism underlying the laxative properties of parsley extract. Phyto 2001 Sep;8(5):382-8

Pea pod fiber has a prebiotic influence that increases bifidobacteria which ultimately, helps correct constipation.

*Iwata et al: The screening method of a bifidogenic dietary fiber extracted from inedible parts of vegetables. J Nutr Sci Vitaminol (Tokyo) 2009 Aug;55(4):385-8

Probiotics can help overcome constipation in adults, children, and infants. Probiotics are needed for digestion as well as the immune system. PRE-biotics are food sources for probiotics which ultimately keep the gut functioning properly.

*Amenta et al: Diet and chronic constipation. Benefits of oral supplementation with symbiotic zir fos (Bifidobacterium longum W11 + FOS Actilight). Acta Biomed 2006 Dec;77(3):157-62

*Bekkali et al: The role of a probiotics mixture in the treatment of childhood constipation: a pilot study. Nutr J 2007;6:17

*Bu et al: Lactobacillus casei rhamnosus Lcr35 in children with chronic constipation. Pediatr Int 2007 Aug;49(4):485-90

*De Paula et al: Effect of the ingestion of a symbiotic yogurt on the bowel habits of women with functional constipation. Canc Res 2009 Dec 1;69(23):8958-66

*Mandalari et al: In vitro evaluation of the prebiotic properties of almond skins (Amygdalus communis L.). FEMS Microbiol Lett 2010 Mar 1;304(2):116-22

*Tabbers et al: Effect of the consumption of a fermented dairy product containing Bifidobacterium lactis DN-173 010 on constipation in childhood: a multicentre randomised controlled trial (NTRTC: 1571). *Toxicol Ind Health* 2007 Oct;23(9):507-13

*Yang et al: Effect of a fermented milk containing Bifidobacterium lactis DN-173010 on Chinese constipated women. *World J Gastroenterol* 2008 Oct 28;14(40):6237-43

Psyllium fiber and Gum Arabic improve bowel conditions including fecal incontinence.

*Bliss et al: Supplementation with dietary fiber improves fecal incontinence. *Nurs Res* 2001 Jul-Aug;50(4):203-13

Senna is a safe and effective alternative to the conventional polyethylene glycol-electrolyte lavage solution (PEG-ES) for colonoscopy preparation.

*Radaelli et al: High-dose senna compared with conventional PEG-ES lavage as bowel preparation for elective colonoscopy: a prospective, randomized, investigator-blinded trial. *Am J Gastroenterol* 2005 Dec;100(12):2674-80

Water is so important in preventing constipation, among other health concerns, especially when consuming fiber. The body is roughly 80% water so it stands to reason that water is what it needs. I never recommend tap water unless that is all you have available. Tap water usually contains chlorine, fluoride and a host of other unwanted metals and microbes.

*Murakami et al: Association between dietary fiber, water and magnesium intake and functional constipation among young Japanese women. *Eur J Clin Nutr* 2007 May;61(5):616-22

Yacon is a Peruvian tuber with significant antioxidant activity. Related to sunflower and Jerusalem artichoke, it speeds transit time through the bowel. It is particularly good for diabetics and those with chronic constipation as it contains a good supply of inulin (a prebiotic food).

*Alvarez et al: Prebiotic inulin/oligofructose in Yacón root (*Smallanthus sonchifolius*), phytochemistry and standardization as basis for clinical and pre-clinical research. *Rev Gastroenterol Peru* 2008 Jan-Mar;28(1):22-7

*Geyer et al: Effect of yacon (*Smallanthus sonchifolius*) on colonic transit time in healthy volunteers. *Digestion* 2008;78(1):30-3

*Valentová et al: Radical scavenging and anti-lipoperoxidative activities of *Smallanthus sonchifolius* leaf extracts. *J Agric Food Chem* 2005 Jul 13;53(14):5577-82



MUSCLE RELAXANTS

COMMON EXAMPLES:

- carisoprodal** – Soma, Vanadom
- cyclobenzaprine** – Flexeril and others
- metaxalone** – Skelaxin
- methocarbamol** – Robaxin and others
- paracetamol** – acetaminophen, Panadol, and others

DEplete:

C, B9, iron, potassium

☞ **Cholesterol-lowering drugs**, especially Statins, have a history of causing various muscle complaints.

- *Franc et al: A comprehensive description of muscle symptoms associated with lipid-lowering drugs. *Cardiovasc Drugs Ther* 2003 Sep-Nov;17(5-6):459-65
- *Janssen et al: Muscle problems due to statins: underestimated. *Ned Tijdschr Geneeskd* 2010 ;154:A1684
- *Marzoa-Rivas et al: Safety of statins when response is carefully monitored: a study of 336 heart recipients. *Transplant Proc* 2005 Nov;37(9):4071-3
- *Scott et al: Statin therapy, muscle function and falls risk in community-dwelling older adults. *QJM* 2009 Sep;102(9):625-33
- *Thompson et al: Lovastatin increases exercise-induced skeletal muscle injury. *Metabolism* 1997 Oct;46(10):1206-10

SUGGESTED ALTERNATIVES:

Anise seed has a long history as an antispasmodic. This study proves its historical use.

- *Tirapelli et al: Antispasmodic and relaxant effects of the hidroalcoholic extract of *Pimpinella anisum* (Apiaceae) on rat anococcygeus smooth muscle. *J Clin Gastroenterol* 2001 Jul;33(1):27-31

Arnica is Homeopathy's first line of defence for pain and muscle stiffness.

- *Tveiten et al: Effect of Arnica D 30 during hard physical exertion. A double-blind randomized trial during the Oslo Marathon 1990. *Tidsskr Nor Laegeforen* 1991 Dec 10;111(30):3630-1

Beetroot is high in natural nitrates which enhance muscle performance especially after exercise.

- *Bailey et al: Dietary nitrate supplementation enhances muscle contractile efficiency during knee-extensor exercise in humans. *J Appl Physiol* 2010 May 13

*Bailey et al: Dietary nitrate supplementation reduces the O₂ cost of low-intensity exercise and enhances tolerance to high-intensity exercise in humans. *J Appl Physiol* 2009 Oct;107(4):1144-55

Bromelain and Fresh pineapple juice increase the healing of achilles tendon injuries. The achilles tendon is located at the back of the leg and attaches the calf muscle to the heel bone. While this may have little to do with muscle cramps, it is another exercise-related injury.

*Aiyegbusi et al: A comparative study of the effects of bromelain and fresh pineapple juice on the early phase of healing in acute crush achilles tendon injury. *J Med Food* 2011 Apr;14(4):348-52

*Aiyegbusi et al: Bromelain in the early phase of healing in acute crush Achilles tendon injury. *Ann Nutr Metab* 2009;54(4):283-90

Carnitine is an amino acid that reduces muscle fatigue. It is a substance synthesized in the body from two amino acids - lysine and methionine – and available as a supplement.

*Moriggi et al: A DIGE approach for the assessment of rat soleus muscle changes during unloading: effect of acetyl-L-carnitine supplementation. *Proteomics* 2008 Sep;8(17):3588-604

Citrulline malate enhances athletic performance and reduces muscle pain.

*Pérez-Guisado & Jakeman: Citrulline malate enhances athletic anaerobic performance and relieves muscle soreness. *J Strength Cond Res* 2010 May;24(5):1215-22

Coconut water is better nutritionally than commercial sports drinks for rehydration after exercise and for preventing muscle spasms. It can even be used as an IV rehydration and resuscitation fluid.

*Campbell-Falck et al: The intravenous use of coconut water. *Am J Emerg Med* 2000 Jan;18(1):108-11

*Ismail et al: Rehydration with sodium-enriched coconut water after exercise-induced dehydration. *SE Asian J Trop Med Pub Health* 2007 Jul;38(4):769-85

*Saat et al: Rehydration after exercise with fresh young coconut water, carbohydrate-electrolyte beverage and plain water. *J Physiol Anthropol Appl Human Sci* 2002 Mar;21(2):93-104

Coriander is an herb with muscle relaxant effects.

*Emamghoreishi et al: Coriandrum sativum: evaluation of its anxiolytic effect in the elevated plus-maze. *Mol Cancer Ther* 2007 Mar;6(3):1013-21

CoQ10 (ubiquinol form) is vital for every cell in the body to produce energy but it has a special affinity for the heart muscle.

*Kon et al: Effect of Coenzyme Q10 supplementation on exercise-induced muscular injury of rats. *Exerc Immunol Rev* 2007;13:76-88

Creatine enhances muscle endurance and recovery after exercise-induced damage and relieves cramping. Creatine has long been used by body builders but it is a supplement that is safely taken for overall improvement in muscle quality for the diabetic, those on hemodialysis or suffering from dystrophies, the aged as well as the athlete.

*Balsom et al: Creatine in humans with special reference to creatine supplementation. *Sports Med (Auckland)* 1994;18(4):268-80

*Candow & Chilibeck: Effect of creatine supplementation during resistance training on muscle accretion in the elderly. *J Nutr Health Aging* 2007 Mar-Apr;11(2):185-8

*Chung et al: Creatine supplements in patients with idiopathic inflammatory myopathies who are clinically weak after conventional pharmacologic treatment: Six-month, double-blind, randomized, placebo-controlled trial. *Arthritis Rheum* 2007 May 15;57(4):694-702

- *Cooke et al: Creatine supplementation enhances muscle force recovery after eccentrically-induced muscle damage in healthy individuals. *J Int Soc Sports Nutr* 2009;6:13
- *Greenhaff et al: Influence of oral creatine supplementation of muscle torque during repeated bouts of maximal voluntary exercise in man. *Clin Sci (London)* 1993;84(5):565-71
- *Gualano et al: Creatine supplementation does not impair kidney function in type 2 diabetic patients: a randomized, double-blind, placebo-controlled, clinical trial. *Eur J Appl Physiol* 2010 Oct 26
- *Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40
- *Hersch et al: Creatine in Huntington disease is safe, tolerable, bioavailable in brain and reduces serum 8OH2'dG. *Neurol* 2006 Jan 24;66(2):250-2
- *Hespel & Derave: Ergogenic effects of creatine in sports and rehabilitation. *Subcell Biochem* 2007;46:245-59
- *Tarnopolsky & MacLennan: Creatine monohydrate supplementation enhances high-intensity exercise performance in males and females. *Int J Sport Nutr Exerc Metab* 2000 Dec;10(4):452-63
- *Tarnopolsky et al: A randomized, controlled trial of creatine monohydrate in patients with mitochondrial cytopathies. *Muscle Nerve* 1997 Dec;20(12):1502-9
- *Walter et al: Creatine monohydrate in muscular dystrophies: A double-blind, placebo-controlled clinical study. *Neurol* 2000 May 9;54(9):1848-50

Curcumin, the active part of Turmeric root, reduces inflammation thus speeding up muscle recovery.

- *Davis et al: Curcumin effects on inflammation and performance recovery following eccentric exercise-induced muscle damage. *Am J Physiol Regul Integr Comp Physiol* 2007 Jun;292(6):R2168-73

Essential oils used in carrier oils and massaged into an area can relieve pain and relax the muscles: Aroma Siez, Deep Relief, PanAway, Balsam, Basil, Marjoram, Peppermint, Rosemary, Roman chamomile, Thyme, Wintergreen.

- *Beer et al: Effect of Thymol on the spontaneous contractile activity of the smooth muscles. *Phytomed* 2007 Jan;14(1):65-9
- *Higley 2010:428-430
- *Sagorchev et al: Investigations into the specific effects of rosemary oil at the receptor level. *Phytomed* 2009 Dec 22
- *Zainuddin et al: Effects of massage on delayed-onset muscle soreness, swelling, and recovery of muscle function. *J Athl Train* 2005 Jul-Sep;40(3):174-80

Magnesium is a major mineral needed for proper functioning of bones and muscles. A deficiency can cause muscle spasms, among other disorders.

- *Abraham & Flechas: Management of fibromyalgia: rationale for the use of magnesium and malic acid. *J Nutr Environ Med* 1992;3(1):49-59
- *Altura & Altura: Tension headaches and muscle tension: is there a role for magnesium? *Med Hypoth* 2001;57(6):705-13
- *Clinton et al: Painful muscle spasm reversed by magnesium sulphate. A case report. *S Afr Med J* 1985 Aug 31;68(5):332-3

Melatonin deficiency may play a role in the development of adolescent scoliosis.

- *Machida et al: Serum melatonin levels in adolescent idiopathic scoliosis prediction and prevention for curve progression--a prospective study. *J Pineal Res* 2009 Apr;46(3):344-8
- *Machida et al: Melatonin. A possible role in pathogenesis of adolescent idiopathic scoliosis. *Spine (Phila Pa 1976)* 1996 May 15;21(10):1147-52

NAC (N-acetylcysteine) is a derivative of the amino acid cysteine which is known to have several health benefits including reducing muscle inflammation after exercise.

*Silva et al: N-acetylcysteine supplementation and oxidative damage and inflammatory response after eccentric exercise. *Int J Sport Nutr Exerc Metab* 2008 Aug;18(4):379-88

Omega-3 fatty acids are known anti-inflammatories that improve muscle performance and recovery.

*Tartibian et al: The effects of ingestion of omega-3 fatty acids on perceived pain and external symptoms of delayed onset muscle soreness in untrained men. *Clin J Sport Med* 2009 Mar;19(2):115-9

Purslane is a salad herb that has muscle relaxant properties.

*Habtemariam et al: Purslane (*P. olecracea*) has muscle relaxant properties associated with its high potassium content. *J Ethnopharma* 1993 Dec;40(3):195-200

*Okwuasaba et al: Comparison of the skeletal muscle relaxant properties of *Portulaca oleracea* extracts with dantrolene sodium and methoxyverapamil. *J Ethnopharmacol* 1987 Jul;20(2):85-106

Sulforaphane is a compound found mainly in broccoli sprouts as well as other cruciferous vegetables (cabbage family). It has many health benefits including protecting the muscles against exhaustion-induced damage.

*Malaguti et al: Sulforaphane treatment protects skeletal muscle against damage induced by exhaustive exercise in rats. *J Appl Physiol* 2009 Oct;107(4):1028-36

Tart Cherry juice taken regularly can minimize muscle pain after strenuous exercise.

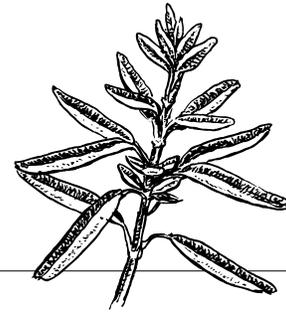
*Kuehl et al: Efficacy of tart cherry juice in reducing muscle pain during running: a randomized controlled trial. *J Int Soc Sports Nutr* 2010;7:17

Valerian herb has antispasmodic effects but be careful when you take it as it is also used to induce sleep.

*Hazelhoff et al: Antispasmodic effects of valeriana compounds: an in-vivo and in-vitro study on the guinea-pig ileum. *Cancer Lett* 2008 Jun 18;264(2):218-28

Vitamin E decreases muscular and oxidative damage but does not address inflammation.

*Silva et al: Vitamin E supplementation induced by eccentric contraction. *J Physiol Sci* 2009 Oct 27



NAUSEA/ANTI-EMETICS

(USED TO MANAGE NAUSEA, VOMITING OR VERTIGO)

COMMON EXAMPLES:

anticholinergics – scopolamine [Scopace, Transderm Scop]

antihistamines

dimenhydrinate – Dramamine

meclizine – Antivert

phenothiazines

prochlorperazine – Compazine

... and many others

DEplete:

B2, riboflavin, CoQ10, NAC

⚠ **Prochlorperazine** has adverse reactions frequently seen in hospital emergency departments.

*Olsen et al: Frequency of adverse reactions to prochlorperazine in the ED. Am J Em Med 2000;18:609–11

SUGGESTED ALTERNATIVES:

Anti-nausea Herbs include: ginger, chamomile, peppermint and raspberry leaf.

*Westfall: Use of anti-emetic herbs in pregnancy: Women's choices, and the question of safety and efficacy. Complement Ther Nurs Midwif 2004;10:30–36

*Wilkinson: What do we know about herbal morning sickness treatments? A literature survey. Midwif 2000;16:224–28

CAM (Complimentary and Alternative Medicine) is being used more and more for all manner of disorders including nausea and vomiting related to various causes, including pregnancy. CAM includes a variety of methods including accupressure and supplementation.

*Bayles: Herbal and other complementary medicine use by Texas midwives. J Midwifery Womens Health 2007;52:473–78

*Hollyer et al: The use of CAM by women suffering from nausea and vomiting during pregnancy. BMC Complement Altern Med 2002;2:5

Curcumin protects against memory loss associated with scopolamine.

*Ali & Arafa: Comparative protective action of curcumin, memantine and diclofenac against scopolamine-induced memory dysfunction. *Fitoterapia* 2011 Jan 26

Essential oil of Peppermint relieves digestive issues including nausea and can safely be taken internally.

*Tate: Peppermint oil: A treatment for postoperative nausea. *J Adv Nurs* 1997;26:543–49

Ginger root, alone or with **Protein** and/or **B6**, has a long history of safe and effective use for nausea related to motion, cancer treatments, surgery, or pregnancy.

*Bryer: A literature review of the effectiveness of ginger in alleviating mild-to-moderate nausea and vomiting of pregnancy. *J Midwifery Womens Health* 2005;50:e1–e3

*Chittumma et al: Comparison of the effectiveness of ginger and vitamin B6 for treatment of nausea and vomiting in early pregnancy: A randomized double-blind controlled trial. *J Med Assoc Thai* 2007;90:15–20

*Ensiyeh & Sakineh: Comparing ginger and vitamin B6 for the treatment of nausea and vomiting in pregnancy: a randomised controlled trial. *Midwifery* 2008 Feb 11

*Ernst & Pittler: Efficacy of ginger for nausea and vomiting: a systematic review of randomized clinical trials. *Br J Anaesth* 2000;84(3):367-71

*Fischer-Rasmussen et al: Ginger treatment of hyperemesis gravidarum. *Eur J Obstet Gynecol Reprod Biol* 1991;38:19–24

*Grøntved et al: Ginger root against seasickness. A controlled trial on the open sea. *Acta Otolaryngol* 1988 Jan-Feb;105(1-2):45-9

*Keating & Chez: Ginger syrup as an antiemetic in early pregnancy. *Altern Ther Health Med* 2002;8:89–91

*Levine et al: Protein and ginger for the treatment of chemotherapy-induced delayed nausea. *J Altern Complement Med* 2008 Jun;14(5):545-51

*Lien et al: Effects of ginger on motion sickness and gastric slow-wave dysrhythmias induced by circularvection. *Am J Physiol Gastrointest Liver Physiol* 2003;284:G481–G489

*Micklefield et al: Effects of ginger on gastroduodenal motility. *Int J Clin Pharmacol Ther* 1999;37:341–46

*Pillai et al: Anti-emetic effect of ginger powder versus placebo as an add-on therapy in children and young adults receiving high emetogenic chemotherapy. *Pediatr Blood Cancer* 2010 Sep 14

*Portnoi et al: Prospective comparative study of the safety and effectiveness of ginger for the treatment of nausea and vomiting in pregnancy. *Am J Obstet Gynecol* 2003;189:1374–77

*Smith et al: A randomized controlled trial of ginger to treat nausea and vomiting in pregnancy. *Obstet Gynecol* 2004;103:639–45

*Sripramote & Lekhyananda: A randomized comparison of ginger and vitamin B6 in the treatment of nausea and vomiting of pregnancy. *J Med Assoc Thai* 2003;86:846–53

*Vutyavanich et al: Ginger for nausea and vomiting in pregnancy: Randomized, double-masked, placebo-controlled trial. *Obstet Gynecol* 2001;97:577–82

*Willettts et al: Effect of a ginger extract on pregnancy-induced nausea: A randomised controlled trial. *Aust N Z J Obstet Gynaecol* 2003;43:139–44

*Yamahara et al: Gastrointestinal motility enhancing effect of ginger and its active constituents. *Chem Pharm Bull (Tokyo)* 1990;38:430–31

Noni juice reduces post-operative nausea.

*Prapaitrakool & Itharat: *Morinda citrifolia* Linn. for prevention of postoperative nausea and vomiting. *J Med Assoc Thai* 2010 Dec;93 Suppl 7:S204-9

Patchouli herb has anti-emetic effects.

*Yang et al: Anti-emetic principles of *Pogostemon cablin* (Blanco) Benth. *Phytomed* 1999 May;6(2):89-93

Vertigoheel is a homeopathic remedy that is safe and effective for dizziness (vertigo).

- *Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29
- *Schneider et al: Treatment of vertigo with a homeopathic complex remedy compared with usual treatments: a meta-analysis of clinical trials. *Arzneimittelforschung* 2005;55(1):23-9
- *Weiser et al: Homeopathic vs conventional treatment of vertigo: a randomized double-blind controlled clinical study. *Arch Otolaryngol Head Neck Surg* 1998 Aug;124(8):879-85

Vitamin supplementation helps prevent nausea, especially in pregnancy. I have noticed that when pregnant women take synthetic vitamins, there are more incidences of nausea than when more natural forms of vitamins are taken.

- *Emelianova et al: Prevalence and severity of nausea and vomiting of pregnancy and effect of vitamin supplementation. *Clin Invest Med* 1999;22:106-10

Vitamin B6 has long been used to relieve nausea in pregnancy but it should always be taken with a B-complex to avoid creating a deficiency in one or more of the other B family members since they all work closely together.

- *Jamigorn & Phupong: Acupressure and vitamin B6 to relieve nausea and vomiting in pregnancy: A randomized study. *Arch Gynecol Obstet* 2007;276:245-49
- *Sahakian et al: Vitamin B6 is effective therapy for nausea and vomiting of pregnancy: A randomized, double-blind placebo-controlled study. *Obstet Gynecol* July 1991;78(1)
- *Shrim et al: Pregnancy outcome following use of large doses of vitamin B6 in the first trimester. *J Obstet Gynaecol* 2006;26:749-51
- *Vutyavanich et al: Pyridoxine for nausea and vomiting of pregnancy: A randomized, double-blind, placebo-controlled trial. *Am J Obstet Gynecol* 1995;173(3 pt 1):881-4

NICOTINE



COMMON EXAMPLES:

cigarettes

cigars

chewing tobacco

nicotine gum, lozenges, patches:

Commit, Habitrol, Nicoderm, Nicorette, and others

nicotine-containing foods:

cauliflower, eggplant, tomatoes, potatoes (plus other nightshade vegetables)

*Castro & Monji: Dietary nicotine and its significance in studies on tobacco smoking. Biochem Arch 1986;2:91-97

*Davis et al: Dietary nicotine: a source of urinary cotinine. J Food Chem Toxicol 1991;29:821-27

*Domino et al: The Nicotine content of common vegetables. N Engl J Med 1993;329:437

*Sheen: Detection of nicotine in foods and plant materials. J Food Sci 1988;53:1572-1573

prescription drugs (nasal spray and inhalers)

Nicotrol

DEplete:

A, carotenoids, all B vitamins, C, E, calcium, selenium, zinc, CoQ10

☞ **More than 4,000 chemical substances** have been found in cigarette smoke; many are carcinogenic.

*Health Canada - www.hc-sc.gc.ca/hc-ps/tobac-tabac/fact-fait/tox-eng.php

☞ **Nicotine** use during teen years later increases the likelihood of depression as adults.

*Iñiguez et al: Nicotine exposure during adolescence induces a depression-like state in adulthood. Neuropsychopharma 2009 May;34(6):1609-24

☞ **Nicotine** speeds up the elimination of some medications, making them less effective.

*Cohen 2008:221

☞ **Nicotine** increases the body's need for caffeine, which is why the two are often used together.

*Gasio et al: Caffeine potentiates the discriminative-stimulus effects of nicotine in rats. Psychopharmacol 2002 Aug;162(4):385-95

*Kozlowski: Effects of caffeine consumption on nicotine consumption. Psychopharmacol 1976;47(2):165-168

*Strassnig et al: Increased caffeine and nicotine consumption in community-dwelling patients with schizophrenia. *Schiz Res* 2006 Sept;86(1-3):269-75

*Swanson et al: Caffeine and nicotine: A review of their joint use and possible interactive effects in tobacco withdrawal. *Add Beh* 1994 May-June;19(3):229-56

☞ **Nicotine** is one of at least 20 chemicals now labelled as **Obesogens** which contribute to weight-gain, including that of children born to parents who smoke.

*Gao et al: Prenatal exposure to nicotine causes postnatal obesity and altered perivascular adipose tissue function. *Obesity Res* 2005;13:687-92

*Neal et al: Sidestream smoking is equally as damaging as mainstream smoking on IVF outcomes. *Hum Reprod* 2005 Sept;20(9):2531-35

*Oken et al: Maternal smoking during pregnancy and child overweight: systematic review and meta-analysis. *Intern J Obesity* 2008;32:201-10

☞ **Smoking** is one of the 9 measured risk factors for heart attacks, arrhythmias, and cancer.

*Gyárfás et al: Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries in a case-control study based on the INTERHEART study. *Orv Hetil.* 2006 Apr 16;147(15):675-86

*Lochen & Rasmussen: Palpitations and lifestyle: impact of depression and self-rated health. The Nordland Health Study. *Scandin J Soc Med* 1996;24(2):140-4

*Thun et al: Tobacco use and cancer: an epidemiologic perspective for geneticists. *Oncogene* 2002;21:7307-25

☞ **Smoking, Alcohol, and Coffee (caffeinated and non-caffeinated)** use during pregnancy affects fetal breathing rates, movement, development, defects, and birth weight; decreases fertility; increases the risk of miscarriages and stillbirths; increases the risk of pancreatic disease and diabetes.

*Balat et al: The effect of smoking and caffeine on the fetus and placenta in pregnancy. *Clin Exp Obstet Gynecol* 2003;30(1):57-9

*Braganza: Pancreatic disease: a casualty of hepatic "detoxification"? *Lancet* 1983 Oct 29;2(8357):1000-3

*Florack et al: Cigarette smoking, alcohol consumption, and caffeine intake and fecundability. *Prevent Med* 1994;23(2):175-80

*Kerr et al: Effect of caffeine on the recognition of and responses to hypoglycemia in humans. *Ann Intern Med* 1993 Oct 15;119(8):799-804

*Lanting et al: Clustering of socioeconomic, behavioural, and neonatal risk factors for infant health in pregnant smokers. *PLoS One* 2009;4(12):e8363

*Tuomilehto et al: Coffee consumption as trigger for insulin dependent diabetes mellitus in childhood. *Br Med J* 1990;300(6725):642-3

☞ **Varenicline** (Chantix in Canada and Chantix in the US) is sold mainly to help people quit smoking but it is strongly linked to worsening psychiatric disorders.

*DiPaula & Thomas: Worsening psychosis induced by varenicline in a hospitalized psychiatric patient. *Pharmacother* 2009 Jul;29(7):852-7

SUGGESTED ALTERNATIVES:

Aromatherapy (inhaling black pepper vapour) reduces symptoms of smoking withdrawal.

*Rose & Behm: Inhalation of vapor from black pepper extract reduces smoking withdrawal symptoms. *Drug Alcohol Depend* 1994 Feb;34(3):225-9

Chicory helps protect the liver against the carcinogens found in tobacco products.

*Hassan & Yousef: Ameliorating effect of chicory (*Cichorium intybus* L.)-supplemented diet against nitrosamine precursors-induced liver injury and oxidative stress in male rats. *Food Chem Toxicol* 2010 Aug-Sep;48(8-9):2163-9

Curcumin, Resveratrol, and Selenium reduce damage to the brain and lungs from cigarette smoke.

*Luchese et al: Brain and lungs of rats are differently affected by cigarette smoke exposure: antioxidant effect of an organoselenium compound. *Pharmacol Res* 2009 Mar;59(3):194-201

*Vanisree & Sudha: Curcumin combats against cigarette smoke and ethanol-induced lipid alterations in rat lung and liver. *J Appl Microbiol* 2009 Jun;106(6):2086-95

Melatonin given to newborns protected their hearts from nicotine damage caused by mothers who smoked.

*Baykan et al: The protective effect of melatonin on nicotine-induced myocardial injury in newborn rats whose mothers received nicotine. *Anadolu Kardiyol Derg* 2008 Aug;8(4):243-8

Noni juice is a safe remedy for reducing cancer risk in current smokers.

*Wang et al: *Morinda citrifolia* (noni) reduces cancer risk in current smokers by decreasing aromatic DNA adducts. *Nutr Cancer* 2009;61(5):634-9

*West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Vitamins and Minerals disappear faster in smokers and those associated with smokers than in non-smokers, creating a greater need for supplementation especially such antioxidants as vitamins C and E which help repair lung damage.

*Alberg: The influence of cigarette smoking on circulating concentrations of antioxidant micronutrients. *Toxicol* 2002 Nov;180(2):121-37

*Brunoa & Traber: Vitamin E biokinetics, oxidative stress and cigarette smoking. *Pathophysiol* 2006 Aug;13(3):143-49

*Bruno & Traber: Cigarette smoke alters human vitamin E requirements. *J Nutr* 2005 Apr;135(4):671-74

*Bruno et al: α -Tocopherol disappearance is faster in cigarette smokers and is inversely related to their ascorbic acid status^{1,2,3}. *Am J Clin Nutr* 2005 Jan;81(1):95-103

*Edes et al: Exposure to the carcinogen benzopyrene depletes tissue vitamin A: β -carotene prevents depletion. *Nutr Cancer* 1991;15(2)

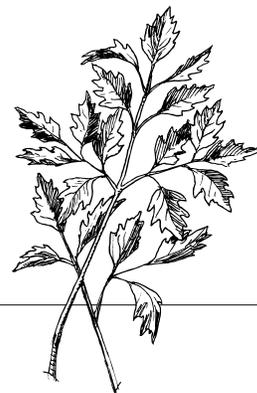
*Marangon et al: Diet, antioxidant status, and smoking habits in French men. *Am J Clin Nutr* Feb 1998;67(2):231-39

*Lykkesfeldt: Cigarette Smoke and Oxidative Stress, 2006:237-260 - Smoking depletes vitamin C: Should smokers be recommended to take supplements?

*Traber et al: Vitamin E kinetics in smokers and nonsmokers. *Free Rad Biol Med* 2001 Dec;31(11):1368-74

*Valenca et al: Supplementation with vitamins C and E improves mouse lung repair. *J Nutr Biochem* 2008 Sep;19(9):604-11

NITRATES



(USED TO TREAT ANGINA)

COMMON EXAMPLES:

isosorbides – Apo-ISDN, Cedocard-SR, Imdur, Isordil, ISMO, Monoket
... and others

nitrofurantoin – Furadantin and others

nitroglycerin – Deponit, Minitran, Nitro-Dur, Notroject, Nitrolingual, Nitrostat
... and others

... and others

DEplete:

B3, C, NAC

⌘ **Angina** is a chest pain or discomfort that occurs if an area of the heart when it is not getting enough oxygen-rich blood. Often, nitrates are given sublingually (under the tongue) when this happens.

⌘ **Nitrates** are used commercially as food preservatives in cured meats (ham, bacon, hot dogs and so on). They are also used to make fertilizers, glass and explosives and found in drinking water. When nitrates are ingested, they are converted to nitrites which becomes a health concern because the nitrites then react with hemoglobin which in turn, decreases blood oxygen levels, ultimately affecting the heart.

*Hord et al: Food sources of nitrates and nitrites: the physiologic context for potential health benefits. *Am J Clin Nutr* 2009 Jul;90(1):1-10

*Katan: Nitrate in foods: harmful or healthy? *Am J Clin Nutr* 2009 Jul;90(1):11-12

*Nitrates and nitrites . CAS # 84145-82-4, 14797-65-0 . *Agenc Toxic Sub Dis Reg (ATSDR)* 2011 January

*No authors listed: Nitrates and Nitrites. TEACH Chemical Summary US EPA Toxicity and Exposure Assessment for Children's Health 2006

*No authors listed: Nitrate and Nitrite. Argonne National Laboratory, EVS, US Dept Energy Human Health Fact Sheet, August 2005

*Tilak et al: Effects of ammonia, nitrite and nitrate on hemoglobin content and oxygen consumption of freshwater fish, *Cyprinus carpio* (Linnaeus). *J Environ Biol* 2007 Jan;28(1):45-7

SUGGESTED ALTERNATIVES:

Antioxidants, Spirulina, CoQ10 and various other supplements prove to be valuable in preventing various heart problems.

*McCarty: Practical prevention of cardiac remodeling and atrial fibrillation with full-spectrum antioxidant therapy and ancillary strategies. *Med Hypoth* 2010 Jan 16

Arjuna improves angina in men.

*Bharani et al: Efficacy of Terminalia arjuna in chronic stable angina: a double-blind, placebo-controlled, crossover study comparing Terminalia arjuna with isosorbide mononitrate. *Indian Heart J* 2002 Mar-Apr;54(2):170-5

B5 improves coronary conditions including angina. Do not take this for long periods of time without taking a full B-complex in addition since a deficiency in one or more of the other B vitamins can be created by just taking only one family member for any length of time.

*Borets et al: Therapeutic efficacy of pantothenic acid preparations in ischemic heart disease patients. *Vopr Pitan* 1987 Mar-Apr;(2):15-7

Carnitine is a substance produced in the body from the amino acids, lysine and methionine. Carnitine effectively decreases the number and intensity of exercise-induced angina episodes.

*Cacciatore et al: The therapeutic effect of L-carnitine in patients with exercise-induced stable angina: a controlled study. *Dig Dis* 2003;21(3):271-5

CoQ10 is a vital antioxidant needed by every cell in the body to make energy but has a special affinity for the heart, improving various conditions and is capable of regenerating vitamin E. The ubiquinol form proves better than the cheaper ubiquinone

*Adarsh et al: Coenzyme Q10 (CoQ10) in isolated diastolic heart failure in hypertrophic cardiomyopathy (HCM). *Biofact* 2008;32(1-4):145-9

*Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure (interim analysis). The CoQ10 Drug Surveillance Investigators. *Forsch Komplementarmed Klass Naturheilkd* 2005 Apr;12(2):77-83

*Baggio et al: Italian multicenter study on the safety and efficacy of coenzyme Q10 as adjunctive therapy in heart failure. CoQ10 Drug Surveillance Investigators. *Mol Aspects Med* 1994;15 Suppl:s287-94

*Berman et al: Coenzyme Q10 in patients with end-stage heart failure awaiting cardiac transplantation: a randomized, placebo-controlled study. *Clin Cardiol* 2004 May;27(5):295-9

*Grudziński & Frankiewicz-Józko: Effects of oral coenzyme Q10 supplementation on sodium nitrite-induced lipid peroxidation in rats. *Rocz Panstw Zakl Hig* 2001;52(3):213-8

*Langsjoen & Langsjoen: Supplemental ubiquinol in patients with advanced congestive heart failure. *Biofact* 2008;32(1-4):119-28

*Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9

*Molyneux et al: Coenzyme Q10; an adjunctive therapy for congestive heart failure? *NZ Med J* 2009 Oct 30;122(1305):74-9

*Morisco et al: Effect of coenzyme Q10 therapy in patients with congestive heart failure: a long-term multicenter randomized study. *Clin Investig* 1993;71(8 Suppl):S134-6

*Mortensen et al: Long-term coenzyme Q10 therapy: a major advance in the management of resistant myocardial failure. *Wien Klin Wochenschr* 2005 Aug;117(15-16):558-60

*Okello et al: Combined statin/coenzyme Q10 as adjunctive treatment of chronic heart failure. *Med Hypoth* 2009 Sep;73(3):306-8

- *Ouchi et al: Tunneling effect in regeneration reaction of vitamin E by ubiquinol. *J Allergy Clin Immunol* 2005 Jun;115(6):1176-83
- *Schmelzer et al: The reduced form of coenzyme Q10 mediates distinct effects on cholesterol metabolism at the transcriptional and metabolite level in SAMP1 mice. *IUBMB Life* 2010 Nov 17
- *Singh et al: Effect of coenzyme Q10 on risk of atherosclerosis in patients with recent myocardial infarction. *Mol Cell Biochem* 2003 Apr;246(1-2):75-82
- *Soja & Mortensen: Treatment of congestive heart failure with coenzyme Q10 illuminated by meta-analyses of clinical trials. *Mol Aspects Med* 1997;18 Suppl:S159-68
- *Tiano et al: Effect of coenzyme Q10 administration on endothelial function and extracellular superoxide dismutase in patients with ischaemic heart disease: a double-blind, randomized controlled study. *Pediatr Int* 2008 Aug;50(4):489-94
- *Tiano et al: Effect of coenzyme Q10 administration on endothelial function and extracellular superoxide dismutase in patients with ischaemic heart disease: a double-blind, randomized controlled study. *Eur Heart J* 2007 Sep;28(18):2249-55
- *Witting et al: Anti-atherogenic effect of coenzyme Q10 in apolipoprotein E gene knockout mice. *Free Radic Biol Med* 2000 Aug;29(3-4):295-305

CoQ10 and Carnitine significantly reduce the inflammatory processes that lead to heart failure.

- *Kumar et al: Effect of carnitine Q-gel (ubiquinol and carnitine) on cytokines in patients with heart failure in the Tishcon study. *Acta Cardiol* 2007 Aug;62(4):349-54

CoQ10, Carnitine, and Omega-3 fatty acids is an effective combination that works synergistically with conventional therapy to address cardiomyopathy.

- *Vargiu et al: Positive inotropic effect of coenzyme Q10, omega-3 fatty acids and propionyl-L-carnitine on papillary muscle force-frequency responses of BIO TO-2 cardiomyopathic Syrian hamsters. *Biofact* 2008;32(1-4):135-44

Enzymes improve stable angina.

- *Kasim et al: Improved myocardial perfusion in stable angina pectoris by oral lumbrokinase: a pilot study. *J Altern Complement Med* 2009 May;15(5):539-44

Magnesium improves angina related to coronary spasms.

- *Teragawa et al: The preventive effect of magnesium on coronary spasm in patients with vasospastic angina. *Clin Cancer Res* 2008 Nov;14(21):6855-66

Magnesium and Vitamin K help prevent barium nitrate-induced toxicity.

- *Payen et al: Intoxication by large amounts of barium nitrate overcome by early massive K supplementation and oral administration of magnesium sulphate. *Hum Exp Toxicol* 2010 Mar 30

Mediterranean diet protects against the production of coronary artery inflammation in those with unstable angina.

- *Serrano-Martinez et al: A Mediterranean dietary style influences TNF-alpha and VCAM-1 coronary blood levels in unstable angina patients. *Eur J Nutr* 2005 Sep;44(6):348-54

Omega-3 (fish oil) is comprised of DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) which help to reduce angina attacks by decreasing inflammation and increasing stability of the cardiovascular system.

- *Cawood et al: Eicosapentaenoic acid (EPA) from highly concentrated n-3 fatty acid ethyl esters is incorporated into advanced atherosclerotic plaques and higher plaque EPA is associated with decreased plaque inflammation and increased stability. *Atheroscler* 2010 Sep;212(1):252-9
- *Salachas et al: Effects of a low-dose fish oil concentrate on angina, exercise tolerance time, serum triglycerides, and platelet function. *Angiol* 1994 Dec;45(12):1023-31

Taurine is an amino acid that may help improve blood flow.

*McCarty: The reported clinical utility of taurine in ischemic disorders may reflect a down-regulation of neutrophil activation and adhesion. *Med Hypoth* 1999 Oct;53(4):290-9

Tribulus is an herb that increases blood flow. It is safe and effective in treating angina.

*Wang et al: 406 cases of angina pectoris in coronary heart disease treated with saponin of *Tribulus terrestris*. *Zhong Xi Yi Jie He Za Zhi* 1990 Feb;10(2):85-7, 68

Zinc decreases angina episodes while improving cardiac function.

*Eby & Halcomb: High-dose zinc to terminate angina pectoris: a review and hypothesis for action by ICAM inhibition. *Med Hypotheses* 2006;66(1):169-72



OSTEOPOROSIS

(USED TO SLOW DOWN OSTEOPOROSIS DEVELOPMENT)

COMMON EXAMPLES:

Bisphosphonates

alendronate - Fosamax
etidronate – Didronel
ibandronate – Boniva
pamidronate – Aredia
risedronate – Actonel
zoledronic – Zometa, Zomera, Aclasta, Reclast

Calcium-lowering hormone

calcitonin – Cibacalcin, Calcimar, and others

Others

raloxifene – Evista
teriparatide – Forteo

DEplete:

B6, D, calcium, iron, magnesium, zinc

⚡ **Aspirin** inhibits bone healing and new bone formation with results dose-dependant.

*Dujic et al: The effects of different concentrations of acetylsalicylic acid on proliferation and viability of lymphocytes in cell culture. Bosn J Basic Med Sci 2008 Aug;8(3):210-3

⚡ **Bisphosphonates** used over an extended period of time lead to excessive mineralization, resulting in microcracks that interfere with bone quality and strength, increasing the risk of fractures. After a 4-year trial involving more than 4,000 patients, **alendronate** showed no reduction in fracture risks but it did show an increase in esophageal ulcerations. **Zoledronic** use resulted in renal impairment of prostate cancer patients.

*Benhamou: Effects of osteoporosis medications on bone quality. Joint Bone Spine 2007 Jan;74(1):39-47

*Cranney et al: WITHDRAWN: Etidronate for treating and preventing postmenopausal osteoporosis. Cochrane Database Syst Rev 2006(1):CD003376

*Duques et al: Esophagus-enteric anastomosis ulceration caused by alendronate. Arq Gastroenterol 2001 Apr-Jun;38(2):129-31

*No authors listed: Alendronic acid in primary prevention: new indication. No reduction in fracture risk. *Prescrire Int* 2000 Jun;9(47):70-2

☞ **Bisphosphonates** are made from the chemical *Etidronic acid*, an ingredient also found in such things as cosmetic formulas, detergents, water treatments (swimming pools), and peroxide bleaching agents. There was even a study done that made the leap from cleaner to bone builder. And these same chemicals are prescribed for bone health. Go figure.

*Swislocki & Wexler: The stumble-from pipe cleaner to bone builder. *Endocr Pract* 2007 Mar-Apr;13(2):194-7

☞ **Bisphosphonates** are often used to prevent metastatic bone cancer but, ironically, cause necrosis (death of all tissue) of the jaw bone and an increase in fractures and gastric ulcers. **Anastrozole** (Arimidex) is another cancer drug given to postmenopausal women undergoing breast cancer treatments but along with these treatments comes a decline in bone density.

*Eckert et al: Bisphosphonate-related jaw necrosis--severe complication in maxillofacial surgery. *Cancer Treat Rev* 2007 Feb;33(1):58-63

*Marshall et al: A randomized controlled trial to assess alendronate-associated injury of the upper gastrointestinal tract. *Aliment Pharmacol Ther* 2000 Nov;14(11):1451-7

*Neviaser et al: Low-energy femoral shaft fractures associated with alendronate use. *J Orthop Trauma* 2008 May-Jun;22(5):346-50

*Spanik & Spanikova: Bone mineral density in early breast cancer patients. *Bratisl Lek Listy* 2010;111(1):27-32

☞ **Bisphosphonates** contribute to bone loss and a significant increase in serious atrial fibrillation in postmenopausal women as well as a wide range of other health issues.

*Amerling et al: Bisphosphonate use in chronic kidney disease: association with adynamic bone disease in a bone histology series. *Blood Purif* 2010;29(3):293-9

*Bhuriya et al: Bisphosphonate use in women and the risk of atrial fibrillation: a systematic review and meta-analysis. *Int J Cardiol* 2010 Jan 3

*Conwell & Chang: Bisphosphonates for osteoporosis in people with cystic fibrosis. *Cochrane Database Syst Rev* 2009(4):CD002010

*Heckbert et al: Use of alendronate and risk of incident atrial fibrillation in women. *Arch Intern Med* 2008 Apr 28;168(8):826-31

*Ho: Bisphosphonate stimulation of osteoblasts and osteoblastic metastasis as a mechanism of hypocalcaemia. *Med Hypotheses* 2011 Dec 27

*Idris et al: Aminobisphosphonates cause osteoblast apoptosis and inhibit bone nodule formation in vitro. *Calcif Tissue Int* 2008 Mar;82(3):191-201

*Loke et al: Bisphosphonates and atrial fibrillation: systematic review and meta-analysis. *Drug Saf* 2009;32(3):219-28

*Naidu et al: The effects of bisphosphonates on osteoblasts in vitro. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008 Jul;106(1):5-13

*Papapetrou: Bisphosphonate-associated adverse events. *Hormones (Athens)* 2009 Apr-Jun;8(2):96-110

*Yan et al: Bisphenol A and 17 β -Estradiol promote arrhythmia in the female heart via alteration of calcium handling. *PLoS One* 2011 ;6(9):e25455

☞ **Bisphosphonates** are linked to the cause behind a rare disorder called osteopetrosis where bones become abnormally dense, significantly increasing the risk of fractures. These drugs have also been the cause of a temporary or permanent loss of blood supply to a bone area.

- *Marx et al: Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis) of the jaws: risk factors, recognition, prevention, and treatment. *J Oral Maxillofac Surg* 2005 Nov;63(11):1567-75
- *Whyte et al: Bisphosphonate-induced osteopetrosis: novel bone modeling defects, metaphyseal osteopenia, and osteosclerosis fractures after drug exposure ceases. *J Bone Miner Res* 2008 Oct;23(10):1698-707

☞ **Blood Thinners** used over a long period of time are associated with reduced bone density and an increase in the number of fractures.

- *Gage et al: Risk of osteoporotic fracture in elderly patients taking warfarin: results from the National Registry of Atrial Fibrillation 2. *Arch Intern Med* 2006 Jan 23;166(2):241-6
- *Rezaieyazdi et al: Reduced bone density in patients on long-term warfarin. *Int J Rheum Dis* 2009 Jul;12(2):130-5

☞ **Celiacs** have much higher rates of osteoporosis than those who do not have digestive issues.

- *Kempainen et al: Osteoporosis in adult patients with celiac disease. *Bone* 1999 Mar;24(3):249-55

☞ **Cow's milk consumption** increases the risk of cancers and fractures.

- *Lanou et al: Should dairy be recommended as part of a healthy vegetarian diet? Counterpoint. *Am J Clin Nutr* 2009 May;89(5):1638S-1642S

☞ **Diabetes drugs** decrease bone mass and strength while increasing fracture risks.

- *Ali et al: Rosiglitazone causes bone loss in mice by suppressing osteoblast differentiation and bone formation. *Endocrinol* 2005 Mar;146(3):1226-35
- *Aubert et al: Rosiglitazone and pioglitazone increase fracture risk in women and men with type 2 diabetes. *Diabetes Obes Metab* 2010 Aug;12(8):716-21
- *Home et al: Rosiglitazone evaluated for cardiovascular outcomes in oral agent combination therapy for type 2 diabetes (RECORD): a multicentre, randomised, open-label trial. *Lancet* 2009 Jun 20;373(9681):2125-35
- *Lazarenko et al: Rosiglitazone induces decreases in bone mass and strength that are reminiscent of aged bone. *Endocrinol* 2007 Jun;148(6):2669-80
- *Wei et al: PGC1beta mediates PPARgamma activation of osteoclastogenesis and rosiglitazone-induced bone loss. *Cell Metab* 2010 Jun 9;11(6):503-16

☞ **Diuretics** affect bone health by removing minerals along with excess fluid.

- *Rejnmark et al: Fracture risk in patients treated with loop diuretics. *J Intern Med* 2006 Jan;259(1):117-24
- *Rejnmark et al: Loop diuretics increase bone turnover and decrease BMD in osteopenic postmenopausal women: results from a randomized controlled study with bumetanide. *J Bone Miner Res* 2006;21(1):163-70

☞ **DXA (dual-emission X-ray absorptiometry) bone scans** have an error rate of +/-20% - meaning at least 20% of the time, the reading will be in error.

- *Bolotin: Inaccuracies inherent in dual-energy X-ray absorptiometry in vivo bone mineral densitometry may flaw osteopenic/osteoporotic interpretations and mislead assessment of antiresorptive therapy effectiveness. *Bone* 2001 May;28(5):548-55

☞ **Proton-pump inhibitors (Acid Blockers)** increase the risk of hip fractures mainly because they inhibit valuable stomach acids needed for digestion and absorption of nutrients.

- *Corley et al: Proton pump inhibitors and histamine-2 receptor antagonists are associated with hip fractures among at-risk patients. *Gastroenterol* 2010 Jul;139(1):93-101
- *Gray et al: Proton pump inhibitor use, hip fracture, and change in bone mineral density in postmenopausal women: results from the Women's Health Initiative. *Arch Intern Med* 2010 May 10;170(9):765-71
- *Ing-Lorenzini et al: Low-energy femoral fractures associated with the long-term use of bisphosphonates:

a case series from a Swiss university hospital. *Drug Saf* 2009;32(9):775-85

*Insogna: The effect of proton pump-inhibiting drugs on mineral metabolism. *Am J Gastroenterol* 2009 Mar;104 Suppl 2:S2-4

*McGowan et al: Prescribing of anti-osteoporotic therapies following the use of proton pump inhibitors in general practice. *Pharmacoepidemiol Drug Saf* 2010 Jul;19(7):763-9

*Targownik et al: Use of proton pump inhibitors and risk of osteoporosis-related fractures. *CMAJ* 2008 Aug 12;179(4):319-26

*Yang et al: Long-term proton pump inhibitor therapy and risk of hip fracture. *JAMA* 2006 Dec 27;296(24):2947-53

☞ **Radiation treatments** have a significantly destructive effect on bones.

*Mitchell & Logan: Radiation-induced changes in bone. *Radiographics* 1998 Sep-Oct;18(5):1125-36; quiz 1242-3

☞ **Smoking** profoundly increases the risk of bone fractures.

*Akhte et al: Effects of nicotine on bone mass and strength in aged female rats. *J Ortho Res* 2003 Jan;21(1):14-19

*Iwaniec et al: Effects of nicotine on bone and calciotropic hormones in aged ovariectomized rats. *J Musculoskel Neuron Interact* 2002;2(5):469-78

☞ **Teriparatide** causes an increase in bone cancer especially those treated for the disease or at a high risk for developing bone cancer.

*Subbiah et al: Of mice and men: divergent risks of teriparatide-induced osteosarcoma. *Osteoporos Int* 2009 Jul 14

*Teriparatide. MedicineNet website

*Vahle et al: Bone neoplasms in F344 rats given teriparatide [rhPTH(1-34)] are dependent on duration of treatment and dose. *Toxicol Pathol* 2004 Jul-Aug;32(4):426-38

*Vahle et al: Skeletal changes in rats given daily subcutaneous injections of recombinant human parathyroid hormone (1-34) for 2 years and relevance to human safety. *Toxicol Pathol* 2002 May-Jun;30(3):312-21

☞ **Thyroxine**, a thyroid medication, interferes with the action of bisphosphonates.

*Panico et al: Osteoporosis and thyrotropin-suppressive therapy: reduced effectiveness of alendronate. *Thyroid* 2009 May;19(5):437-42

SUGGESTED ALTERNATIVES:

Alpha-Lipoic acid inhibits inflammatory bone resorption.

*Ha et al: Alpha-Lipoic acid inhibits inflammatory bone resorption by suppressing prostaglandin E2 synthesis. *J Immunol* 2006 Jan 1;176(1):111-7

Alpha-lipoic acid, Berberine, EGCG, and Resveratrol have beneficial effects on bone health.

*Lee et al: AMP kinase acts as a negative regulator of RANKL in the differentiation of osteoclasts. *Bone* 2010 Nov;47(5):926-37

Anise seed, Chamomile, and Mountain tea have estrogen-modulating effects that help prevent osteoporosis.

*Kassi et al: Greek plant extracts exhibit selective estrogen receptor modulator (SERM)-like properties. *Br J Pharmacol* 2008 Mar;153(5):879-85

Arginine and **Lysine** are amino acids that are important bone-building promoters. These proteins double calcium absorption into the bone and generally improve mineral absorption.

- *Filip et al: Alpha-ketoglutarate decreases serum levels of C-terminal cross-linking telopeptide of type I collagen (CTX) in postmenopausal women with osteopenia: six-month study. *Int J Vitam Nutr Res* 2007 Mar;77(2):89-97
- *Fiore et al: L-arginine prevents bone loss and bone collagen breakdown in cyclosporin A-treated rats. *Eur J Pharmacol* 2000 Nov 24;408(3):323-6
- *Fürst: Dietary L-lysine supplementation: a promising nutritional tool in the prophylaxis and treatment of osteoporosis. *Nutr* 1993 Jan-Feb;9(1):71-2
- *Pennisi et al: L-arginine supplementation normalizes bone turnover and preserves bone mass in streptozotocin-induced diabetic rats. *J Endocrinol Invest* 2009 Jun;32(6):546-51
- *Pennisi et al: Supplementation of L-arginine prevents glucocorticoid-induced reduction of bone growth and bone turnover abnormalities in a growing rat model. *J Bone Miner Metab* 2005;23(2):134-9

Ashwaganda has a profound effect in preventing bone loss in women who have had their ovaries removed.

- *Nagareddy & Lakshmana: Withania somnifera improves bone calcification in calcium-deficient ovariectomized rats. *Phytomed* 2007 Feb;14(2-3):136-42

B vitamin (6,9,12) deficiency contributes to increased levels of **homocysteine** which lead to bone fractures as well as cardiovascular disease and Alzheimer's. Supplementation of these nutrients (plus a total B-complex to avoid creating a deficiency in one or more of the family members) and **Betaine hydrochloric acid** to improve digestion, help prevent such disorders.

- *McLean et al: Homocysteine as a predictive factor for hip fracture in older persons. *New Eng J Med* 2004;350(20):2042-49
- *Spence et al: Understanding the complexity of homocysteine lowering with vitamins. *JAMA* 2011;306(23):2610-11
- *van Meurs et al: Homocysteine levels and the risk of osteoporotic fracture. *New Eng J Med* 2004;350(20):2033-41

Bee Propolis and **Royal Jelly** prevent osteoporosis by stimulating bone formation and increasing bone fracture healing time.

- *Guney et al: Effects of Propolis on Fracture Healing: An Experimental Study. *Phytother Res* 2011 Mar 21
- *Ha et al: Caffeic acid phenethyl ester inhibits osteoclastogenesis by suppressing NF kappaB and downregulating NFATc1 and c-Fos. *Int Immunopharmacol* 2009 Jun;9(6):774-80
- *Hidaka et al: Royal jelly prevents osteoporosis in rats: beneficial effects in ovariectomy model and in bone tissue culture model. *J Nutr* 2007 Jul;137(7):1769-75
- *Hidaka et al: Royal jelly prevents osteoporosis in rats: beneficial effects in ovariectomy model and in bone tissue culture model. *Adv Acc Publ* 2006 April 24;3(3)339-48
- *Narita et al: Royal jelly stimulates bone formation: physiologic and nutrigenomic studies with mice and cell lines. *Bull Exp Biol Med* 2008 Jan;145(1):75-7
- *Narita et al: Royal jelly stimulates bone formation: physiologic and nutrigenomic studies with mice and cell lines. *Biosci Biotechnol Biochem* 2006 Oct;70(10):2508-14

Berberine-containing plants (Barberry, Goldenseal, Oregon grape, Goldenthread), **Hops** and **Vitamins D** and **K** have bone-protecting qualities that are particularly beneficial to postmenopausal women.

- *Konda et al: Rho iso-alpha acids from hops inhibit the GSK-3/NF-κB pathway and reduce inflammatory markers associated with bone and cartilage degradation. *J Inflamm (Lond)* 2009;6:26

- *Holick et al: Hop rho iso-alpha acids, berberine, vitamin D3 and vitamin K1 favorably impact biomarkers of bone turnover in postmenopausal women in a 14-week trial. *J Bone Miner Metab* 2009 Dec 19
- *Lamb et al: Nutritional supplementation of hop rho iso-alpha acids, berberine, vitamin D₃, and vitamin K₁ produces a favorable bone biomarker profile supporting healthy bone metabolism in postmenopausal women with metabolic syndrome. *Nutr Res.* 2011 May;31(5):347-55

Blackberries have bone-protecting properties.

- *Do et al: Bone-protecting effect of *Rubus coreanus* by dual regulation of osteoblasts and osteoclasts. *Menopause* 2008 Jul-Aug;15(4 Pt1):676-83

Black cohosh, an herb often used in the treatment of menopausal symptoms, also stimulates skeletal bone growth, even in men, without affecting the prostate.

- *Seidlová-Wuttke et al: Effects of estradiol-17beta, testosterone and a black cohosh preparation on bone and prostate in orchidectomized rats. *Maturitas* 2005 Jun 16;51(2):177-86
- *Viereck et al: Isopropanolic extract of black cohosh stimulates osteoprotegerin production by human osteoblasts. *J Bone Miner Res* 2005;20(11):2036-43
- *Wuttke et al: The *Cimicifuga* preparation BNO 1055 vs. conjugated estrogens in a double-blind placebo-controlled study: effects on menopause symptoms and bone markers. *Maturitas* 2003 Mar 14;44 Suppl 1:S67-77

Black olives (but not green) prevent bone loss.

- *Puel et al: Black Lucques olives prevented bone loss caused by ovariectomy and talc granulomatosis in rats. *Br J Nutr* 2007 May;97(5):1012-20

Boron is a trace mineral that stimulates bone formation and inhibits bone resorption.

- *Xu et al: Therapeutic effect of dietary boron supplement on retinoic acid-induced osteoporosis in rats. *Nan Fang Yi Ke Da Xue Xue Bao* 2006 Dec;26(12):1785-8

Calcium without vitamin D or taken in high amounts increase the risk of fractures.

- *Klompakerno et al: Lifetime high calcium intake increases osteoporotic fracture risk in old age. *Med Hypotheses* 2005;65(3):552-8
- *Reid et al: Effect of calcium supplementation on hip fractures. *Osteoporos Int* 2008 Aug;19(8):1119-23

Calcium supplements, from a plant-based red marine algae called *Lithothamnion calcareum*, are better absorbed than calcium derived from “rock” and have additional benefits of prohibiting the growth of colon cancer cells and acting as an anti-inflammatory. Inflammation often increases bone loss. Red marine algae is full of minerals, especially bioavailable calcium, which help improve bone structure.

- *Aslam et al: A mineral-rich extract from the red marine algae *lithothamnion calcareum* preserves bone structure and function in female mice on a western-style diet. *Calc Tissue Int* 2010 Apr;86(4):313-24
- *Aslam: A mineral-rich red algae extract inhibits polyp formation and inflammation in the gastrointestinal tract of mice on a high-fat diet. *Integr Cancer Ther* 2010 Mar;9(1):93-99
- *Aslam et al: Growth-inhibitory effects of a mineralized extract from the red marine algae, *Lithothamnion calcareum*, on Ca²⁺-sensitive and Ca²⁺-resistant human colon carcinoma cells. *Cancer Lett* 2009 Oct 8;283(2):186-92
- *Guerriero et al: Novel hydroxyicosatetraenoic and hydroxyicosapentaenoic acids and a 13-oxo analog isolation from a mixture of the calcareous red algae *lithothamnion corallioides* and *lithothamnion calcareum* of brittany waters. *Helvetica Chimica Acta* 1990 Dec 12;73(8):2183-89
- *Ryan et al: Evidence that the marine-derived multi-mineral aquamin has anti-inflammatory effects on cortical glial-enriched cultures. *Phytoth Res* 2011 May;25(5):765-67

Cinnamon prevents bone loss and reabsorption of bone into tissues.

- *Tsuji-Naito: Aldehydic components of cinnamon bark extract suppresses RANKL-induced osteoclastogenesis through NFATc1 downregulation. *Bioorg Med Chem* 2008 Oct 15;16(20):9176-83

Citrus juices and pulp, improve bone quality and antioxidant status but they should not be eaten by those on any kind of medication including a one-a-day aspirin.

- *Deyhim et al: Grapefruit pulp increases antioxidant status and improves bone quality in orchidectomized rats. *Br J Nutr* 2007 Feb;97(2):365-72
- *Deyhim et al: Citrus juice modulates bone strength in male senescent rat model of osteoporosis. *Nutr* 2006 May;22(5):559-63
- *Morrow et al: Feeding orange pulp improved bone quality in a rat model of male osteoporosis. *J Med Food* 2009 Apr;12(2):298-303

Colostrum (lactoferrin) is the first milk produced by mammals right after giving birth. It has significant immune-boosting properties valuable for the newly born and as a supplement, offers the same effects to the elderly as well as preserving their bones.

- *Guo et al: Orally administered lactoferrin preserves bone mass and microarchitecture in ovariectomized rats. *J Nutr* 2009 May;139(5):958-64

Conjugated linoleic acid (CLA) increases bone mineral content.

- *Roy et al: Conjugated linoleic acid prevents growth attenuation induced by corticosteroid administration and increases bone mineral content in young rats. *Appl Physiol Nutr Metab* 2008 Dec;33(6):1096-104

Cumin seed reverses bone loss as effectively as estradiol in those who have had their ovaries removed.

- *Shirke et al: Methanolic extract of *Cuminum cyminum* inhibits ovariectomy-induced bone loss in rats. *Exp Biol Med (Maywood)* 2008 Sep 29

Curcumin is the active part of Turmeric and significantly contributes to bone health.

- *French et al: The ovariectomized, mature rat model of postmenopausal osteoporosis: an assessment of the bone sparing effects of curcumin. *Phytomed* 2008 Dec;15(12):1069-78
- *Metzler et al: Curcumin diminishes human osteoclastogenesis by inhibition of the signalosome-associated I kappaB kinase. *J Cancer Res Clin Oncol* 2009 Feb;135(2):173-9
- *Oh et al: Curcumin inhibits osteoclastogenesis by decreasing receptor activator of nuclear factor-kappaB ligand (RANKL) in bone marrow stromal cells. *Mol Cells* 2008 Nov 30;26(5):486-9
- *Yang et al: Curcumin improves bone microarchitecture and enhances mineral density in APP/PS1 transgenic mice. *Phytomed* 2011 Jan 15;18(2-3):205-13

Exercise is very important for maintaining bone health, balance, and reducing falls and resulting fractures. Tai chi and yoga have been studied the most related to bone health but any form of exercise is much better than nothing.

- *Angin & Erden: The effect of group exercise on postmenopausal osteoporosis and osteopenia. *Acta Orthop Traumatol Turc* 2009 Aug-Oct;43(4):343-50
- *Chan et al: A randomized, prospective study of the effects of Tai Chi Chun exercise on bone mineral density in postmenopausal women. *Arch Phys Med Rehabil* 2004 May;85(5):717-22
- *Leung et al: Tai chi as an intervention to improve balance and reduce falls in older adults: A systematic and meta-analytical review. *Altern Ther Health Med* 2011 Jan-Feb;17(1):40-8
- *Peppone et al: Effects of a structured weight-bearing exercise program on bone metabolism among breast cancer survivors: a feasibility trial. *Clin Breast Cancer* 2010 Jun;10(3):224-9
- *Phoosuwan et al: The effects of weight bearing yoga training on the bone resorption markers of the postmenopausal women. *J Med Assoc Thai* 2009 Sep;92 Suppl5:S102-8

- *Song et al: A randomized study of the effects of t'ai chi on muscle strength, bone mineral density, and fear of falling in women with osteoarthritis. *J Altern Complement Med* 2010 Mar;16(3):227-33
- *Tolomio et al: Effects of a combined weight-bearing and non-weight-bearing (warm water) exercise program on bone mass and quality in postmenopausal women with low bone-mineral density. *Clin Ter* 2009 Mar-Apr;160(2):105-9
- *Tüzün et al: Yoga might be an alternative training for the quality of life and balance in postmenopausal osteoporosis. *Eur J Phys Rehabil Med* 2010 Feb 18
- *Wayne et al: The effects of Tai Chi on bone mineral density in postmenopausal women: a systematic review. *Arch Phys Med Rehabil* 2007 May;88(5):673-80

FOS (fructooligosaccharide) is a prebiotic food supply for good gut bacteria, usually derived from inulin. FOS with Plums, Omega 3, or fermented soy are good combinations to increase bone health. Healthy supplies of good bacteria help correct malabsorption problems and resulting bone disease.

- *Arjmandi et al: Combining fructooligosaccharide and dried plum has the greatest effect on restoring bone mineral density among select functional foods and bioactive compounds. *Helicobacter* 2009 Aug;14(4):280-5
- *Devareddy et al: The effects of fructo-oligosaccharides in combination with soy protein on bone in osteopenic ovariectomized rats. *Menopause* 2006 Jul-Aug;13(4):692-9
- *Stefano et al: Small intestine bacterial overgrowth and metabolic bone disease. *Dig Dis Sci* 2001 May;46(5):1077-82

Fruit, Vegetable, and Legume consumption is linked to greater bone health. Red and orange produce, in particular, contain carotenoids which stimulate bone formation and inhibit bone resorption into the tissues but green and yellow produce is equally as important. The Western-type diet, with more processed foods and fewer fresh fruits and vegetables, contributes to bone loss and other health issues.

- *Fujii et al Daily intake of green and yellow vegetables is effective for maintaining bone mass in young women. *Tohoku J Exp Med* 2009;218(2):149-54
- *Huang et al: Onion decreases the ovariectomy-induced osteopenia in young adult rats. *Bone* 2008 Jun;42(6):1154-63. Epub 2008 Feb 29
- *Lee et al: Consumption of legumes improves certain bone markers in ovariectomized rats. *Nutr Res* 2011 May ;31(5):397-403
- *Maurer et al: Neutralization of Western diet inhibits bone resorption independently of K intake and reduces cortisol secretion in humans. *Am J Physiol Renal Physiol* 2003 Jan;284(1):F32-40
- *New: Intake of fruit and vegetables: implications for bone health. *Proc Nutr Soc* 2003 Nov;62(4):889-99
- *Park et al: Protective effect of apigenin on ovariectomy-induced bone loss in rats. *Life Sci* 2008 Jun 20;82(25-26):1217-23
- *Sahni et al: Protective effect of total carotenoid and lycopene intake on the risk of hip fracture: a 17-year follow-up from the Framingham Osteoporosis Study. *J Bone Miner Res* 2009 Jun;24(6):1086-94
- *Ward et al: A western-style diet reduces bone mass and biomechanical bone strength to a greater extent in male compared with female rats during development. *Br J Nutr* 2003 Sep;90(3):589-95
- *Yamaguchi & Uchiyama: Beta-cryptoxanthin stimulates bone formation and inhibits bone resorption in tissue culture in vitro. *Mol Cell Biochem* 2004 Mar;258(1-2):137-44
- *Zhang et al: Greater vegetable and fruit intake is associated with a lower risk of breast cancer among Chinese women. *Int J Cancer* 2009 Jul 1;125(1):181-8

Genistein is an isoflavone found in high concentrations in such foods as soy and fava beans and kudzu (a pea plant considered to be a noxious weed in many places). Genistein is well-known and safe for supporting bone health without adversely affecting breast density or endometrium thickness. It also proved to be superior to the bone drugs alendronate, raloxifene and estradiol in reversing drug-induced

osteoporosis. However, Genistein can also be a hormone-disrupter so eating such foods should be limited to the occasional use. Fermenting these foods does get rid of the disrupting substances.

- *Atteritano et al: Effects of the phytoestrogen genistein on some predictors of cardiovascular risk in osteopenic, postmenopausal women: a two-year randomized, double-blind, placebo-controlled study. *Exp Gerontol* 2010 Jan 18
- *Bitto et al: Protective effect of genistein aglycone on the development of osteonecrosis of the femoral head and secondary osteoporosis induced by methylprednisolone in rats. *J Ethnopharmacol* 2009 Oct 29;126(1):134-42
- *Bitto et al: Effects of genistein aglycone in osteoporotic, ovariectomized rats: a comparison with alendronate, raloxifene and oestradiol. *Br J Pharmacol* 2008 Nov;155(6):896-905
- *Bitto et al: Genistein aglycone reverses glucocorticoid-induced osteoporosis and increases bone breaking strength in rats: a comparative study with alendronate. *Ann N Y Acad Sci* 2007 Jan;1095:412-7
- *Dai et al: Effects of genistein on vertebral trabecular bone microstructure, bone mineral density, microcracks, osteocyte density, and bone strength in ovariectomized rats. *J Bone Miner Metab* 2008;26(4):342-9
- *Marini et al: Breast safety and efficacy of genistein aglycone for postmenopausal bone loss: a follow-up study. *J Clin Endocrinol Metab* 2008 Dec;93(12):4787-96
- *Marini et al: Effects of the phytoestrogen genistein on bone metabolism in osteopenic postmenopausal women: a randomized trial. *Ann Intern Med* 2007 Jun 19;146(12):839-47
- *Morabito et al: Effects of genistein and hormone-replacement therapy on bone loss in early postmenopausal women: a randomized double-blind placebo-controlled study. *J Bone Miner Res* 2002 Oct;17(10):1904-12
- *Okumura et al: Bone formation-promoting effect of genistein on marrow mesenchymal cell culture. *Biomed Mater Eng* 2006;16(1):23-32
- *Sehmisch et al: Effects of isoflavones equol and genistein on bone quality in a rat osteopenia model. *Phytother Res* 2009 Dec 9
- *Sehmisch et al: Evaluation of bone quality and quantity in osteoporotic mice--the effects of genistein and equol. *J Vet Med Sci* 2002 Mar;64(3):227-35

Grapefruit pulp improves bone quality **but should not be consumed by anyone on any kind of medication.**

- *Deyhim et al: Grapefruit pulp increases antioxidant status and improves bone quality in orchidectomized rats. *Br J Nutr* 2007 Feb;97(2):365-72

Hesperitin is a citrus bioflavonoid that is important for the formation and maintenance of bone mass and strength.

- *Horcajada et al: Hesperidin inhibits ovariectomized-induced osteopenia and shows differential effects on bone mass and strength in young and adult intact rats. *J Appl Physiol* 2008 Mar;104(3):648-54

Homeopathic plumbum proves better than calcitonin for regenerating bone.

- *Almeida et al: Homeopathic treatment for bone regeneration: experimental study. *Homeopathy* 2009 Apr;98(2):92-6

Horny Goat Weed is an herb often sold as an endurance supplement that improves circulation but it is also high in a substance called icarlin which appears to be more potent than genistein when it comes to promoting bone health.

- *Ma et al: Icarin is more potent than genistein in promoting osteoblast differentiation and mineralization in vitro. *J Cell Biochem* 2010 Dec 29

Kudzu is an herb that is often viewed as a noxious weed in many places but it does have some valuable health properties and one is contributing to the prevention of bone loss.

*Wang et al: Puerariae radix prevents bone loss in ovariectomized mice. *J Bone Miner Metab* 2003;21(5):268-75

Maca is a Peruvian root noted for balancing hormones in both men and women and therefore valuable in protecting against estrogen deficient bone loss.

*Zhang et al: Effect of ethanol extract of *Lepidium meyenii* Walp. on osteoporosis in ovariectomized rat. *J Ethnopharmacol* 2006 Apr 21;105(1-2):274-9

Melatonin protects the digestive tract from damage caused by bisphosphonates.

*Sener et al: Protective effect of melatonin and omeprazole against alendronat-induced gastric damage. *Dig Dis Sci* 2005 Aug;50(8):1506-12

Mineral-deficiency, especially magnesium, contributes to osteoporosis especially in those with **gluten sensitivity**. Digestive problems such as celiac, Crohn's, IBS etc significantly decreases the ability to absorb nutrients efficiently thus contributing to various health problems including osteoporosis.

*Capriles et al: Metabolic osteopathy in celiac disease: importance of a gluten-free diet. *Nutr Rev* 2009 Oct;67(10):599-606

*Dimai et al: Daily oral magnesium supplementation suppresses bone turnover in young adult males. *J Biol Chem* 2002 Dec 27;277(52):50341-7

*Mulder et al: Celiac disease presenting as severe osteopenia. *Hawaii Med J* 2011 Nov ;70(11):242-4

*Rude et al: Magnesium deficiency-induced osteoporosis in the rat: uncoupling of bone formation and bone resorption. *Magnes Res* 1999 Dec;12(4):257-67

*Rude & Olerich: Magnesium deficiency: possible role in osteoporosis associated with gluten-sensitive enteropathy. *Osteoporos Int* 1996;6(6):453-61

*Scharla: Causes of osteoporosis: don't forget celiac disease. *Life Sci* 2006 Jan 2;78(6):655-63

Manganese is a trace mineral that improves mineral density in bones.

*Bae & Kim: Manganese supplementation improves mineral density of the spine and femur and serum osteocalcin in rats. *Biol Trace Elem Res* 2008 Jul;124(1):28-34

Milk Thistle is an estrogen modulator that has positive effects in preventing osteoporosis.

*El-Shitany et al: Evidences for antiosteoporotic and selective estrogen receptor modulator activity of silymarin compared with ethinylestradiol in ovariectomized rats. *Phytomed* 2010 Feb;17(2):116-25

Nutmeg contains a compound that stimulates osteoblast differentiation.

*Lee et al: Machilin A isolated from *Myristica fragrans* stimulates osteoblast differentiation. *Planta Med* 2009 Feb;75(2):152-7

Olives contain a compound called oleuropein which protects against bone loss.

*Puel et al: Black Lucques olives prevented bone loss caused by ovariectomy and talc granulomatosis in rats. *Br J Nutr* 2007 May;97(5):1012-20

*Puel et al: Dose-response study of effect of oleuropein, an olive oil polyphenol, in an ovariectomy/inflammation experimental model of bone loss in the rat. *Clin Nutr* 2006 Oct;25(5):859-68

Omega 3 fatty acids and **GLA** (the "good" part of Omega 6 fatty acid) found in the oils of borage, evening primrose, and black currant have beneficial effects on bone health and joints in general.

- *Chan et al: Effects of food groups and dietary nutrients on bone loss in elderly Chinese population. *J Nutr Health Aging* 2011;15(4):287-94
- *Kruger et al: Calcium, gamma-linolenic acid and eicosapentaenoic acid supplementation in senile osteoporosis. *Aging (Milano)* 1998 Oct;10(5):385-94
- *Rahman et al: Docosahexaenoic acid is more potent inhibitor of osteoclast differentiation in RAW 264.7 cells than eicosapentaenoic acid. *J Cell Physiol* 2008 Jan;214(1):201-9

Oranges improve osteoporosis and bone strength, especially in males.

- *Deyhim et al: Citrus juice modulates bone strength in male senescent rat model of osteoporosis. *Nutri* 2006 May;22(5):559-63
- *Mandadi et al: Citrus bioactive compounds improve bone quality and plasma antioxidant activity in orchidectomized rats. *Phytomed* 2009 Jun;16(6-7):513-20
- *Morrow et al: Feeding orange pulp improved bone quality in a rat model of male osteoporosis. *J Med Food* 2009 Apr;12(2):298-303

Olive oil protects against bone loss.

- *Puel et al: Dose-response study of effect of oleuropein, an olive oil polyphenol, in an ovariectomy/inflammation experimental model of bone loss in the rat. *Clin Nutr* 2006 Oct;25(5):859-68

Plums prevent bone loss and increase bone density thereby reversing osteopenia.

- *Arjmandi et al: Dried plums improve indices of bone formation in postmenopausal women. *Altern Ther Health Med* 2010 Mar-Apr;16(2):12-4
- *Bu et al: Comparison of dried plum supplementation and intermittent PTH in restoring bone in osteopenic orchidectomized rats. *Am J Epidemiol* 2008 Aug 27
- *Deyhim et al: Dried plum reverses bone loss in an osteopenic rat model of osteoporosis. *Menopause* 2005 Nov-Dec;12(6):755-62
- *Franklin et al: Dried plum prevents bone loss in a male osteoporosis model via IGF-I and the RANK pathway. *Bone* 2006 Dec;39(6):1331-42
- *Hooshmand et al: Comparative effects of dried plum and dried apple on bone in postmenopausal women. *Br J Nutr* 2011 May 31:1-8

Plums and **FOS** (fructooligosaccharide – a prebiotic) reverses bone loss caused by removal of the ovaries.

- *Arjmandi et al: Combining fructooligosaccharide and dried plum has the greatest effect on restoring bone mineral density among select functional foods and bioactive compounds. *Helicobacter* 2009 Aug;14(4):280-5

Pomegranates have estrogen-like properties that improve bone loss in menopausal women.

- *Mori-Okamoto et al: Pomegranate extract improves a depressive state and bone properties in menopausal syndrome model ovariectomized mice. *J Ethnopharmacol* 2004 May;92(1):93-101

Red Yeast Rice is often used for its cholesterol-lowering properties which are similar to statin drug action but RYR increases bone formation whereas statins do not.

- *Wong & Rabie: Chinese red yeast rice (*Monascus purpureus*-fermented rice) promotes bone formation. *Chin Med* 2008 Mar 29;3:4
- *Wong & Rabie: Chinese red yeast rice (*Monascus purpureus*-fermented rice) promotes bone formation. *Nutr* 2007 Mar;23(3):261-6

Resveratrol, a potent antioxidant found most commonly in the skins of red grapes, has a positive effect on bone health.

- *Habold et al: Effect of prior treatment with resveratrol on density and structure of rat long bones under tail-suspension. *Neurol* 2007 Feb 20;68(8):563-8

- *He et al: Resveratrol prevents RANKL-induced osteoclast differentiation of murine osteoclast progenitor RAW 264.7 cells through inhibition of ROS production. *Biochem Biophys Res Commun* 2010 Oct 22;401(3):356-62
- *Li et al: Resveratrol-conjugated poly-ε-caprolactone facilitates in vitro mineralization and in vivo bone regeneration. *Acta Biomater* 2011 Feb;7(2):751-8
- *Liu et al: Effects of trans-resveratrol from *Polygonum cuspidatum* on bone loss using the ovariectomized rat model. *J Med Food* 2005 Spring;8(1):14-9
- *Shakibaei et al: Resveratrol-mediated SIRT-1 interactions with p300 modulate receptor activator of NF-κappaB ligand (RANKL) activation of NF-κappaB signaling and inhibit osteoclastogenesis in bone-derived cells. *J Biol Chem* 2011 Jan 14

Silica is a mineral known to improve the conditions of skin, hair, nails, and bones. Its nutritional bioactive form is called Orthosilicic acid and found in health products derived from bamboo, horsetail, or other sources.

- *Kim et al: Silicon supplementation improves the bone mineral density of calcium-deficient ovariectomized rats by reducing bone resorption. *Biol Trace Elem Res* 2009 Jun;128(3):239-47
- *Spector et al: Choline-stabilized orthosilicic acid supplementation as an adjunct to calcium/vitamin D3 stimulates markers of bone formation in osteopenic females: a randomized, placebo-controlled trial. *BMC Musculoskelet Disord* 2008 Jun 11;9:85

Soy milk and **Progesterone** taken **separately** may be beneficial to bone health but when **taken together**, contributes to bone loss. Fermented soy poses no problem to bone health.

- *Lydeking-Olsen et al: Soymilk or progesterone for prevention of bone loss--a 2 year randomized, placebo-controlled trial. *Eur J Nutr* 2004 Aug;43(4):246-57

Strontium renalate safely reduces risk of fractures in postmenopausal osteoporosis.

- *Reginster et al: Strontium ranelate: a new treatment for postmenopausal osteoporosis with a dual mode of action. *Curr Osteoporos Rep* 2005 Mar;3(1):30-4
- *Seeman et al: Strontium ranelate reduces the risk of vertebral and nonvertebral fractures in women eighty years of age and older. *J Bone Miner Res* 2006 Jul;21(7):1113-20
- *Sila-Asna et al: Osteoblast differentiation and bone formation gene expression in strontium-inducing bone marrow mesenchymal stem cell. *Kobe J Med Sci* 2007;53(1-2):25-35

Sulforaphane is a compound found in cruciferous vegetables, especially broccoli sprouts, which shows important action in preventing osteoporosis.

- *Kim et al: Sulforaphane inhibits osteoclastogenesis by inhibiting nuclear factor-κappaB. *Mol Cells* 2005 Dec 31;20(3):364-70

Tea (Green and Black) is linked to better bone structure.

- *Das et al: Evidence for a prospective anti-osteoporosis effect of black tea (*Camellia Sinensis*) extract in a bilaterally ovariectomized rat model. *Asia Pac J Clin Nutr* 2004;13(2):210-6
- *Devine et al: Tea drinking is associated with benefits on bone density in older women. *J Pediatr Endocrinol Metab* 1996 Mar;9 Suppl 1:101-11
- *Shen et al: Supplementation with green tea polyphenols improves bone microstructure and quality in aged, orchidectomized rats. *Calcif Tissue Int* 2011 Mar 23
- *Shen et al: Green tea polyphenols mitigate bone loss of female rats in a chronic inflammation-induced bone loss model. *J Nutr Biochem* 2009 Dec 3
- *Shen et al: Green tea and bone metabolism. *Nutr Res* 2009 Jul;29(7):437-56
- *Shen et al: Protective effect of green tea polyphenols on bone loss in middle-aged female rats. *Osteoporos Int* 2008 Jul;19(7):979-90

Vitamin C improves collagen formation and osteoblast differentiation. The best vitamin C for bioavailability is that made from mineral ascorbates (less acidic) rather than ascorbic acid.

*Franceschi et al: Effects of ascorbic acid on collagen matrix formation and osteoblast differentiation in murine MC3T3-E1 cells. *J Bone Miner Res* 1994 Jun;9(6):843-54

Vitamin D3 is an essential nutrient for bone health and the many other health conditions that it improves.

*Sato et al: Amelioration of osteoporosis and hypovitaminosis D by sunlight exposure in Parkinson's disease. *Parkinsonism Relat Disord* 2011 Jan;17(1):22-6

*Sato et al: Amelioration of osteoporosis and hypovitaminosis D by sunlight exposure in hospitalized, elderly women with Alzheimer's disease: a randomized controlled trial. *J Bone Miner Res* 2005 Aug;20(8):1327-33

*Sato et al: Amelioration of osteoporosis and hypovitaminosis D by sunlight exposure in stroke patients. *Neurol* 2003 Aug 12;61(3):338-42

Vitamin D3 and K2 together have a greater effect on bone health.

*Iwamoto et al: Effect of combined administration of vitamin D3 and vitamin K2 on bone mineral density of the lumbar spine in postmenopausal women with osteoporosis. *J Nutr* 2008 May;138(5):954-63

*Yonemura et al: Protective effect of vitamins K2 and D3 on prednisolone-induced loss of bone mineral density in the lumbar spine. *Am J Kidney Dis* 2004 Jan;43(1):53-60

Vitamin E tocotrienols promote bone formation. The best vitamin E supplement is one that contains all 4 tocopherols and 4 tocotrienols.

*Ahmad et al: Tocotrienol offers better protection than tocopherol from free radical-induced damage of rat bone. *Clin Exp Pharmacol Physiol* 2005 Sep;32(9):761-70

*Mehat et al: Beneficial effects of vitamin E isomer supplementation on static and dynamic bone histomorphometry parameters in normal male rats. *J Bone Miner Metab* 2010 Feb 10

Vitamin K is a fat-soluble vitamin vital for blood clotting and bone health. It is found in fermented foods (natto, soy, tempeh, miso, etc) and green foods (kale, spinach, chard, etc). **Fermented soy** is an excellent source since the fermentation process nullifies substances that can disrupt hormones. Be aware that most soy is genetically modified making it an inferior food with little to no medicinal value so try to find **organic fermented soy** products as much as possible. Since these foods are high in vitamin K, **they should be carefully used by those on blood thinners.**

*Adams & Pepping: Vitamin K in the treatment and prevention of osteoporosis and arterial calcification. *Am J Health Syst Pharm* 2005 Aug 1;62(15):1574-81

*Atkinson et al: The effects of phytoestrogen isoflavones on bone density in women: a double-blind, randomized, placebo-controlled trial. *Am J Clin Nutr* 2004 Feb;79(2):326-33

*Cheung et al: Vitamin K supplementation in postmenopausal women with osteopenia (ECKO trial): a randomized controlled trial. *PLoS Med* 2008 Oct 14;5(10):e196

*Devarreddy et al: Soy moderately improves microstructural properties without affecting bone mass in an ovariectomized rat model of osteoporosis. *Bone* 2006 May;38(5):686-93

*Droke et al: Soy isoflavones avert chronic inflammation-induced bone loss and vascular disease. *J Inflamm (Lond)* 2007 Sep 7;4:17

*Hara & Akiyama: Vitamin K and bone quality. *Int J Cardiol* 2010 Jan 3

*Hara & Akiyama: Vitamin K and bone quality. *Clin Calcium* 2007 Nov;17(11):1678-84

*Hirao et al: Onotherapy and combined therapy with vitamin K2 in postmenopausal women. *J Bone Miner Metab* 2008;26(3):260-4

*Ishida: Vitamin K2. *Clin Calcium* 2008 Oct;18(10):1476-82

- *Iwamoto et al: Bone quality and vitamin K2 in type 2 diabetes: review of preclinical and clinical studies. *Nutr Rev* 2011 Mar;69(3):162-7
- *Iwamoto et al: High-dose vitamin K supplementation reduces fracture incidence in postmenopausal women: a review of the literature. *Nutr Res* 2009 Apr;29(4):221-8
- *Iwamoto: Anti-fracture efficacy of vitamin K. *Clin Calcium* 2009 Dec;19(12):1805-14
- *Kaneki: Protective effects of vitamin K against osteoporosis and its pleiotropic actions. *Clin Calcium* 2006 Sep;16(9):1526-34
- *Kaneki et al: Japanese fermented soybean food as the major determinant of the large geographic difference in circulating levels of vitamin K2: possible implications for hip-fracture risk. *Nutr* 2001 Apr;17(4):315-21
- *Katsuyama et al: Promotion of bone formation by fermented soybean (Natto) intake in premenopausal women. *J Nutr Sci Vitaminol (Tokyo)* 2004 Apr;50(2):114-20
- *Katsuyama et al: Usual dietary intake of fermented soybeans (Natto) is associated with bone mineral density in premenopausal women. *J Nutr Sci Vitaminol (Tokyo)* 2002 Jun;48(3):207-15
- *Knäpen et al: Vitamin K2 supplementation improves hip bone geometry and bone strength indices in postmenopausal women. *Osteoporos Int* 2007 Jul;18(7):963-72
- *Koh et al: Gender-specific associations between soy and risk of hip fracture in the Singapore Chinese Health Study. *Am J Epidemiol* 2009 Oct 1;170(7):901-9
- *Koitaya et al: Effect of low dose vitamin K2 (MK-4) supplementation on bio-indices in postmenopausal Japanese women. *J Nutr Sci Vitaminol (Tokyo)* 2009 Feb;55(1):15-21
- *Purwosunu et al: Vitamin K2 treatment for postmenopausal osteoporosis in Indonesia. *J Obstet Gynaecol Res* 2006 Apr;32(2):230-4
- *Roudsari et al: Assessment of soy phytoestrogens' effects on bone turnover indicators in menopausal women with osteopenia in Iran: a before and after clinical trial. *Hum Cell* 1999 Dec;12(4):189-96
- *Sasaki et al: Vitamin K2 inhibits glucocorticoid-induced bone loss partly by preventing the reduction of osteoprotegerin (OPG). *J Bone Miner Metab* 2005;23(1):41-7
- *Soung et al: Soy affects trabecular microarchitecture and favorably alters select bone-specific gene expressions in a male rat model of osteoporosis. *Calcif Tissue Int* 2006 Jun;78(6):385-91
- *Tsukamoto: Studies on action of menaquinone-7 in regulation of bone metabolism and its preventive role of osteoporosis. *Biofact* 2004;22(1-4):5-19
- *Tsukamoto et al: Intake of fermented soybean (natto) increases circulating vitamin K2 (menaquinone-7) and gamma-carboxylated osteocalcin concentration in normal individuals. *J Bone Miner Metab* 2000;18(4):216-22
- *van Summeren et al: The effect of menaquinone-7 (vitamin K2) supplementation on osteocalcin carboxylation in healthy prepubertal children. *Br J Nutr* 2009 Oct;102(8):1171-8
- *Watkins et al: Protective actions of soy isoflavones and n-3 PUFAs on bone mass in ovariectomized rats. *J Nutr Biochem* 2005 Aug;16(8):479-88
- *Yamaguchi & Weitzmann: Vitamin K2 stimulates osteoblastogenesis and suppresses osteoclastogenesis by suppressing NF- κ B activation. *Int J Mol Med* 2011 Jan;27(1):3-14
- *Yamaguchi et al: Inhibitory effect of menaquinone-7 (vitamin K2) on the bone-resorbing factors-induced bone resorption in elderly female rat femoral tissues in vitro. *Exp Parasitol* 2008 May;119(1):74-9
- *Yamaguchi et al: Stimulatory effect of menaquinone-7 on bone formation in elderly female rat femoral tissues in vitro: prevention of bone deterioration with aging. *Int J Mol Med* 2002 Dec;10(6):729-33
- *Yamaguchi et al: Prolonged intake of fermented soybean (natto) diets containing vitamin K2 (menaquinone-7) prevents bone loss in ovariectomized rats. *J Bone Miner Metab* 2000;18(2):71-6
- *Ye et al: Soy isoflavones attenuate bone loss in early postmenopausal Chinese women : a single-blind randomized, placebo-controlled trial. *Eur J Nutr* 2006 Sep;45(6):327-34
- *Zhang et al: Genistein and a soy extract differentially affect three-dimensional bone parameters and bone-specific gene expression in ovariectomized mice. *Mol Pharm* 2009 Jul-Aug;6(4):1152-9
- *Zhang et al: Prospective cohort study of soy food consumption and risk of bone fracture among postmenopausal women. *Arch Intern Med* 2005 Sep 12;165(16):1890-5

Vitex (Chasteberry) is an herb often used by women to manage PMS but has a traditional value for the reproductive systems of both men and women. Vitex also has osteoprotective effects.

- *Sehmisch et al: Vitex agnus castus as prophylaxis for osteopenia after orchidectomy in rats compared with estradiol and testosterone supplementation. *Phytother Res* 2009 Jun;23(6):851-8

Walnut extract contains a substance (ellagic acid) which stimulates bone formation as well as having an anti-inflammatory effect on the aorta.

- *Papoutsis et al: Walnut extract (*Juglans regia* L.) and its component ellagic acid exhibit anti-inflammatory activity in human aorta endothelial cells and osteoblastic activity in the cell line KS483. *Br J Nutr* 2008 Apr;99(4):715-22

Xylitol is a healthier sugar substitute that actually helps with bone health as well as preventing dental cavities.

- *Mattila et al: Improved bone biomechanical properties in xylitol-fed aged rats. *Metabolism* 2002 Jan;51(1):92-6
- *Mattila et al: Increased bone volume and bone mineral content in xylitol-fed aged rats. *Gerontol* 2001 Nov-Dec;47(6):300-5
- *Mattila et al: Dietary xylitol protects against weakening of bone biomechanical properties in ovariectomized rats. *J Nutr* 1998 Oct;128(10):1811-4

Yacon is a Peruvian tuber with significant antioxidant activity. Yacon is related to the sunflower and Jerusalem artichoke and found to improve bone density and quality.

- *Alvarez et al: Prebiotic inulin/oligofructose in Yacón root (*Smallanthus sonchifolius*), phytochemistry and standardization as basis for clinical and pre-clinical research. *Rev Gastroenterol Peru* 2008 Jan-Mar;28(1):22-7
- *Geyer et al: Effect of yacon (*Smallanthus sonchifolius*) on colonic transit time in healthy volunteers. *Digestion* 2008;78(1):30-3
- *Lobo et al: Effects of fructans-containing yacon (*Smallanthus sonchifolius* Poepp and Endl.) flour on caecum mucosal morphometry, calcium and magnesium balance, and bone calcium retention in growing rats. *Br J Nutr* 2007 Apr;97(4):776-85

Yam (*Dioscorea alata*) has beneficial effects on bone health.

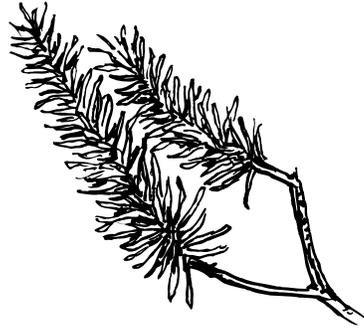
- *Chiang et al: Osteoprotective effect of monascus-fermented *Dioscorea* in ovariectomized rat model of postmenopausal osteoporosis. *J Agric Food Chem* 2011;59(17):9150-57
- *Peng et al: Antiosteoporotic activity of *Dioscorea alata* L. cv. phyto through driving mesenchymal stem cells differentiation for bone formation. *Evid Based Compl Alt Med* 2011;712892:12 pages
- *Yin et al: The in vitro anti-osteoporotic activity of some diarylheptanoids and lignans from the rhizomes of *Dioscorea spongiosa*. *Planta Med* 2008 Oct;74(12):1451-3
- *Yin et al: Antiosteoporotic activity of the water extract of *Dioscorea spongiosa*. *Biol Pharm Bull* 2004 Apr;27(4):583-6
- *Yin et al: Steroidal glycosides from the rhizomes of *Dioscorea spongiosa*. *J Nat Prod* 2003;66(5):646-50

Zinc and **Carotenoids** are important components of healthy bones.

- *Uchiyama et al: Synergistic effect of beta-cryptoxanthin and zinc sulfate on the bone component in rat femoral tissues in vitro: the unique anabolic effect with zinc. *Biol Pharm Bull* 2005 Nov;28(11):2142-5

Zyflamend is an anti-inflammatory product that inhibits prostate cancer cells and has proven to be beneficial for bone health.

- *Sandur et al: Zyflamend, a polyherbal preparation, inhibits invasion, suppresses osteoclastogenesis, and potentiates apoptosis through down-regulation of NF-kappa B activation and NF-kappa B-regulated gene products. *Nutr Cancer* 2007;57(1):78-87



PANCREAS

(USED TO TREAT PANCREATIC DISORDERS AND CYSTIC FIBROSIS DIGESTION)

COMMON EXAMPLES:

pancreatin – Donnazyme, Pancrezyme, Pancote and others

pancrelipase – Cotazym, Creon, Ku-zyme, Pancrease, Ultrase, Viokase and others

DEplete:

B9, iron

SUGGESTED ALTERNATIVES:

☞ **Pancreatic enzymes** are formed in the pancreas and consist of about 22 different kinds with only a few being prescribed for either humans or animals. Since these enzymes are vital, nutritional supplements should also be taken to offset any deficiencies the enzymes might cause. Without vitamins, enzymes cannot function.

*Friess et al: Influence of high-dose pancreatic enzyme treatment on pancreatic function in healthy volunteers. *Cancer Res* 2006 Jul 1;66(13):6748-55

*Haas 2006:83

*Murray 1996:7,394-99

*Whitcomb & Lowe: Human pancreatic digestive enzymes. *Dig Dis Sci* 2007;52(1):1-17

☞ **Pancreatic enzymes** consist of substances that break down proteins (protease), fats (lipase), and carbohydrates (amylase) and generally come from an animal source. Digestive enzymes, as a whole can come from two sources, plants and animals. Animal sources are slaughtered to extract the raw material. Most of these sources are raised in questionable environments and given disturbing substances. That said, in cases of pancreatic disorders, it is still recommended that animal-based enzymes be combined with plant-based because animal-based will fortify the organ while the plant-based enzymes will break down food that is eaten.

*Bohager 2009:18-23

*Friess et al: Influence of high-dose pancreatic enzyme treatment on pancreatic function in healthy volunteers. *Can Res* 2006 Jul;66(13):6748-55

*Murray 1998:127

☞ **Pancreatic and Digestive Enzymes assist:**

- **Athletic performance**

- *Miller et al: The effects of protease supplementation on skeletal muscle function and DOMS following downhill running. *J Agric Food Chem* 2008 Aug 27;56(16):7010-6
- *Miller et al: Pancreatic enzymes improve muscle healing after intense exercise. *J Sports Sci* 2004 Apr;22(4):365-72

- **Celiac disease**

- *Gass et al: Combination enzyme therapy for gastric digestion of dietary gluten in patients with celiac sprue. *Gastroentero* 2007 Aug;133(2):472-80
- *Leeds et al: Is exocrine pancreatic insufficiency in adult coeliac disease a cause of persisting symptoms? *Aliment Pharmacol Ther.* 2007 Feb 1;25(3):265-71

- **Chronic Pancreatitis, especially after pancreatic surgery**

- *Halgreen et al: Symptomatic effect of pancreatic enzyme therapy in patients with chronic pancreatitis. *Scandin J Gastroenter* 1986;21(1):104-8
- *Hoozen et al: Efficacy of enzyme supplementation after surgery for chronic pancreatitis. *Pancreas* 1997 Mar;14(2):174-80

- **Cystic Fibrosis**

- *No authors listed: Comparison of a high lipase pancreatic enzyme extract with a regular pancreatin preparation in adult cystic fibrosis patients. *Aliment Pharmacol Ther* 1994 Dec;8(6):603-7
- *Tursi et al: Plant sources of acid stable lipases: potential therapy for cystic fibrosis. *Metabolism* 2010 Feb;59(2):285-92

- **Diabetes**

- *Mohan et al: Oral pancreatic enzyme therapy contributes to an improvement of diabetes mellitus in tropical calculous pancreatitis. *Int J Pancreatol* 1998 Aug;24(1):19-22

- **Fat malabsorption**

- *Carroccio et al: Efficacy of oral pancreatic enzyme therapy for the treatment of fat malabsorption in HIV-infected patients. *Aliment Pharmacol Ther* 2001 Oct;15(10):1619-25
- *Safdi et al: The effects of oral pancreatic enzymes (Creon 10 capsule) on steatorrhea: a multicenter, placebo-controlled, parallel group trial in subjects with chronic pancreatitis. *Pancreas* 2006 Aug;33(2):156-62
- *Suarez et al: Pancreatic supplements reduce symptomatic response of healthy subjects to a high fat meal. *Nutrition* 2006 Feb;22(2):179-86

- **Pancreatic cancer**

- *Gonzalez & Isaacs: Pancreatic enzyme supplementation with aggressive dietary modification significantly increases survival for patients with inoperable pancreatic cancer. *Nutr Cancer* 1999;33(2):117-24
- *Saruc et al: Treatment with pancreatic enzymes significantly prolongs the survival of mice with human pancreatic cancer xenografts and slows the tumor growth. *Pancreas* 2004 May;28(4):401-12

- **Pancreatic insufficiency**

- *Domínguez-Muñoz et al: Effect of the administration schedule on the therapeutic efficacy of oral pancreatic enzyme supplements in patients with exocrine pancreatic insufficiency: a randomized, three-way crossover study. *Aliment Pharmacol Ther* 2005 Apr 15;21(8):993-1000

- **Rosacea**

- *Barba et al: Pancreatic enzymes, particularly Lipase, may have a therapeutic role in the treatment of Rosacea. *Int J Food Sci Nutr* 2007 Sep;58(6):429-36

☞ **Processed Meats** are significantly linked to the development of pancreatic cancer with a 68% increased risk over those that ate other types of meat.

- *Nöthlings et al: Meat and Fat Intake as Risk Factors for Pancreatic Cancer: The Multiethnic Cohort Study. *JNCI J Natl Cancer Inst* 2005 Oct 5;97(19):1458-65

SUGGESTED HELPERS:

Astragalus is an herb that reduces the autoimmune destruction of pancreatic cells, especially in diabetics.

*Li et al: Effect of Astragalus polysaccharide on pancreatic cell mass in type 1 diabetic mice. *Zhong-guo Zhong Yao Za Zhi* 2007 Oct;32(20):2169-73

Dandelion has pancreatic lipase activity which protects the pancreas from chemically-induced pancreatitis.

*Seo et al: Taraxacum officinale protects against cholecystokinin-induced acute pancreatitis in rats. *World J Gastroenterol* 2005 Jan 28;11(4):597-9

*Zhang et al: Pancreatic lipase inhibitory activity of taraxacum officinale in vitro and in vivo. *Nutr Res Pract* 2008;2(4):200-3

Melatonin has beneficial effects involving pancreatic cancer.

*Ruiz-Rabelo et al: Beneficial properties of melatonin in an experimental model of pancreatic cancer. *J Pineal Res* 2007 Oct;43(3):270-5

Melatonin and **Tryptophan** reduce damage during acute pancreatitis.

*Jaworek et al: Protective effect of melatonin and its precursor L-tryptophan on acute pancreatitis induced by caerulein overstimulation or ischemia/reperfusion. *J Pineal Res* 2003 Jan;34(1):40-52

Phospholids (lecithin, phosphatidylcholine) protect the pancreas from alcohol-induced oxidation and the liver from fibrosis.

*Aleynik et al: Alcohol-induced pancreatic oxidative stress: protection by phospholipid repletion. *Free Radic Biol Med* 1999 Mar;26(5-6):609-19

*Lieber et al: Attenuation of alcohol-induced hepatic fibrosis by polyunsaturated lecithin. *Hepatology* 1990 Dec;12(6):1390-8

Spices enhance pancreatic enzyme activity, especially Asafoetida (a gum obtained from giant fennel), Capsaicin, Cumin, Curcumin, Fenugreek, Ginger, Mustard, and Black pepper.

*Platel & Srinivasan: Influence of dietary spices and their active principles on pancreatic digestive enzymes in albino rats. *Mol Nutr Food Res Nahrung* 2000 Jan;44(1):42-46



PARKINSON'S DISEASE

COMMON EXAMPLES:

Anticholinergics

atropine
benztropine – Cogentin
glycopyrrolate – Robinul
propantheline – Norpanth
trihexyphenidyl – Artane

Dopamine agonists

amantadine – Symmetrel, Symadine
bromocriptine – Parlodel
levodopa – Sinemet, L-Dopa, and others
pergolide – Permax

DEplete:

B3, B6, B9, B12, C, iron, potassium, SAmE

⚡ **5-HTP** should not be taken with these drugs as the combination can cause scleroderma-like conditions (skin becomes hard and tight).

*Auffranc et al: Sclerodermiform and poikilodermal syndrome observed during treatment with carbidopa and 5-hydroxytryptophan [translated from French]. *Ann Dermatol Venereol* 1985;112:691–2

*Joly et al: Development of pseudobullous morphea and scleroderma-like illness during therapy with L-5-hydroxytryptophan and carbidopa. *J Am Acad Dermatol* 1991;25:332–3

*Sternberg et al: Development of a scleroderma-like illness during therapy with L-5-hydroxytryptophan and carbidopa. *N Engl J Med* 1980;303:782–7

⚡ **Cholinesterase inhibitors**, taken for Alzheimer's disease, increase the tremors and exacerbation of Parkinson's disease.

*No authors listed: Cholinesterase inhibitors: tremor and exacerbation of Parkinson's disease. *Prescrire Int* 2007 Oct;16(91):197-8

⚡ **Cholesterol levels** at moderately high levels seem to slow the progression of Parkinson's.

*Huang et al: Serum cholesterol and the progression of Parkinson's disease: Results from DATATOP. *PLoS One* 2011;6(8):e22854

SUGGESTED ALTERNATIVES:

Alpha lipoic acid is a potent antioxidant with neuro-protective effects making it ideal for such diseases as Alzheimer's and Parkinson's.

*Fujita et al: Alpha-lipoic acid suppresses 6-hydroxydopamine-induced ROS generation and apoptosis through the stimulation of glutathione synthesis but not by the expression of heme oxygenase-1. *Brain Res* 2008 Apr;1206:1-12

Ashwaganda is an adaptogenic herb used to combat stress but it also has neuro-protective effects.

*Ahmad et al: Neuroprotective effects of *Withania somnifera* on 6-hydroxydopamine induced Parkinsonism in rats. *Hum Exp Toxicol* 2005 Mar;24(3):137-47

Astaxanthin is a carotenoid that has many health benefits including neuroprotective properties.

*Ikeda et al: Protective effects of astaxanthin on 6-hydroxydopamine-induced apoptosis in human neuroblastoma SH-SY5Y cells. *J Neurochem* 2008 Dec;107(6):1730-40

*Lee et al: Astaxanthin protects against MPTP/MPP⁺-induced mitochondrial dysfunction and ROS production in vivo and in vitro. *Food Chem Toxicol* 2011 Jan;49(1):271-80

Blueberry polyphenols reduce the effects of neurodegenerative diseases.

*Shukitt-Hale et al: Blueberry polyphenols attenuate kainic acid-induced decrements in cognition and alter inflammatory gene expression in rat hippocampus. *Nutr Neurosci* 2008 Aug;11(4):172-82

Chinese skullcap is an herb that contains baicalein which has neuro-protective effects.

*Li et al: Inhibition of microglial activation by the herbal flavonoid baicalein attenuates inflammation-mediated degeneration of dopaminergic neurons. *J Neural Transm* 2005 Mar;112(3):331-47

*Mu et al: Baicalein exerts neuroprotective effects in 6-hydroxydopamine-induced experimental parkinsonism in vivo and in vitro. *Pharmacol Biochem Behav* 2009 Jun;92(4):642-8

Coconut water protects neurons from degenerating.

*Park et al: *Poria cocos* water extract (PCW) protects PC12 neuronal cells from beta-amyloid-induced cell death through antioxidant and antiapoptotic functions. *Pharmazie* 2009 Nov;64(11):760-4

CoQ10 protects neurons and slows the degenerative progress. The ubiquinol form is better absorbed and utilized than the cheaper ubiquinone.

*Clerehugh et al: Coenzyme Q10 has a neuroprotective effect in an experimental model of Parkinson's disease. *J Neurochem* 2008 Mar;104(6):1613-21

*Hargreaves et al: The coenzyme Q10 status of the brain regions of Parkinson's disease patients. *Neurosci Lett* 2008 Dec 5;447(1):17-9

*Maroz et al: Reactivity of ubiquinone and ubiquinol with superoxide and the hydroperoxyl radical: implications for in vivo antioxidant activity. *Free Radic Biol Med* 2009 Jan 1;46(1):105-9

*Müller et al: Coenzyme Q10 supplementation provides mild symptomatic benefit in patients with Parkinson's disease. *Neurosci Lett* 2003 May 8;341(3):201-4

*Shults et al: Effects of coenzyme Q10 in early Parkinson disease: evidence of slowing of the functional decline. *Arch Neurol* 2002 Oct;59(10):1541-50

*Somayajulu-Nițu et al: Paraquat induces oxidative stress, neuronal loss in substantia nigra region and parkinsonism in adult rats: neuroprotection and amelioration of symptoms by water-soluble formulation of coenzyme Q10. *BMC Neurosci* 2009;10:88

Creatine, alone or with **CoQ10**, is a combination proving to be useful in treating such diseases as Parkinson's, Huntington's and other neurological conditions. Creatine

alone improves muscle quality in the aged, the athlete and those with muscular diseases. It also reduces muscle cramps and helps with noise-induced hearing loss. It is safely taken by diabetics and those on dialysis. Creatine decreases homocysteine levels, important in those with Parkinson's or heart disease.

- *Adihetty & Beal: Creatine and its potential therapeutic value for targeting cellular energy impairment in neurodegenerative diseases. *Neuromolecular Med* 2008;10(4):275-90
- *Candow & Chilibeck: Effect of creatine supplementation during resistance training on muscle accretion in the elderly. *J Nutr Health Aging* 2007 Mar-Apr;11(2):185-8
- *Chang et al: Creatine monohydrate treatment alleviates muscle cramps associated with haemodialysis. *Nephrol Dial Transplant* 2002 Nov;17(11):1978-81
- *Chung et al: Creatine supplements in patients with idiopathic inflammatory myopathies who are clinically weak after conventional pharmacologic treatment: Six-month, double-blind, randomized, placebo-controlled trial. *Arthritis Rheum* 2007 May 15;57(4):694-702
- *Gualano et al: Creatine supplementation does not impair kidney function in type 2 diabetic patients: a randomized, double-blind, placebo-controlled, clinical trial. *Eur J Appl Physiol* 2010 Oct 26
- *Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40
- *Hersch et al: Creatine in Huntington disease is safe, tolerable, bioavailable in brain and reduces serum 8OH²'dG. *Neurol* 2006 Jan 24;66(2):250-2
- *Hespel & Derave: Ergogenic effects of creatine in sports and rehabilitation. *Subcell Biochem* 2007;46:245-59
- *Minami et al: Creatine and tempol attenuate noise-induced hearing loss. *Brain Res* 2007 May 7;1148:83-9
- *Smith et al: Effects of exercise and creatine on myosin heavy chain isoform composition in patients with Charcot-Marie-Tooth disease. *Muscle Nerve* 2006 Nov;34(5):586-94
- *Somayajulu-Nitu et al: Paraquat induces oxidative stress, neuronal loss in substantia nigra region and parkinsonism in adult rats: neuroprotection and amelioration of symptoms by water-soluble formulation of coenzyme Q10. *BMC Neurosci* 2009;10:88
- *Taes et al: Creatine supplementation decreases homocysteine in an animal model of uremia. *Kidney Int* 2003 Oct;64(4):1331-7
- *Tarnopolsky & MacLennan: Creatine monohydrate supplementation enhances high-intensity exercise performance in males and females. *Int J Sport Nutr Exerc Metab* 2000 Dec;10(4):452-63
- *Tarnopolsky et al: A randomized, controlled trial of creatine monohydrate in patients with mitochondrial cytopathies. *Muscle Nerve* 1997 Dec;20(12):1502-9
- *Walter et al: Creatine monohydrate in muscular dystrophies: A double-blind, placebo-controlled clinical study. *Neurol* 2000 May 9;54(9):1848-50
- *Yang et al: Combination therapy with coenzyme Q10 and creatine produces additive neuroprotective effects in models of Parkinson's and Huntington's diseases. *J Neurochem* 2009 Jun;109(5):1427-39

Curcumin is the active compound found in the food spice, Turmeric. It has numerous healing benefits including neuro-protective effects and alleviating glutathione depletion, which is valuable in treating such diseases as Parkinson's and Alzheimer's.

- *Chen et al: Curcumin protects PC12 cells against 1-methyl-4-phenylpyridinium ion-induced apoptosis by bcl-2-mitochondria-ROS-iNOS pathway. *Apoptosis* 2006 Jun;11(6):943-53
- *Jagatha et al: Curcumin treatment alleviates the effects of glutathione depletion in vitro and in vivo: therapeutic implications for Parkinson's disease explained via in silico studies. *Free Radic Biol Med* 2008 Mar 1;44(5):907-17
- *Jaisin et al: Curcumin I protects the dopaminergic cell line SH-SY5Y from 6-hydroxydopamine-induced neurotoxicity through attenuation of p53-mediated apoptosis. *Neurosci Lett* 2011 Feb 11;489(3):192-6
- *Khuwaja et al: Neuroprotective effects of curcumin on 6-hydroxydopamine-induced Parkinsonism in rats: behavioral, neurochemical and immunohistochemical studies. *Exp Neurol* 2010 Oct;225(2):237-9

- *Liu et al: Curcumin protects against A53T alpha-synuclein-induced toxicity in a PC12 inducible cell model for Parkinsonism. *Pharmacol Res* 2011 Jan 12
- *Mythri & Bharath: Curcumin: A potential neuroprotective agent in Parkinson's disease. *Curr Pharm Des* 2012 Jan 1
- *Mythri et al: Mitochondrial complex I inhibition in Parkinson's disease: how can curcumin protect mitochondria? *Antioxid Redox Signal* 2007 Mar;9(3):399-408
- *Rajeswari & Sabesan: Inhibition of monoamine oxidase-B by the polyphenolic compound, curcumin and its metabolite tetrahydrocurcumin, in a model of Parkinson's disease induced by MPTP neurodegeneration in mice. *Inflammopharmacol* 2008 Apr;16(2):96-9
- *Wang et al: Curcumin reduces alpha-synuclein induced cytotoxicity in Parkinson's disease cell model. *BMC Neurosci* 2010;11:57
- *Wang et al: Curcumin attenuates 6-hydroxydopamine-induced cytotoxicity by anti-oxidation and nuclear factor-kappa B modulation in MES23.5 cells. *Biochem Pharmacol* 2009 Jul 15;78(2):178-83
- *Yu et al: Curcumin prevents dopaminergic neuronal death through inhibition of the c-Jun N-terminal kinase pathway. *Rejuvenation Res* 2010 Feb;13(1):55-64
- *Zbarsky et al: Neuroprotective properties of the natural phenolic antioxidants curcumin and naringenin but not quercetin and fisetin in a 6-OHDA model of Parkinson's disease. *Free Radic Res* 2005 Oct;39(10):1119-25

Echinacea is an herb well known for boosting the immune system during cold and flu season but it also contains a compound which has neuro-protective effects.

- *Geng et al: Neuroprotective effects of echinacoside in the mouse MPTP model of Parkinson's disease. *Eur J Pharmacol* 2007 Jun 14;564(1-3):66-74

Exercise improves balance confidence and endurance. Although tai chi and dancing have been studied the most in relation to Parkinson's, any form of exercise is better than nothing.

- *Hackney & Earhart: Effects of dance on balance and gait in severe Parkinson disease: a case study. *Disabil Rehabil* 2010;32(8):679-84
- *Hackney & Earhart: Tai Chi improves balance and mobility in people with Parkinson disease. *Gait Posture* 2008 Oct;28(3):456-60
- *Hackney & Earhart: Short duration, intensive tango dancing for Parkinson disease: an uncontrolled pilot study. *Planta Med* 1996 Oct;62(5):405-9

Ginkgo biloba is an herb most often used for increasing memory (mainly because it increases blood flow to the brain) but Ginkgo also has properties that decrease the neurotoxic effects of l-dopa.

- *Cao et al: Experimental study on inhibition of neuronal toxic effect of levodopa by ginkgo biloba extract on Parkinson disease in rats. *J Huazhong Univ Sci Technolog Med Sci* 2003;23(2):151-3

Homocysteine levels should be **decreased** in order to prevent Parkinson's, cardiovascular diseases, and bone loss in those taking l-dopa, a medication which tends to raise homocysteine levels. This can be achieved through supplementation of certain B vitamins (**6,9,12**) which should be taken with a **B-complex** in order to prevent a deficiency in one or more of the other B family members. In addition, **B6** may reduce the severity of l-dopa-induced dyskinesias (involuntary movements) in Parkinson's disease and **B5** may play a role in reversing the effects of Hallervorden-Spatzky syndrome, which also has a movement disorder as part of the diagnosis.

- *de Lau et al: Dietary folate, vitamin B12, and vitamin B6 and the risk of Parkinson disease. *Neurol* 2006 Jul 25;67(2):315-8
- *Ientile et al: Homocysteine, vitamin determinants and neurological diseases. *Front Biosci (Schol Ed)* 2010;2:359-72

- *Kuo et al: Deprivation of pantothenic acid elicits a movement disorder and azoospermia in a mouse model of pantothenate kinase-associated neurodegeneration. *J Inherit Metab Dis* 2007 Jun;30(3):310-7
- *Lee et al: Homocysteine-lowering therapy or antioxidant therapy for bone loss in Parkinson's disease. *Mov Disord* 2010 Feb 15;25(3):332-40
- *Levin et al: High homocysteine levels are associated with neurodegenerative conditions such as Parkinson's disease, ALS and progressive supranuclear palsy. *Dement Geriatr Cogn Disord* 2010 Jul;29(6):553-9
- *Sandyk & Pardeshi: Pyridoxine improves drug-induced parkinsonism and psychosis in a schizophrenic patient. *Phytother Res* 2008 Sep;22(9):1162-7
- *Schroecksadel et al: Effect of L-dopa on plasma homocysteine in PD patients: relationship to B-vitamin status. *Biometals* 2008 Sep 4

Lion's Mane mushroom stimulates nerve regeneration.

- *Kenmoku et al: Erinacine Q, a new erinacine from *Hericium erinaceum*, and its biosynthetic route to erinacine C in the basidiomycete. *Biosci Biotechnol Biochem* 2002 Mar;66(3):571-5
- *Kolotushkina et al: The influence of *Hericium erinaceus* extract on myelination process in vitro. *Fiziol Zh* 2003;49(1):38-45
- *Mori et al: Nerve growth factor-inducing activity of *Hericium erinaceus* in 1321N1 human astrocytoma cells. *Colorectal Dis* 2007 Jul;9(6):549-52

Psyllium fiber increases the bioavailability of l-dopa.

- *Diez et al: The hydrosoluble fiber *Plantago ovata* husk improves levodopa (with carbidopa) bioavailability after repeated administration. *J Neurol Sci* 2008 Aug 15;271(1-2):15-20.

Quercetin is a bioflavonoid that may be an effective helper for l-dopa.

- *Singh et al: Quercetin potentiates L-Dopa reversal of drug-induced catalepsy in rats: possible COMT/MAO inhibition. *Pharmacol* 2003 Jun;68(2):81-8

Quince fruit (*Chaenomeles speciosa*) has anti-Parkinson's effects, useful in treating the disease.

- *Zhao et al: Dopamine transporter inhibitory and antiparkinsonian effect of common flowering quince extract. *Pharmacol Biochem Behav* 2008 Sep;90(3):363-71

Red Sage increases dopamine release.

- *Kim et al: *Salviae miltiorrhizae radix* increases dopamine release of rat and pheochromocytoma PC12 cells. *Phytother Res* 2006 Mar;20(3):191-9

Reishi mushrooms protect the neurons in such degenerating diseases as Parkinson's.

- *No authors listed: *Ganoderma lucidum* protects dopaminergic neuron degeneration through inhibition of microglial activation. *Evid Based Complement Alternat Med* 2009 Jul 16
- *Zhu et al: Effect of the oil from *ganoderma lucidum* spores on pathological changes in the substantia nigra and behaviors of MPTP-treated mice. *Di Yi Jun Yi Da Xue Xue Bao* 2005 Jun;25(6):667-71

Resveratrol is a substance derived from red grape skins and other fruits such as mulberry, reduces oxidative damage, depletion of dopamine, and protects the neurons.

- *Busanello et al: Resveratrol protects against a model of vacuous chewing movements induced by reserpine in mice. *Behav Pharmacol* 2010 Nov 30
- *Chao et al: Dietary oxyresveratrol prevents parkinsonian mimetic 6-hydroxydopamine neurotoxicity. *Free Radic Biol Med* 2008 Oct 1;45(7):1019-26
- *Doré: Unique properties of polyphenol stilbenes in the brain: more than direct antioxidant actions; gene/protein regulatory activity. *Neuropharmacol* 2008 Jun;54(7):1112-9

- *Khan et al: Resveratrol attenuates 6-hydroxydopamine-induced oxidative damage and dopamine depletion in rat model of Parkinson's disease. *Brain Res* 2010 Apr 30;1328:139-51
- *Sun et al: Resveratrol as a therapeutic agent for neurodegenerative diseases. *Mol Neurobiol* 2010 Jun;41(2-3):375-83
- *Zhang et al: Resveratrol protects dopamine neurons against lipopolysaccharide-induced neurotoxicity through its anti-inflammatory actions. *Mol Pharmacol* 2010 Sep 1;78(3):466-77

Rosemary contains a compound that stimulates nerve growth.

- *Kosaka & Yokoi: Carnosic acid, a component of rosemary (*Rosmarinus officinalis* L.), promotes synthesis of nerve growth factor in T98G human glioblastoma cells. *Mol Cancer Ther* 2004 Oct;3(10):1239-48
- *Park et al: Beneficial effects of carnosic acid on dieldrin-induced dopaminergic neuronal cell death. *Neuroreport* 2008 Aug 27;19(13):1301-4

SAME is effective and well-tolerated in those with Parkinson's suffering from depression.

- *Rocco et al: S-Adenosyl-Methionine improves depression in patients with Parkinson's disease in an open-label clinical trial. *Mov Disord* 2000 Nov;15(6):1225-9

Sulforaphane is a substance found in cruciferous vegetables but highest is in broccoli sprouts. Sulforaphane has numerous health benefits including a protective effect against neuron cell death.

- *Han et al: Protective effect of sulforaphane against dopaminergic cell death. *J Pharmacol Exp Ther* 2007 Apr;321(1):249-56
- *Tarozzi et al: Sulforaphane as an inducer of glutathione prevents oxidative stress-induced cell death in a dopaminergic-like neuroblastoma cell line. *J Neurochem* 2009 Dec;111(5):1161-71
- *Vauzour et al: Sulforaphane protects cortical neurons against 5-S-cysteinyl-dopamine-induced toxicity through the activation of ERK1/2, Nrf-2 and the upregulation of detoxification enzymes. *Mol Nutr Food Res* 2010 Apr;54(4):532-42

Theanine is a substance derived from Green tea and has neuroprotective properties as well as a calming effect, useful in stressful situations.

- *Cho et al: Protective effect of the green tea component, L-theanine on environmental toxins-induced neuronal cell death. *Neurotox* 2008 Jul;29(4):656-62

Velvet bean extract (*Mucuna pruriens*) has a long history of use for treating Parkinson's because of its natural dopamine content. Tests revealed that this herb had better effects, including a longer relief from dyskinesia, than those taking l-dopa. If you want to try it, it is wise to find the ready-made extract because the seed pods also have a history of use – as an itch powder. *Mucuna pruriens* is not available in Canada because it is a pharmaceutical rival but some Horny Goat weed products do contain this herb.

- *Kasture et al: Assessment of symptomatic and neuroprotective efficacy of *Mucuna pruriens* seed extract in rodent model of Parkinson's disease. *Neurotox Res* 2009 Feb;15(2):111-22
- *Katzenschlager et al: *Mucuna pruriens* in Parkinson's disease: a double blind clinical and pharmacological study. *J Neurol Neurosurg Psych* 2004 Dec;75(12):1672-7
- *Lieu et al: A water extract of *Mucuna pruriens* provides long-term amelioration of parkinsonism with reduced risk for dyskinesias. *Parkinson Related Disorders* 2010 Aug;16(7):458-65
- *Manyam et al: Effect of antiparkinson drug HP-200 (*Mucuna pruriens*) on the central monoaminergic neurotransmitters. *Phytother Res* 2004;18:97-101
- *Manyam et al: Neuroprotective effects of the antiparkinson drug *Mucuna pruriens*. *Phytother Res* 2004;18:706-12

*No authors listed: An alternative medicine treatment for Parkinson's disease: results of a multicenter clinical trial. HP-200 in Parkinson's Disease Study Group. J Altern Complement Med 1995 Fall;1(3):249-55

Vitamin D deficiency leads to a greater risk of developing Parkinson's and such other neurological disorders as multiple sclerosis.

*Sato et al: Amelioration of osteoporosis and hypovitaminosis D by sunlight exposure in Parkinson's disease. Parkinsonism Relat Disord 2011 Jan;17(1):22-6

*Solomon: Multiple sclerosis and vitamin D. Neurology 2011 Oct 25;77(17):e99-e100



PROSTATE

(USED TO TREAT PROSTATE ENLARGEMENT (BPH – BENIGN PROSTATIC HYPERPLASIA))

COMMON EXAMPLES:

5-Alpha Reductase Inhibitors

finasteride – Proscar
dutasteride – Avodart

Alpha-1 Blockers

alfuzosin – UroXatral
doxazosin – Cardura
prazosin – Minipress
tamsulosin – Flomax
terazosin – Hytrin

DEplete:

studies have not yet determined any

☞ **Aluminum-containing antiperspirants** contribute to breast and prostate cancers as well as other disorders. Aluminum is found in many products including acid relievers, food and soft drink cans, cookware, vaccines, food additives (often beginning with an E followed by a number) and more.

*Hupston: Avoid aluminum - Locate the unexpected sources of aluminum in products. NaturalNews Friday, August 26, 2011

*McGrath: Apocrine sweat gland obstruction by antiperspirants allowing transdermal absorption of cutaneous generated hormones and pheromones as a link to the observed incidence rates of breast and prostate cancer in the 20th century. Med Hypotheses 2009 Jun;72(6):665-74

☞ **Bisphosphonates** are prescribed for osteoporosis but have, instead, resulted in renal impairment of prostate cancer patients.

*Oh et al: The risk of renal impairment in hormone-refractory prostate cancer patients with bone metastases treated with zoledronic acid. Cancer 2007 Mar 15;109(6):1090-6

☞ **Blood thinners** used beyond two years after a diagnosis of prostate cancer is associated with a poorer prognosis.

*Tagalakis & Tamim: The effect of warfarin use on clinical stage and histological grade of prostate cancer. Pharmacoepidemiol Drug Saf 2010 May;19(5):436-9

☞ **Certain drugs** used to induce growth in young boys, cause loss of bone quality and increases the size of the prostate. These drugs, called Aromatase

inhibitors (AIs), are normally used for breast cancer treatments in women and to prevent enlarged breasts in men.

*Bajpai et al: Peripubertal aromatase inhibition in male rats has adverse long-term effects on bone strength and growth and induces prostatic hyperplasia. *J Endocrinol* 2010 Oct;207(1):27-34

☞ **Dairy consumption** increases the risk of prostate (and ovarian cancer) as well as decreased bone quality. While dairy is the main focus of the studies, one also states that “milk was most closely correlated ... with prostatic cancer incidence, followed by meat and coffee. As for testicular cancer, cheese was most closely correlated ... with the incidences in ages of 20-39, followed by animal fat and milk.”

*Lanou: Should dairy be recommended as part of a healthy vegetarian diet? Counterpoint. *Am J Clin Nutr* 2009 May;89(5):1638S-1642S

*Li et al: The effects of estrogen-like products in milk on prostate and testes. *Endocr Pract* 2003 Jul-Aug;9(4):290-5

☞ **Enlarged prostates** create a higher risk for prostate cancer, a risk that continues to climb with age and nutrient deficiencies, which increase even more when drugs for the prostate are added to the other factors.

*Mandal: Drugs for enlarged prostate raise cancer risk. *news-medical.net* online article published June 9, 2011

☞ **HRTs (Hormone Replacement Therapy)** are occasionally used in aging men but that has adverse effects on the prostate as well as accelerating the aging process.

*Montico et al: Hormonal therapy in the senescence: Prostatic microenvironment structure and adhesion molecules. *Micron* 2011 Aug;42(6):642-55

☞ **Nutrient deficiencies** contribute to male hormone reduction, especially vitamins A and E and the minerals selenium and zinc.

*He & Feng: Effects of some micronutrients on partial androgen deficiency in the aging male. *Clin Neuropharmacol* 1999 Jul-Aug;22(4):241-3

☞ **Pesticides** (DDT, simazine, lindane and some of their active constituents) have long been associated with a significant increase in developing cancers. Chronic exposure also increases the risk for diabetes, thyroid diseases, and hypertension.

*Band et al: Prostate cancer risk and exposure to pesticides in British Columbia farmers. *Prostate* 2010 Aug 26

*Burns et al: Cancer incidence of 2,4-D production workers. *Int J Environ Res Public Health* 2011 Sep;8(9):3579-90

*Donato & Zani: Chronic exposure to organochlorine compounds and health effects in adults: diabetes and thyroid diseases. *Ann Ig* 2010 May-Jun;22(3):185-98

*Goncharov et al: Blood pressure in relation to concentrations of PCB congeners and chlorinated pesticides. *Environ Health Perspect* 2011 Mar;119(3):319-25

*Kumar et al: CYP 1A1 polymorphism and organochlorine pesticides levels in the etiology of prostate cancer. *Chemosphere* 2010 Sep;81(4):464-8

*McGlynn et al: Persistent organochlorine pesticides and risk of testicular germ cell tumors. *J Natl Cancer Inst* 2008 May 7;100(9):663-71

*Multigner et al: Chlordecone exposure and risk of prostate cancer. *J Clin Oncol* 2010 Jul 20;28(21):3457-62

*Parent et al: Does exposure to agricultural chemicals increase the risk of prostate cancer among farmers? *McGill J Med* 2009 Jan;12(1):70-7

*Xu et al: Associations of serum concentrations of organochlorine pesticides with breast cancer and prostate cancer in U.S. adults. *Environ Health Perspect* 2010 Jan;118(1):60-6

⌘ **Petroleum products** such as mineral oil, often used as a laxative, increases cancer risks and not just of the prostate.

*Tolbert: Oils and cancer. *Cancer Causes Control* 1997 May;8(3):386-405

⌘ **Statin drugs**, used for Cholesterol, have many side effects including stimulating the growth of prostate cancer cells.

*Chang et al: Statins increase the risk of prostate cancer: A population-based case-control study. *Prostate* 2011 Dec ;71(16):1818-24

*Murtola et al: Comparative effects of high and low-dose simvastatin on prostate epithelial cells: The role of LDL. *Eur J Pharmacol* 2011 Oct 25

*Ritch et al: Effect of statin use on biochemical outcome following radical prostatectomy as evidenced by the fact that Statin users have a lower 5-year biochemical recurrence-free survival compared with non-users. *BJU Int* 2011 Oct;108(8 Pt 2):E211-6

⌘ **Trans fats** significantly increase the risk of numerous diseases including cancers, which is why it is so important to take antioxidants. Trans fats are found in processed foods, hard margarines and shortening, and notoriously high in deep fried foods.

*Chavarro et al: A prospective study of trans-fatty acid levels in blood and risk of prostate cancer. *Cancer Epidemiol Biomark Prev* 2008 Jan;17(1):95-101

⌘ **Vaccines** using animal cells are linked to retrovirus infections associated with chronic fatigue and prostate cancer.

*Miyazawa et al: Endogenous retroviruses as potential hazards for vaccines. *Biologic* 2010 May;38(3):371-6

SUGGESTED ALTERNATIVES:

SEE MORE SUGGESTIONS FOR PROSTATE UNDER CANCER.

Antioxidants, Milk thistle, Isoflavones, and Lycopene significantly reduce enlarged prostates and the risk for prostate cancer. Other antioxidants (**CoQ10, vitamin E, Selenium, Methionine, Phospholipids**) protect men (and women) against the occupational stress of working with petrochemicals in the oil and gas industry.

*Edinger & Koff: Effect of the consumption of tomato paste on plasma prostate-specific antigen levels in patients with benign prostate hyperplasia. *Braz J Med Biol Res* 2006 Aug;39(8):1115-9

*Jian et al: Do dietary lycopene and other carotenoids protect against prostate cancer? *Int J Cancer* 2005 Mar 1;113(6):1010-4

*Korkina et al: Coenzyme Q10-containing composition (Immugen) protects against occupational and environmental stress in workers of the gas and oil industry. *Biofactors* 2003;18(1-4):245-54

*Schröder et al: Randomized, double-blind, placebo-controlled crossover study in men with prostate cancer and rising PSA: effectiveness of a dietary supplement. *Eur Urol* 2005 Dec;48(6):922-30; disc 930-1

*Schwarz et al: Lycopene inhibits disease progression in patients with benign prostate hyperplasia. *J Nutr* 2008 Jan;138(1):49-53

*Singh & Agarwal: Prostate cancer chemoprevention by silibinin: bench to bedside. *Mol Carcinog* 2006;45(6):436-42

Apigenin and **Luteolin** are bioflavonoids found in a number of fruits, vegetables, and herbs. They are potent antioxidants that prohibit the progression of prostate cancer cells and trigger their death.

*Chiu & Lin: Downregulation of androgen receptor expression by luteolin causes inhibition of cell proliferation and induction of apoptosis in human prostate cancer cells and xenografts. *Anticancer Res* 2005 Jan-Feb;25(1A):139-47

*Franzen et al: The chemopreventive bioflavonoid apigenin inhibits prostate cancer cell motility through the focal adhesion kinase/Src signaling mechanism. *Cancer Prev Res (Phila Pa)* 2009 Sep;2(9):830-41

*Kaur et al: Plant flavonoid apigenin inactivates Akt to trigger apoptosis in human prostate cancer: an in vitro and in vivo study. *Carcinogen* 2008 Nov;29(11):2210-7

*Mirzoeva et al: Inhibition of HIF-1 alpha and VEGF expression by the chemopreventive bioflavonoid apigenin is accompanied by Akt inhibition in human prostate carcinoma PC3-M cells. *Mol Carcinog* 2008 Sep;47(9):686-700

*Shukla & Gupta: Apigenin suppresses insulin-like growth factor I receptor signaling in human prostate cancer: an in vitro and in vivo study. *Mol Carcinog* 2009 Mar;48(3):243-52

*Zhou et al: Luteolin inhibits invasion of prostate cancer PC3 cells through E-cadherin. *Mol Cancer Ther* 2009 Jun;8(6):1684-91

Apricots reduce alcohol- or radiation-induced testicular damage.

*Kurus et al: Apricot ameliorates alcohol induced testicular damage in rat model. *Food Chem Toxicol* 2009 Oct;47(10):2666-72

*Ugras et al: *Prunus armeniaca* L (apricot) protects rat testes from detrimental effects of low-dose x-rays. *Nutr Res* 2010 Mar;30(3):200-8

Astaxanthin (a potent antioxidant carotenoid) and **Saw palmetto** decrease the growth of prostate cancer cells.

*Anderson: A preliminary investigation of the enzymatic inhibition of 5alpha-reduction and growth of prostatic carcinoma cell line LNCap-FGC by natural astaxanthin and Saw Palmetto lipid extract in vitro. *J Herb Pharmacother* 2005;5(1):17-26

Avocados are rich in compounds that help prevent prostate problems.

*Lu et al: Inhibition of prostate cancer cell growth by an avocado extract: role of lipid-soluble bioactive substances. *J Nutr Biochem* 2005 Jan;16(1):23-30

B12 deficiency causes a type of anemia called pernicious anemia which has been linked to prostate cancer but which responds well to supplementation.

*Tisman et al: Coexistence of pernicious anemia and prostate cancer - 'an experiment of nature' involving vitamin B(12) modulation of prostate cancer growth and metabolism: a case report. *J Med Case Reports* 2009;3:9295

Banana peel extract reduces the risk of prostate enlargement.

*Akamine et al: Banana peel extract suppressed prostate gland enlargement in testosterone-treated mice. *Dermatol Surg* 2005 Jul;31(7Pt2):855-60; disc 860

Bee pollen derived from mustard green flowers induces prostate cancer cell death.

*Wu & Lou: A steroid fraction of chloroform extract from bee pollen of *Brassica campestris* induces apoptosis in human prostate cancer PC-3 cells. *Phytother Res* 2007 Nov;21(11):1087-91

Bee propolis and **Brazilian Green Bee Propolis** are known anti-infectives but they also induce the deaths of various cancer cells including that of the prostate.

*Szliszka et al: Ethanol extract of Brazilian green propolis sensitizes prostate cancer cells to TRAIL-induced apoptosis. *Int J Oncol* 2011 Feb 1

*Szliszka et al: Ethanol extract of propolis augments TRAIL-induced apoptotic death in prostate cancer cells. *Evid Based Complement Alternat Med* 2009 Nov 5

Berberine-containing plants (Barberry, Goldenseal, Goldentthread, Oregon grape) are strong anti-microbials as well as having an anti-cancer effect on the prostate.

*Mantena et al: Berberine, a natural product, induces G1-phase cell cycle arrest and caspase-3-dependent apoptosis in human prostate carcinoma cells. *Mol Cancer Ther* 2006 Feb;5(2):296-308

Beta-sitosterol and **Saw palmetto** protect the prostate **and reduce hair loss in men.**

*Prager et al: A randomized, double-blind, placebo-controlled trial to determine the effectiveness of botanically derived inhibitors of 5-alpha-reductase in the treatment of androgenetic alopecia. *J Altern Complement Med* 2002 Apr;8(2):143-52

Black cohosh is an herb frequently used by women for menopausal symptoms but it also works very well for men by inhibiting the formation of prostate cancer cells.

*Hostanska et al: Apoptosis of human prostate androgen-dependent and -independent carcinoma cells induced by an isopropanolic extract of black cohosh involves degradation of cytokeratin (CK)18. *Anticancer Res* 2005 Jan-Feb;25(1A):139-47

*Jarry et al: Petasiphenone, a phenol isolated from *Cimicifuga racemosa*, in vitro inhibits proliferation of the human prostate cancer cell line LNCaP. *Planta Med* 2007 Feb;73(2):184-7

Brown Seaweed and **Spinach carotenoids** (fucoxanthin and neoxanthin respectively) have anti-cancer properties against prostate cells. Fucoxanthin is also sold as a weightloss product.

*Kotake-Nara et al: Carotenoids affect proliferation of human prostate cancer cells. *J Nutr* 2001 Dec;131(12):3303-6

*Yoshiko & Hoyoku: Fucoxanthin, a natural carotenoid, induces G1 arrest and GADD45 gene expression in human cancer cells. *In Vivo* 2007 Mar-Apr;21(2):305-9

Cacao is the base for cocoa and chocolate but in the raw state has many health benefits including a protective effect on the prostate.

*Bisson et al: Therapeutic effect of ACTICOA powder, a cocoa polyphenolic extract, on experimentally induced prostate hyperplasia in Wistar-Unilever rats. *J Med Food* 2007 Dec;10(4):628-35

*Jourdain et al: In-vitro effects of polyphenols from cocoa and beta-sitosterol on the growth of human prostate cancer and normal cells. *Am J Physiol Renal Physiol* 2007 Oct;293(4):F1256-61

*Peng et al: In vitro and in vivo effects of water extract of white cocoa tea (*Camellia ptilophylla*) against human prostate cancer. *Pharm Res* 2010 Jun;27(6):1128-37

Coconut oil has significant health benefits including reducing enlarged prostates while increasing testosterone and antioxidant levels in the testes.

*Arruzazabala et al: Effects of coconut oil on testosterone-induced prostatic hyperplasia in Sprague-Dawley rats. *J Pharm Pharmacol* 2007 Jul;59(7):995-9

*Hurtado de Catalfo et al: Dietary lipids modify redox homeostasis and steroidogenic status in rat testis. *Phytother Res* 2010 Feb;24(2):163-8

Cruciferous (Brassica) vegetables of the cabbage family significantly reduce the risk of prostate cancer but a "Western-style diet" aggressively increases the risk. **Selenium** and **Sulforaphane** (a potent phytoestrogen) are found in high amounts in **broccoli sprouts.**

- *Abdulah et al: Selenium enrichment of broccoli sprout extract increases chemosensitivity and apoptosis of LNCaP prostate cancer cells. *BMC Cancer* 2009;9:414
- *Ambrosini et al: Dietary patterns identified using factor analysis and prostate cancer risk: a case control study in Western Australia. *Ann Epidemiol* 2008 May;18(5):364-70
- *Bhamre et al: Temporal changes in gene expression induced by sulforaphane in human prostate cancer cells. *Prostate* 2009 Feb 1;69(2):181-90
- *Brooks et al: Potent induction of phase 2 enzymes in human prostate cells by sulforaphane. *Cancer Epidemiol Biomarkers Prev* 2001 Sep;10(9):949-54
- *Chiao et al: Sulforaphane and its metabolite mediate growth arrest and apoptosis in human prostate cancer cells. *Int J Oncol* 2002 Mar;20(3):631-6
- *Gibbs et al: Sulforaphane destabilizes the androgen receptor in prostate cancer cells by inactivating histone deacetylase 6. *Proc Natl Acad Sci USA* 2009 Sep 29;106(39):16663-8
- *Hahm & Singh: Sulforaphane inhibits constitutive and interleukin-6-induced activation of signal transducer and activator of transcription 3 in prostate cancer cells. *Cancer Prev Res (Phila)* 2010 Apr;3(4):484-94
- *Ho et al: Dietary sulforaphane, a histone deacetylase inhibitor for cancer prevention. *J Nut* 2009 Dec;139(12):2393-6
- *Keum et al: Pharmacokinetics and pharmacodynamics of broccoli sprouts on the suppression of prostate cancer in transgenic adenocarcinoma of mouse prostate (TRAMP) mice: implication of induction of Nrf2, HO-1 and apoptosis and the suppression of Akt-dependent kinase pathway. *Pharm Res* 2009 Oct;26(10):2324-31
- *Kristal & Lampe: Brassica vegetables and prostate cancer risk: a review of the epidemiological evidence. *Nutr Cancer* 2002;42(1):1-9
- *Myzak et al: Sulforaphane retards the growth of human PC-3 xenografts and inhibits HDAC activity in human subjects. *Exp Biol Med (Maywood)* 2007 Feb;232(2):227-34
- *Shankar et al: Sulforaphane enhances the therapeutic potential of TRAIL in prostate cancer orthotopic model through regulation of apoptosis, metastasis, and angiogenesis. *Clin Cancer Res* 2008 Nov 1;14(21):6855-66
- *Singh et al: Sulforaphane inhibits prostate carcinogenesis and pulmonary metastasis in TRAMP mice in association with increased cytotoxicity of natural killer cells. *Cancer Res* 2009 Mar 1;69(5):2117-25
- *Xue et al: Induced hyperproliferation in epithelial cells of mouse prostate by a Western-style diet. *Carcinogen* 1997 May;18(5):995-9

Cubeb pepper demonstrates hormone-regulating and anti-inflammatory effects, important in treating an enlarged prostate.

- *Yam et al: Piper cubeba demonstrates anti-estrogenic and anti-inflammatory properties. *Planta Med* 2008 Feb;74(2):142-6

Curcumin is an active compound of the cooking spice, Turmeric, and known to significantly enhance health including that of the prostate, inducing cancer cell death and preventing metastatic activity.

- *Cabrespine-Faugeras et al: Possible benefits of curcumin regimen in combination with taxane chemotherapy for hormone-refractory prostate cancer treatment. *Nutr Cancer* 2010;62(2):148-53
- *Chaudhary & Hruska: Inhibition of cell survival signal protein kinase B/Akt by curcumin in human prostate cancer cells. *Int J Cardiol* 1995 May;49(3):191-9
- *Chen et al: Curcumin inhibits growth, induces G1 arrest and apoptosis on human prostatic stromal cells by regulating Bcl-2/Bax. *Zhongguo Zhong Yao Za Zhi* 2008 Aug;33(16):2022-5
- *Chendil et al: Curcumin confers radiosensitizing effect in prostate cancer cell line PC-3. *Oncogene* 2004 Feb 26;23(8):1599-607
- *Choi et al: Curcumin interrupts the interaction between the androgen receptor and Wnt/ β -catenin signaling pathway in LNCaP prostate cancer cells. *Prostate Cancer Prostatic Dis* 2010 Dec;13(4):343-9
- *Deeb et al: Curcumin [1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadine-3,5-dione; C₂₁H₂₀O₆] sensitizes human prostate cancer cells to tumor necrosis factor-related apoptosis-inducing ligand/

- Apo2L-induced apoptosis by suppressing nuclear factor-kappaB via inhibition of the prosurvival Akt signaling pathway. *J Pharmacol Exp Ther* 2007 May;321(2):616-25
- *Deeb et al: Chemosensitization of hormone-refractory prostate cancer cells by curcumin to TRAIL-induced apoptosis. *J Exp Ther Oncol* 2005;5(2):81-91
 - *Deeb et al: Curcumin sensitizes prostate cancer cells to tumor necrosis factor-related apoptosis-inducing ligand/Apo2L by inhibiting nuclear factor-kappaB through suppression of I κ B α phosphorylation. *Mol Cancer Ther* 2004 Jul;3(7):803-12
 - *Deeb et al: Curcumin (diferuloyl-methane) enhances tumor necrosis factor-related apoptosis-inducing ligand-induced apoptosis in LNCaP prostate cancer cells. *Mol Cancer Ther* 2003 Jan;2(1):95-103
 - *Deng et al: Curcumin inhibits the expression of vascular endothelial growth factor and androgen-independent prostate cancer cell line PC-3 in vitro. *Zhonghua Nan Ke Xue* 2008 Feb;14(2):116-21
 - *Dora et al: Therapeutic potential of curcumin in human prostate cancer. III. Curcumin inhibits proliferation, induces apoptosis, and inhibits angiogenesis of LNCaP prostate cancer cells in vivo. *Prostate* 2001 Jun 1;47(4):293-303
 - *Dorai et al: Therapeutic potential of curcumin in prostate cancer--V: Interference with the osteomimetic properties of hormone refractory C4-2B prostate cancer cells. *Prostate* 2004 Jun 15;60(1):1-17
 - *Dorai et al: Therapeutic potential of curcumin in human prostate cancer. II. Curcumin inhibits tyrosine kinase activity of epidermal growth factor receptor and depletes the protein. *Mol Urol* 2000;4(1):1-6
 - *Fernández-Martínez et al: Multifunctional role of VIP in prostate cancer progression in a xenograft model: suppression by curcumin and COX-2 inhibitor NS-398. *Peptides* 2009 Dec;30(12):2357-64
 - *Guo et al: Curcumin-induced the expression of inhibitor kappaB α protein in human prostate cancer cells. *Zhonghua Wai Ke Za Zhi* 2006 Sep 15;44(18):1256-9
 - *Guo et al: Curcumin-induced apoptosis in androgen-dependent prostate cancer cell line LNCaP in vitro. *Zhonghua Nan Ke Xue* 2006 Feb;12(2):141-4
 - *Herman et al: Curcumin blocks CCL2-induced adhesion, motility and invasion, in part, through down-regulation of CCL2 expression and proteolytic activity. *Int J Oncol* 2009 May;34(5):1319-27
 - *Hilchie et al: Curcumin-induced apoptosis in PC3 prostate carcinoma cells is caspase-independent and involves cellular ceramide accumulation and damage to mitochondria. *Nutr Cancer* 2010 Apr;62(3):379-89
 - *Holy: Curcumin inhibits cell motility and alters microfilament organization and function in prostate cancer cells. *Cell Motil Cytoskeleton* 2004 Aug;58(4):253-68
 - *Li et al: Curcumin, a dietary component, has anticancer, chemosensitization, and radiosensitization effects by down-regulating the MDM2 oncogene through the PI3K/mTOR/ETS2 pathway. *Cancer Res* 2007 Mar 1;67(5):1988-96
 - *Marcu et al: Curcumin is an inhibitor of p300 histone acetyltransferase. *Med Chem* 2006 Mar;2(2):169-74
 - *Mukhopadhyay et al: Curcumin downregulates cell survival mechanisms in human prostate cancer cell lines. *J Pharm Pharmacol* 2010 Feb;62(2):241-6
 - *Nakamura et al: Curcumin down-regulates AR gene expression and activation in prostate cancer cell lines. *Int J Oncol* 2002 Oct;21(4):825-30
 - *Piantino et al: An evaluation of the anti-neoplastic activity of curcumin in prostate cancer cell lines. *Int Braz J Urol* 2009 May-Jun;35(3):354-60;disc 361
 - *Teiten et al: Anti-proliferative potential of curcumin in androgen-dependent prostate cancer cells occurs through modulation of the Wnt signaling pathway. *Int J Oncol* 2011 Mar;38(3):603-11
 - *Teiten et al: Chemopreventive potential of curcumin in prostate cancer. *Genes Nutr* 2009 Oct 6
 - *Thangapazham et al: Androgen responsive and refractory prostate cancer cells exhibit distinct curcumin regulated transcriptome. *Cancer Biol Ther* 2008 Sep;7(9):1427-35
 - *Tsui et al: Curcumin blocks the activation of androgen and interleukin-6 on prostate-specific antigen expression in human prostatic carcinoma cells. *J Androl* 2008 Nov-Dec;29(6):661-8
 - *Yang et al: Inhibition of the expression of prostate specific antigen by curcumin. *Yao Xue Xue Bao* 2005 Sep;40(9):800-3
 - *Zhang et al: Reducing effect of curcumin on expressions of TNF- α , IL-6 and IL-8 in rats with chronic nonbacterial prostatitis. *Zhonghua Nan Ke Xue* 2010 Jan;16(1):84-8

Curcumin and **Brassica vegetables** have synergistic effects on preventing the growth of prostate cells.

- *Barve et al: Murine prostate cancer inhibition by dietary phytochemicals--curcumin and phenethylisothiocyanate. *Pharm Res* 2008 Sep;25(9):2181-9
- *Khor et al: Combined inhibitory effects of curcumin and phenethyl isothiocyanate on the growth of human PC-3 prostate xenografts in immunodeficient mice. *Am J Clin Nutr* 2008 Jul;88(1):216-23
- *Kim et al: Inhibition of EGFR signaling in human prostate cancer PC-3 cells by combination treatment with beta-phenylethyl isothiocyanate and curcumin. *Cancer Epidemiol Biomarkers Prev* 2006 Aug;15(8):1526-31

Curcumin, Resveratrol and **Ginger** is a powerful combination that decreases inflammation plus their antioxidant activity discourages the formation of prostate cancer cells.

- *Narayanan et al: Liposome encapsulation of curcumin and resveratrol in combination reduces prostate cancer incidence in PTEN knockout mice. *Int J Cancer* 2009 Jul 1;125(1):1-8
- *Nonn et al: Chemopreventive anti-inflammatory activities of curcumin and other phytochemicals mediated by MAP kinase phosphatase-5 in prostate cells. *Carcinogen* 2007 Jun;28(6):1188-96

Curcumin and **Soy isoflavones** reduce PSA levels.

- *Ide et al: Combined inhibitory effects of soy isoflavones and curcumin on the production of prostate-specific antigen. *Prostate* 2010 Jul 1;70(10):1127-33

Dandelion is an excellent blood cleanser but it also has anti-cancer activity against prostate and breast cancer cells.

- *Sigstedt et al: Evaluation of aqueous extracts of *Taraxacum officinale* on growth and invasion of breast and prostate cancer cells. *Int J Oncol* 2008 May;32(5):1085-90

DIM (diindolylmethane) is a substance found in cruciferous (brassica) vegetables that inhibits prostate cancer cell growth.

- *Bhuiyan et al: Down-regulation of androgen receptor by 3,3'-diindolylmethane contributes to inhibition of cell proliferation and induction of apoptosis in both hormone-sensitive LNCaP and insensitive C4-2B prostate cancer cells. *Carcinogen* 2000 May;21(5):921-7

Echinacea is an herb most often used to boost the immune system at onset of an illness but it also prevents the development of an enlarged prostate.

- *Skaudickas et al: The effect of *Echinacea purpurea* (L.) Moench extract on experimental prostate hyperplasia. *Eur J Phys Rehabil Med* 2010 May 6

EGCG (epigallocatechin-3-gallate) is a potent antioxidant derived from **Green Tea** and proves to be valuable in prostate health, reducing PSA levels without affecting the liver in men with prostate cancer.

- *Adhami et al: Molecular targets for green tea in prostate cancer prevention. *J Nutr* 2003 Jul;133(7 Suppl):2417S-2424S
- *Brusselmans et al: Epigallocatechin-3-gallate is a potent natural inhibitor of fatty acid synthase in intact cells and selectively induces apoptosis in prostate cancer cells. *Cancer Immunol Immunother* 2010 Feb 6
- *Gupta et al: Growth inhibition, cell-cycle dysregulation, and induction of apoptosis by green tea constituent (-)-epigallocatechin-3-gallate in androgen-sensitive and androgen-insensitive human prostate carcinoma cells. *Toxicol Appl Pharmacol* 2000 Apr 1;164(1):82-90
- *Lee et al: Effect of a prodrug of the green tea polyphenol (-)-epigallocatechin-3-gallate on the growth of androgen-independent prostate cancer in vivo. *Nutr Cancer* 2008;60(4):483-91
- *McLarty et al: Tea polyphenols decrease serum levels of prostate-specific antigen, hepatocyte growth factor, and vascular endothelial growth factor in prostate cancer patients and inhibit production of

hepatocyte growth factor and vascular endothelial growth factor in vitro. *Cancer Prev Res (Phila Pa)* 2009 Jul;2(7):673-82

- *Siddiqui et al: Green tea polyphenol EGCG sensitizes human prostate carcinoma LNCaP cells to TRAIL-mediated apoptosis and synergistically inhibits biomarkers associated with angiogenesis and metastasis. *Oncogene* 2008 Mar 27;27(14):2055-63

Essiac Tea inhibits cancer growth including that of the prostate. Essiac tea consists of four herbs: burdock root, slippery elm, sheep sorrel, and Indian rhubarb root.

- *Ottenweller et al: Inhibition of prostate cancer-cell proliferation by Essiac. *J Altern Complement Med* 2004 Aug;10(4):687-91

Fisetin is a flavonoid found in strawberries, mangos and other plants. As with other flavonoids, fisetin also encourages the death of tumours.

- *Khan et al: A novel dietary flavonoid fisetin inhibits androgen receptor signaling and tumor growth in athymic nude mice. *Cancer Res* 2008 Oct 15;68(20):8555-63

Flaxseed contains lignans which improve urinary function in those with enlarged prostates as effectively as drugs but without the side effects. Flaxseed also reduces prostate cancer cell proliferation and increases sperm quality.

- *Demark-Wahnefried et al: Pilot study to explore effects of low-fat, flaxseed-supplemented diet on proliferation of benign prostatic epithelium and prostate-specific antigen. *Urology* 2004 May;63(5):900-4
- *Mourvaki et al: Effects of flaxseed dietary supplementation on sperm quality and on lipid composition of sperm subfractions and prostatic granules in rabbit. *Theriogenol* 2009 Dec 22
- *Switzer & Demark-Wahnefried: Effect of mammalian lignans on the growth of prostate cancer cell lines. *Anticancer Res* 2001 Nov-Dec;21(6A):3995-9
- *Zhang et al: Effects of dietary flaxseed lignan extract on symptoms of benign prostatic hyperplasia. *J Ren Nutr* 2007 Jan;17(1):23-9

GLA (gamma linolenic acid) is the anti-inflammatory part of omega-6 which is found in such oil seeds as borage, evening primrose, and black currant. GLA plays a significant role in reducing prostate tumor growth.

- *Pham et al: Dietary gamma-linolenate attenuates tumor growth in a rodent model of prostatic adenocarcinoma via suppression of elevated generation of PGE(2) and 5S-HETE. *Prostaglandins Leukot Essent Fatty Acids* 2006 Apr;74(4):271-82

Garlic, a natural antibiotic, has a synergistic effect with the antibiotic ciprofloxacin in treating chronic prostatitis.

- *Sohn et al: Anti-inflammatory and antimicrobial effects of garlic and synergistic effect between garlic and ciprofloxacin in a chronic bacterial prostatitis rat model. *Int J Antimicrob Agents* 2009 Apr 16

Genistein is an isoflavone found in high concentrations in such foods as **Soy and Fava beans** and **Kudzu** (a pea plant considered to be a noxious weed in many places). Genistein-containing foods reduce PSA levels and the risk of prostate cancer. Equol is an isoflavonol metabolized from daidzein, another flavonoid found in soybeans. Certain probiotics feed on this compound and in turn, produce hormone-regulating effects including relieving menopausal symptoms in women and inhibiting prostate growth in men. **Use only non-GMO or fermented soy foods as they have the medicinal value.** The fermentation process nullifies any hormone-disrupting qualities present in soy and other foods.

- *Burich et al: Genistein combined polysaccharide enhances activity of docetaxel, bicalutamide and Src kinase inhibition in androgen-dependent and independent prostate cancer cell lines. *BJU Int* 2008 Nov;102(10):1458-66

- *de Vere White et al: Effects of a genistein-rich extract on PSA levels in men with a history of prostate cancer. *Urol* 2004 Feb;63(2):259-63
- *Hamilton-Reeves et al: Effects of soy protein isolate consumption on prostate cancer biomarkers in men with HGPIN, ASAP, and low-grade prostate cancer. *Nutr Cancer* 2008;60(1):7-13
- *Hamilton-Reeves et al: Isoflavone-rich soy protein isolate suppresses androgen receptor expression without altering estrogen receptor-beta expression or serum hormonal profiles in men at high risk of prostate cancer. *J Nutr* 2007 Jul;137(7):1769-75
- *Hussain et al: Soy isoflavones in the treatment of prostate cancer. *Nutr Cancer* 2003;47(2):111-7
- *Hwang et al: Soy food consumption and risk of prostate cancer: a meta-analysis of observational studies. *J Altern Complement Med* 2009 Aug;15(8):905-9
- *Ishiwata et al: New equol supplement for relieving menopausal symptoms: randomized, placebo-controlled trial of Japanese women. *Menopause* 2009 Jan-Feb;16(1):141-8
- *Jacobsen et al: Does high soy milk intake reduce prostate cancer incidence? The Adventist Health Study (United States). *Cancer Caus Contr* 1998;9(6):553-7
- *Lakshman et al: Dietary genistein inhibits metastasis of human prostate cancer in mice. *Ann Thorac Surg* 2010 Mar;89(3):781-6
- *Li et al: Inactivation of nuclear factor kappaB by soy isoflavone genistein contributes to increased apoptosis induced by chemotherapeutic agents in human cancer cells. *Cancer Res* 2005 Aug 1;65(15):6934-42
- *Lund et al: Equol is a novel anti-androgen that inhibits prostate growth and hormone feedback. *Int J Neurosci* 2008 Jan;118(1):59-77
- *Majid et al: Genistein reverses hypermethylation and induces active histone modifications in tumor suppressor gene B-Cell translocation gene 3 in prostate cancer. *Cancer* 2009 Nov 2
- *Maskarinec et al: Serum prostate-specific antigen but not testosterone levels decrease in a randomized soy intervention among men. *Eur J Clin Nutr* 2006 Dec;60(12):1423-9
- *Onozawa et al: Effects of a soybean isoflavone mixture on carcinogenesis in prostate and seminal vesicles of F344 rats. *Jpn J Cancer Res* 1999 Apr;90(4):393-8
- *Swami et al: Genistein potentiates the growth inhibitory effects of 1,25-dihydroxyvitamin D3 in DU145 human prostate cancer cells: role of the direct inhibition of CYP24 enzyme activity. *J Dairy Sci* 2009 Mar;92(3):837-46
- *Travis et al: Plasma phyto-oestrogens and prostate cancer in the European Prospective Investigation into Cancer and Nutrition. *Br J Cancer* 2009 Jun 2;100(11):1817-23
- *Wong et al: The association between isoflavone and lower urinary tract symptoms in elderly men. *Br J Nutr* 2007 Dec;98(6):1237-42
- *Xu et al: MEK4 function, genistein treatment, and invasion of human prostate cancer cells. *J Natl Cancer Inst* 2009 Aug 19;101(16):1141-55
- *Yan & Spitznagel: Soy consumption and prostate cancer risk in men: a revisit of a meta-analysis. *Am J Clin Nutr* 2009 Apr;89(4):1155-63
- *Yan & Spitznagel: Meta-analysis of soy food and risk of prostate cancer in men. *Int J Canc* 2005 Nov 20;117(4):667-9
- *Yatkin et al: The soy effect in the disease models of nonbacterial prostatitis and obstructive voiding. *Exp Biol Med (Maywood)* 2007 May;232(5):674-81
- *Zhang et al: A novel anti-cancer effect of genistein: reversal of epithelial mesenchymal transition in prostate cancer cells. *Acta Pharmacol Sin* 2008 Sep;29(9):1060-8
- *Zhou et al: Inhibition of orthotopic growth and metastasis of androgen-sensitive human prostate tumors in mice by bioactive soybean components. *Prostate* 2002 Oct 1;53(2):143-53

Ginger reduces the risk of prostate cancer and tumor growth.

- *Karna et al: Benefits of whole ginger extract in prostate cancer. *Br J Nutr* 2011 Aug 18:1-12
- *Shukla et al: In vitro and in vivo modulation of testosterone mediated alterations in apoptosis related proteins by [6]-gingerol. *Mol Nutr Food Res* 2007 Dec;51(12):1492-502

Goji berries/Wolfberry induce programmed cell death in prostate cancer cells.

*Luo et al: Lycium barbarum polysaccharides induce apoptosis in human prostate cancer cells and inhibits prostate cancer growth in a xenograft mouse model of human prostate cancer. J Med Food 2009 Aug;12(4):695-703

Goldenrod (*Solidago virgaurea*) inhibits the growth of prostate tumor cells.

*Gross et al: Antineoplastic activity of *Solidago virgaurea* on prostatic tumor cells in an SCID mouse model. Nutr Cancer 2002;43(1):76-81

Grape seed extract contains a substance called Gallic acid which inhibits prostate cancer cell growth.

*Raina et al: Chemopreventive effects of oral gallic acid feeding on tumor growth and progression in TRAMP mice. Mol Cancer Ther 2008 May;7(5):1258-67

*Singh et al: Grape seed extract inhibits advanced human prostate tumor growth and angiogenesis and upregulates insulin-like growth factor binding protein-3. Int J Cancer 2004 Feb 20;108(5):733-40

*Tyagi et al: Grape seed extract inhibits EGF-induced and constitutively active mitogenic signaling but activates JNK in human prostate carcinoma DU145 cells: possible role in antiproliferation and apoptosis. Oncogene 2003 Mar 6;22(9):1302-16

Grape seed extract and **Pycnogenol** prevent prostate cancer cells from forming.

*Neuwirt et al: Oligomeric proanthocyanidin complexes (OPC) exert anti-proliferative and pro-apoptotic effects on prostate cancer cells. Prostate 2008 Jul 28

Graviola is a rainforest tree whose leaves have potent anti-cancer properties especially against prostate and pancreatic cell lines.

*Kim et al: Muricoreacin and murihexocin C, mono-tetrahydrofuran acetogenins, from the leaves of *Annona muricata*. Phytochem 1998 Sep;49(2):565-71

Guggul is an Ayurvedic herb often used to control cholesterol levels. It also contains a substance called Guggulsterone which induces the deaths of prostate cancer cells.

*Singh et al: Guggulsterone-induced apoptosis in human prostate cancer cells is caused by reactive oxygen intermediate dependent activation of c-Jun NH2-terminal kinase. Cancer Res 2007 Aug 1;67(15):7439-49

*Xiao & Singh: z-Guggulsterone, a constituent of Ayurvedic medicinal plant *Commiphora mukul*, inhibits angiogenesis in vitro and in vivo. Mol Cancer Ther 2008 Jan;7(1):171-80

Herbal compounds (apigenin, baicalein, curcumin, EGCG, genistein, quercetin, resveratrol) prove to be safer, less expensive, and just as effective in preventing cancer cell growth as most medications.

*Slusarz et al: Common botanical compounds inhibit the hedgehog signaling pathway in prostate cancer. Virol J 2006 Sep 1;3:68

Homeopathic selective treatments slow the progression of tumor cells but are not preventatives.

*Jonas et al: Can homeopathic treatment slow prostate cancer growth? Integr Cancer Ther 2006 Dec;5(4):343-9

*MacLaughlin et al: Effects of homeopathic preparations on human prostate cancer growth in cellular and animal models. Integr Cancer Ther 2006 Dec;5(4):362-72

Honokiol is a substance found in *Magnolia* that is effective for preventing and treating prostate cancer. *Magnolia* is one of the herbs found in *Relora* which is used for regulating cortisol and stress levels.

*Hahm et al: Honokiol, a constituent of oriental medicinal herb *magnolia officinalis*, inhibits growth of PC-3 xenografts in vivo in association with apoptosis induction. Clin Cancer Res 2008 Feb 15;14(4):1248-57

Hops is an herb used extensively in the brewing industry and often used to promote sleep but it also has compounds which promote prostate cancer cell deaths.

- *Colgate et al: Xanthohumol, a prenylflavonoid derived from hops induces apoptosis and inhibits NF-kappaB activation in prostate epithelial cells. *Cancer Lett* 2007 Feb 8;246(1-2):201-9
- *Delmulle et al: Anti-proliferative properties of prenylated flavonoids from hops (*Humulus lupulus* L.) in human prostate cancer cell lines. *Phytomed* 2006 Nov;13(9-10):732-4

I3C (Indole-3-carbinol) is a phytonutrient found in cruciferous vegetables and some spices like cardamom. It is often used as a supplement for hormonal balance in both men and women but it also has substances which prevent the formation of prostate cancer cells.

- *Chinni et al: Indole-3-carbinol (I3C) induced cell growth inhibition, G1 cell cycle arrest and apoptosis in prostate cancer cells. *Oncogene* 2001 May 24;20(23):2927-36
- *Hsu et al: Indole-3-carbinol inhibition of androgen receptor expression and downregulation of androgen responsiveness in human prostate cancer cells. *Carcinogen* 2005 Nov;26(11):1896-904

Inositol (vitamin B8) has significant anti-cancer effects, stimulating the natural killer cells.

- *Agarwal et al: Inositol hexaphosphate inhibits growth and induces G1 arrest and apoptotic death of androgen-dependent human prostate carcinoma LNCaP cells. *Neoplasia* 2004 Sep-Oct;6(5):646-59
- *Baten et al: Inositol-phosphate-induced enhancement of natural killer cell activity correlates with tumor suppression. *Carcinogen* 1989 Sep;10(9):1595-8
- *Kerr & Colucci: Inositol phospholipid signaling and the biology of natural killer cells. *J Innate Immun* 2011;3(3):249-57
- *Raina et al: Chemopreventive efficacy of inositol hexaphosphate against prostate tumor growth and progression in TRAMP mice. *Clin Cancer Res* 2008 May 15;14(10):3177-84
- *Shamsuddin & Yang: Inositol hexaphosphate inhibits growth and induces differentiation of PC-3 human prostate cancer cells. *Carcinogen* 1995 Aug;16(8):1975-9
- *Singh et al: In vivo suppression of hormone-refractory prostate cancer growth by inositol hexaphosphate: induction of insulin-like growth factor binding protein-3 and inhibition of vascular endothelial growth factor. *Clin Cancer Res* 2004 Jan 1;10(1Pt1):244-50
- *Singh et al: Inositol hexaphosphate inhibits growth, and induces G1 arrest and apoptotic death of prostate carcinoma DU145 cells: modulation of CDKI-CDK-cyclin and pRb-related protein-E2F complexes. *Carcinogen* 2003 Mar;24(3):555-63

Isoliquiritigenin is a flavonoid found in such foods as **licorice** and **soybeans** that has anti-tumor effects against prostate cancer. **Licorice** also contains a component called *licochalcone-A* which prevents prostate cancer cell growth.

- *Jung et al: Isoliquiritigenin induces apoptosis by depolarizing mitochondrial membranes in prostate cancer cells. *J Nutr Biochem* 2006 Oct;17(10):689-96
- *Lee et al: Induction of cell cycle arrest in prostate cancer cells by the dietary compound isoliquiritigenin. *J Med Food* 2009 Feb;12(1):8-14
- *Yo et al: Licorice and licochalcone-A induce autophagy in LNCaP prostate cancer cells by suppression of Bcl-2 expression and the mTOR pathway. *J Agric Food Chem* 2009 Aug 27

Kava is a calming herb that also has anti-prostate cancer effects. Kava is banned in Canada despite its proven usefulness.

- *Tang et al: Flavokawain B, a kava chalcone, induces apoptosis via up-regulation of death-receptor 5 and Bim expression in androgen receptor negative, hormonal refractory prostate cancer cell lines and reduces tumor growth. *Indian J Exp Biol* 2007 Jun;45(6):524-8

Lycopene is a carotenoid found in high amounts in tomatoes and a significant nutrient in prostate health. It also enhances the effects of the antibiotic ciprofloxacin in the treatment of prostatitis.

- *Bowen et al: Tomato sauce supplementation and prostate cancer: lycopene accumulation and modulation of biomarkers of carcinogenesis. *Exp Biol Med* (Maywood) 2002 Nov;227(10):886-93
- *Edinger & Koff: Effect of the consumption of tomato paste on plasma prostate-specific antigen levels in patients with benign prostate hyperplasia. *Braz J Med Biol Res* 2006 Aug;39(8):1115-9
- *Han et al: Synergistic effect between lycopene and ciprofloxacin on a chronic bacterial prostatitis rat model. *Int J Antimicrob Agents* 2008 Feb;31 Suppl 1:S102-7
- *Jian et al: Do dietary lycopene and other carotenoids protect against prostate cancer? *Int J Cancer* 2005 Mar 1;113(6):1010-4
- *Palozza et al: Lycopene induces cell growth inhibition by altering mevalonate pathway and Ras signaling in cancer cell lines. *Carcinogenesis* 2010 Oct;31(10):1813-21
- *Schwarz et al: Lycopene inhibits disease progression in patients with benign prostate hyperplasia. *J Nutr* 2008 Jan;138(1):49-53
- *Wang & Zhang: Effect of lycopene on proliferation and cell cycle of hormone refractory prostate cancer PC-3 cell line. *Wei Sheng Yan Jiu* 2007 Sep;36(5):575-8

Lycopene, Soy isoflavones, Milk Thistle, and Antioxidants lower PSA levels even in men with prostate cancer.

- *Schröder et al: Randomized, double-blind, placebo-controlled crossover study in men with prostate cancer and rising PSA: effectiveness of a dietary supplement. *Eur Urol* 2005 Dec;48(6):922-30;disc 930-1
- *Vaishampayan et al: Lycopene and soy isoflavones in the treatment of prostate cancer. *J Pharm Pharmacol* 2009 Jul;61(7):961-7

Maca is a Peruvian ginseng-type root, producing similar results as other ginsengs. The typical modulation of the male hormones includes decreasing an enlarged prostate and increasing sperm quality. While the maca root can come in various colours (black, blue, cream, green, purple, or red), black is considered best for energy and stamina while the red has been more effective for the prostate. It does not increase estrogens, progesterone, or testosterone. See more under Prostate and Erectile Dysfunction.

- *Bogani et al: *Lepidium meyenii* (Maca) does not exert direct androgenic activities. *J Ethnopharmacol* 2006 Apr;104(3):415-7
- *Chung et al: Dose-response effects of *Lepidium meyenii* (Maca) aqueous extract on testicular function and weight of different organs in adult rats. *J Ethnopharmacol* 2005 Apr;98(1-2):143-7
- *Gonzales et al: Antagonistic effect of *Lepidium meyenii* (red maca) on prostatic hyperplasia in adult mice. *Andrologia* 2008 Jun;40(3):179-85
- *Gonzales et al: Effect of two different extracts of red maca in male rats with testosterone-induced prostatic hyperplasia. *Asian J Androl* 2007 Mar;9(2):245-51
- *Gonzales et al: Red maca (*Lepidium meyenii*) reduced prostate size in rats. *Repro Biol Endocrinol* 2005 Jan 20;3:5
- *Gonzales et al: Effect of *Lepidium meyenii* (Maca), a root with aphrodisiac and fertility-enhancing properties, on serum reproductive hormone levels in adult healthy men. *J Endocrinol* 2003 Jan 1;176:163-8
- *Gonzales et al: Effect of *Lepidium meyenii* (MACA) on sexual desire and its absent relationship with serum testosterone levels in adult healthy men. *Andrologia* 2002 Dec;34(6):367-72
- *Gonzales et al: Effect of *Lepidium meyenii* (maca) roots on spermatogenesis of male rats. *Asian J Androl* 2001 Sep;3:231-33
- *Gonzales et al: *Lepidium meyenii* (Maca) improved semen parameters in adult men. *Asian J Androl* 2001 Dec;3:301-3

- *León: The “Maca” (*Lepidium meyenii*), a little known food plant of Peru. *Econ Bot* 18(2):122-7
- *Piacente et al: Investigation of the tuber constituents of maca (*Lepidium meyenii* Walp). *J Agric Food Chem* 2002;50(20):5621-25
- *Raintree Nutrition Tropical Plant Database “Maca” www.rain-tree.com/maca.htm
- *Taylor 2005:338-44
- *Valerio & Gonzales: Toxicological aspects of the South American herbs cat’s claw (*Uncaria tomentosa*) and maca (*Lepidium meyenii*): A critical synopsis. *Toxicol Rev* 2005;24(1):11-35(25)

Maitake mushroom induces the deaths of prostate cancer cells.

- *Fullerton et al: Induction of apoptosis in human prostatic cancer cells with beta-glucan (Maitake mushroom polysaccharide). *Boll Soc Ital Biol Sper* 2000 Jan-Feb;76(1-2):1-4
- *Pyo et al: Possible immunotherapeutic potentiation with D-fraction in prostate cancer cells. *J Hematol Oncol* 2008;1:25

Mango contains compounds that induces prostate cancer cell death.

- *Prasad et al: Induction of apoptosis by lupeol and mango extract in mouse prostate and LNCaP cells. *Nutr Cancer* 2008;60(1):120-30

Mass Market Multivitamins without additional vitamins A, C, and E, are associated with an increase in prostate cancer deaths. The explanation is likely due to the fact that mass market multis often consist of synthetic “nutrients” and fillers which the body cannot utilize but rather treats as toxic substances.

- *Balch 2006:15-16
- *Cohen 2011:310-17
- *Stevens et al: Use of multivitamins and prostate cancer mortality in a large cohort of US men. *Cancer Causes Control* 2005 Aug;16(6):643-50

Melatonin suppresses prostate cancer cell growth; decreases BPA toxin effects in the testicles; and reduces effects of kidney damage caused by cell phones.

- *Anjum et al: Melatonin ameliorates bisphenol A-induced biochemical toxicity in testicular mitochondria of mouse. *Food Chem Toxicol* 2011 Aug 5
- *Kim & Yoo: Melatonin Induces Apoptotic Cell Death via p53 in LNCaP Cells. *Korean J Physiol Pharmacol* 2010 Dec;14(6):365-9
- *Joo & Yoo: Melatonin induces apoptotic death in LNCaP cells via p38 and JNK pathways: therapeutic implications for prostate cancer. *J Pineal Res* 2009 Aug;47(1):8-14
- *Oktem et al: Oxidative damage in the kidney induced by 900-MHz-emitted mobile phone: protection by melatonin. *Arch Med Res* 2005 Jul-Aug;36(4):350-5
- *Quiroz et al: Melatonin ameliorates oxidative stress, inflammation, proteinuria, and progression of renal damage in rats with renal mass reduction. *Zhonghua Zhong Liu Za Zhi* 2005 Nov;27(11):667-71
- *Shiu et al: Melatonin slowed the early biochemical progression of hormone-refractory prostate cancer in a patient whose prostate tumor tissue expressed MT1 receptor subtype. *J Pineal Res* 2003 Oct;35(3):177-82
- *Tam et al: Melatonin as a negative mitogenic hormonal regulator of human prostate epithelial cell growth: potential mechanisms and clinical significance. *J Pineal Res* 2008 Jul 14

Milk Thistle contains flavonoids that protect the prostate from cancer and induces prostate cancer cell death.

- *Deep et al: Identifying the differential effects of silymarin constituents on cell growth and cell cycle regulatory molecules in human prostate cancer cells. *Int J Cancer* 2008 Jul 1;123(1):41-50
- *Singh & Agarwal: Prostate cancer chemoprevention by silibinin: bench to bedside. *Mol Carcinog* 2006;45(6):436-42

*Singh et al: Suppression of advanced human prostate tumor growth in athymic mice by silibinin feeding is associated with reduced cell proliferation, increased apoptosis, and inhibition of angiogenesis. *Cancer Epidemiol Biomarkers Prev* 2003 Sep;12(9):933-9

Modified Citrus Pectin induces prostate cancer cell deaths. Citrus pectin is processed or modified for supplemental purposes to increase absorption.

*Jackson et al: Pectin induces apoptosis in human prostate cancer cells: correlation of apoptotic function with pectin structure. *Glycobiol* 2007 Aug;17(8):805-19

Murill mushrooms suppress prostate tumor growth.

*Yu et al: Inhibitory mechanisms of *Agaricus blazei* Murill on the growth of prostate cancer in vitro and in vivo. *J Nutr Biochem* 2009 Oct;20(10):753-64

Neem leaves are known to have anti-microbial effects but they also protect the prostate by inhibiting the formation of cancer cells.

*Kumar et al: Anticancer effects of ethanolic neem leaf extract on prostate cancer cell line (PC-3). *J Ethnopharmacol* 2006 Apr 21;105(1-2):246-50

Nettle, sometimes referred to as Stinging Nettle, contains compounds that benefit an enlarged prostate as well as one for cancer.

*Durak et al: Aqueous extract of *Urtica dioica* makes significant inhibition on adenosine deaminase activity in prostate tissue from patients with prostate cancer. *Vaccine* 2007 Feb 26;25(10):1838-40

*Konrad et al: Antiproliferative effect on human prostate cancer cells by a stinging nettle root (*Urtica dioica*) extract. *Planta Med* 2000 Feb;66(1):44-7

*Safarinejad: *Urtica dioica* for treatment of benign prostatic hyperplasia: a prospective, randomized, double-blind, placebo-controlled, crossover study. *J Herb Pharmacother* 2005;5(4):1-11

*Zhang et al: Effects of the polysaccharide fraction of *Urtica fissa* on castrated rat prostate hyperplasia induced by testosterone propionate. *Phytomed* 2008 Sep;15(9):722-7

Omega fatty acids inhibit the growth of various cancer cells including prostate, pancreas, colon and breast. A deficiency is apparent in those with prostate cancer as opposed to those who do not have prostate problems.

*Mamalakis et al: Prostate cancer vs hyperplasia: relationships with prostatic and adipose tissue fatty acid composition. *Prostaglandins Leukot Essent Fatty Acids* 2002 May-Jun;66(5-6):467-77

*Strouch et al: A high omega-3 fatty acid diet mitigates murine pancreatic precancer development. *J Surg Res.* 2009 May 15

*Szymanski et al: Fish consumption and prostate cancer risk: a review and meta-analysis. *Am J Clin Nutr* 2010 Nov;92(5):1223-33

Onion and Garlic consumption is associated with a reduced risk of developing an enlarged prostate.

*Galeone et al: Onion and garlic intake and the odds of benign prostatic hyperplasia. *Urology* 2007 Oct; 70(4):672-6

Orange juice with pulp from blood oranges inhibit prostate cancer cell growth. Blood oranges are a deep red indicating more carotenoids which have numerous health benefits.

*Vitali et al: Effect of a standardized extract of red orange juice on proliferation of human prostate cells in vitro. *Fitoterapia* 2006 Apr;77(3):151-5

Oyster mushrooms encourage prostate cancer cell deaths.

*No authors listed: Cytotoxic effect of oyster mushroom *Pleurotus ostreatus* on human androgen-independent prostate cancer PC-3 cells. *J Med Food* 2006;9(2):196-204

Panax Ginseng contains hormone-regulating compounds that prevent prostate cancer.

*Wang et al: Experimental therapy of prostate cancer with novel natural product anti-cancer ginsenosides. *Prostate* 2008 Jun 1;68(8):809-19

Pau d'arco (Taheebo) is an herb often used as an anti-inflammatory and anti-microbial but it also inhibits the formation of prostate cancer cells.

*Lee et al: Down-regulation of cyclooxygenase-2 and telomerase activity by beta-lapachone in human prostate carcinoma cells. *Pharmacol Res* 2005 Jun;51(6):553-60

*RainTree Tropical Plant Database www.rain-tree.com

Peppermint oil induces prostate cancer cell death. Peppermint oil can safely be taken internally.

*Kim et al: Menthol regulates TRPM8-independent processes in PC-3 prostate cancer cells. *Biochim Biophys Acta* 2007 Apr;1770(4):659-65

*Park et al: Menthol enhances an antiproliferative activity of 1alpha,25-Dihydroxyvitamin D(3) in LNCaP Cells. *J Clin Biochem Nutr* 2009 Mar;44(2):125-30

Phellodendron (Cork Tree) is a popular Chinese herb used to inhibit cancer cell growth.

*Muralimanocharan et al: Butanol fraction containing berberine or related compound from nextrutine inhibits NFkappaB signaling and induces apoptosis in prostate cancer cells. *Prostate* 2008 Dec 23

Phytoestrogens are found in almost all plant-based unprocessed foods that protect the body from breast and prostate cancer as well as numerous other disorders.

*Shenouda et al: Phytoestrogens in common herbs regulate prostate cancer cell growth in vitro. *Cogn Behav Ther* 2009 Sep;38(3):184-90

*Shenouda et al: Phytoestrogens in common herbs regulate prostate cancer cell growth in vitro. *Nutr Cancer* 2004;49(2):200-8

*Wang: Mammalian phytoestrogens: enterodiol and enterolactone. *J Chromatogr B Analyt Technol Biomed Life Sci* 2002 Sep 25;777(1-2):289-309

Pomegranates reduce PSA levels and stop the proliferation of prostate cancer cells.

*Albrecht et al: Pomegranate extracts potently suppress proliferation, xenograft growth, and invasion of human prostate cancer cells. *J Med Food* 2004 Fall;7(3):274-83

*Lansky et al: Pomegranate (*Punica granatum*) pure chemicals show possible synergistic inhibition of human PC-3 prostate cancer cell invasion across Matrigel. *Invest New Drugs* 2005 Mar;23(2):121-2

*Pantuck et al: Phase II study of pomegranate juice for men with rising prostate-specific antigen following surgery or radiation for prostate cancer. *Forsch Komplementmed* 2007 Feb;14(1):39-44

*Seeram et al: In vitro antiproliferative, apoptotic and antioxidant activities of punicalagin, ellagic acid and a total pomegranate tannin extract are enhanced in combination with other polyphenols as found in pomegranate juice. *J Nutr Biochem* 2005 Jun;16(6):360-7

Prickly Pear Cactus Flower extract is a novel alternative for the treatment of an enlarged prostate.

*Jonas et al: Cactus flower extracts may prove beneficial in benign prostatic hyperplasia due to inhibition of 5alpha reductase activity, aromatase activity and lipid peroxidation. *Urol Res* 1998;26(4):265-70

Pumpkin seeds are high in zinc, phytosterols, omega fatty acids, and proteins, therefore a significant contributor to prostate health.

*Gossell-Williams et al: Inhibition of testosterone-induced hyperplasia of the prostate of sprague-dawley rats by pumpkin seed oil. *QJM* 2008 Mar;101(3):167-79

*Tsai et al: Pumpkin seed oil and phytosterol-F can block testosterone/prazosin-induced prostate growth in rats. *Urol Int* 2006;77(3):269-74

Red Clover inhibits prostate enlargement and prevents the formation of prostate cancer cells.

*Chen et al: Red clover isoflavones inhibit the proliferation and promote the apoptosis of benign prostatic hyperplasia stromal cells. *Zhonghua Nan Ke Xue* 2010 Jan;16(1):34-9

*Jarred et al: Induction of apoptosis in low to moderate-grade human prostate carcinoma by red clover-derived dietary isoflavones. *Cancer Epidemiol Biomark Prev* 2002 Dec;11:1689

Red Yeast Rice is not only an effective alternative for reducing Cholesterol but it also inhibits the growth of prostate cancer cells.

*Hong et al: Chinese red yeast rice inhibition of prostate tumor growth in SCID mice. *Cancer Prev Res (Phila)* 2011 Apr;4(4):608-15

*Hong et al: Chinese red yeast rice versus lovastatin effects on prostate cancer cells with and without androgen receptor overexpression. *J Med Food* 2008 Dec 3;11(4)

*Tsai et al: Red mold rice mitigates oral carcinogenesis in 7,12-dimethyl-1,2-benz[a]anthracene-induced oral carcinogenesis in hamster. *Evid Base Complement Alt Med* 2011(2011): Art ID245209:8 pages

*Yu et al: Safety and mutagenicity evaluation of nanoparticulate red mold rice. *J Agric Food Chem* 2008;56(22):11038-48

Reishi mushroom inhibits androgen production which diminishes the risk of an enlarged prostate or prostate cancer while improving urinary function in those with enlarged prostates.

*Futrakul et al: Ganoderma lucidum suppresses endothelial cell cytotoxicity and proteinuria in persistent proteinuric focal segmental glomerulosclerosis (FSGS) nephrosis. *Clin Hemorheol Microcirc* 2004;31(4):267-72

*Jiang et al: Ganoderma lucidum inhibits proliferation and induces apoptosis in human prostate cancer cells PC-3. *Int J Oncol* 2004 May;24(5):1093-9

*Liu & Tamura: Anti-androgen effects of extracts and compounds from Ganoderma lucidum. *Chem Biodivers* 2009 Feb;6(2):231-43

*Liu et al: The anti-androgen effect of ganoderol B isolated from the fruiting body of Ganoderma lucidum. *Bioorg Med Chem* 2007 Jul 15;15(14):4966-72

*Noguchi et al: Randomized clinical trial of an ethanol extract of Ganoderma lucidum in men with lower urinary tract symptoms. *Asian J Androl* 2008 Sep;10(5):777-85

Resveratrol is a potent antioxidant found in the skins of red grapes. It is a significant health booster including that of the prostate, reducing PSA levels in those with enlarged prostates and protecting the urinary bladder from dysfunction. Choose **organic** grapes, however, since non-organic grapes are one of the top ten foods high in pesticide contamination.

*Agartan et al: Protection of urinary bladder function by grape suspension. *Phytother Res* 2004 Dec;18(12):1013-8

*Chakraborty et al: In vitro evaluation of the cytotoxic, anti-proliferative and anti-oxidant properties of pterostilbene isolated from Pterocarpus marsupium. *Toxicol In Vitro* 2010 Jun;24(4):1215-28

*Chen et al: Resveratrol induces growth arrest and apoptosis through activation of FOXO transcription factors in prostate cancer cells. *PLoS One* 2010;5(12):e15288

*Ganapathy et al: Resveratrol enhances antitumor activity of TRAIL in prostate cancer xenografts through activation of FOXO transcription factor. *PLoS One* 2010;5(12):e15627

*Gill et al: Resveratrol sensitizes androgen independent prostate cancer cells to death-receptor mediated apoptosis through multiple mechanisms. *Prostate* 2007 Nov 1;67(15):1641-53

*Gupta et al: Chemosensitization of tumors by resveratrol. *Ann N Y Acad Sci* 2011 Jan;1215(1):150-60

- *Harada et al: Inhibitory mechanisms of the transcriptional activity of androgen receptor by resveratrol: Implication of DNA binding and acetylation of the receptor. *J Steroid Biochem Mol Biol* 2011 Jan;123(1-2):65-70
- *Hudson et al: Inhibition of prostate cancer growth by muscadine grape skin extract and resveratrol through distinct mechanisms. *Cancer Res* 2007 Sep1;67(17):8396-405
- *The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/
- *Wang et al: Differential effects of resveratrol and its naturally occurring methylether analogs on cell cycle and apoptosis in human androgen-responsive LNCaP cancer cells. *Mol Nutr Food Res* 2010 Mar;54(3):335-44

Ruta graveolens (Rue), either in herbal or homeopathic form, inhibits colon, breast and prostate cancer cells.

- *Fadlalla et al: Ruta graveolens extract induces DNA damage pathways and blocks Akt activation to inhibit cancer cell proliferation and survival. *Anticancer Res* 2011 Jan;31(1):233-41

Rye Bran bread increases the death of prostate cancer cells.

- *Bylund et al: Randomised controlled short-term intervention pilot study on rye bran bread in prostate cancer. *Eur J Cancer Prev* 2003 Oct;12(5):407-15
- *Landberg et al: Rye whole grain and bran intake compared with refined wheat decreases urinary C-peptide, plasma insulin, and prostate specific antigen in men with prostate cancer. *J Nutr* 2010 Dec;140(12):2180-6
- *Wikstrom et al: Rye bran diet increases epithelial cell apoptosis and decreases epithelial cell volume in TRAMP (transgenic adenocarcinoma of the mouse prostate) tumors. *Nutr Cancer* 2005;53(1):111-6

Rye bran and **Soy** (Genistein) induce prostate cancer cell death. Be sure to use only non-GMO, organically-grown or fermented soy.

- *Bylund et al: Rye bran and soy protein delay growth and increase apoptosis of human LNCaP prostate adenocarcinoma in nude mice. *Prostate* 2000 Mar 1;42(4):304-14
- *Landström et al: Inhibitory effects of soy and rye diets on the development of Dunning R3327 prostate adenocarcinoma in rats. *Med Princ Pract* 2008;17(2):131-5

Rye Flower Pollen has proven to reduce enlarged prostates for more than 50 years. The earliest study I found was from 1962 with dozens more since then but not all listed here. This flower pollen is called by different names, notably Swedish Flower Pollen, Cernilton, PollenAid, and Graminex. In Canada, I tend to lean towards Graminex as a supplement of choice because it is organically certified, kosher, and uses solvent-free extraction.

- *Apolikhin et al: A comparative clinical randomized trial of cernilton efficacy and safety in patients with chronic abacterial prostatitis. [Article in Russian] *Urol* 2010 Jan-Feb;(1):29-34
- *Aslamazov et al: Cernilton in the treatment of prostatic adenoma and chronic prostatitis. [Article in Russian] *Urologiia* 2007 Jan-Feb;(1):52,54-6
- *Buck et al: Treatment of outflow tract obstruction due to benign prostatic hyperplasia with the pollen extract Cernilton. A Double-blind, Placebo-controlled Study. *Br J Urol* 1990 Oct;66(4):398-404
- *Chambliss : A critical review of Graminex flower pollen extract for symptomatic relief of lower urinary tract symptoms (LUTS) in Men . Jan 12, 2003 (online pdf)
- *Dutkiewicz: Usefulness of Cernilton in the treatment of benign prostatic hyperplasia. *Internatl Urol Nephrol* 1996;28(1):49-53
- *Leander: Preliminary research on the therapeutic effect of Cernilton on chronic prostatovesiculitis. [Article in Swedish] *Sven Lakartidn* 1962 Nov 8;59:3296-304
- *Rugendorff et al: Results of treatment with pollen extract (Cernilton N) in chronic prostatitis and prostatodynia. *Br J Urol* 1993 Apr;71(4):433-8
- *Shaplygin & Sivakov: Use of cernilton in the therapy of prostatic adenoma and chronic prostatitis. [Article in Russian] *Urolog* 2007 May-Jun;(3):35-7,39

- *Wagenlehner et al: A pollen extract (Cernilton) in patients with inflammatory chronic prostatitis—chronic pelvic pain syndrome: A multicentre, randomised, prospective, double-blind, placebo-controlled phase 3 study. *Eur Urol* 2009 Sept;56(3):544–51
- *Xu et al: A comparative study on different doses of Cernilton for preventing the clinical progression of benign prostatic hyperplasia. [Article in Chinese] *Zhonghua Nan Ke Xue* 2008 Jun;14(6):533-7
- *www.graminex.com/

Saw Palmetto and **Pygeum** are herbs that can function alone but do especially well together in reducing an enlarged prostate and preventing cancer cell growth. Saw Palmetto compares favourably with the drug tamsulosin in treating an enlarged prostate. The Cuban royal palm (*Roystonea regia*), mentioned in one of the studies, is a member of the Saw palmetto family.

- *Abe et al: Pharmacologically relevant receptor binding characteristics and 5alpha-reductase inhibitory activity of free Fatty acids contained in saw palmetto extract. *Biol Pharm Bull* 2009 Apr;32(4):646-50
- *Baron et al: *Serenoa repens* extract targets mitochondria and activates the intrinsic apoptotic pathway in human prostate cancer cells. *BJU Int* 2009 May;103(9):1275-83
- *Breza et al: Efficacy and acceptability of tadenan (*Pygeum africanum* extract) in the treatment of benign prostatic hyperplasia (BPH): a multicentre trial in central Europe. *Curr Med Res Opin* 1998;14(3):127-39
- *Debruyne et al: Comparison of a phytotherapeutic agent (Permixon) with an alpha-blocker (Tamsulosin) in the treatment of benign prostatic hyperplasia: a 1-year randomized international study. *Prog Urol* 2002 Jun;12(3):384-92;disc 394-4
- *Goldmann et al: Saw palmetto berry extract inhibits cell growth and Cox-2 expression in prostatic cancer cells. *Cell Biol Int* 2001;25(11):1117-24
- *Habib et al: *Serenoa repens* (Permixon) inhibits the 5alpha-reductase activity of human prostate cancer cell lines without interfering with PSA expression. *Clin Nutr* 2006 Dec;25(6):923-38
- *Hizli and Uygur: A prospective study of the efficacy of *Serenoa repens*, tamsulosin, and *Serenoa repens* plus tamsulosin treatment for patients with benign prostate hyperplasia. *Int Urol Nephrol* 2007;39(3):879-86
- *Hostanska et al: Evaluation of cell death caused by an ethanolic extract of *Serenoa repens* fructus (Prostasan) on human carcinoma cell lines. *Anticancer Res* 2007 Mar-Apr;27(2):873-81
- *Noa et al: Effect of D-004, a lipid extract from Cuban royal palm fruit, on histological changes of prostate hyperplasia induced with testosterone in rats. *Int J Tissue React* 2005;27(4):203-11
- *Papaioannou et al: NBBS isolated from *Pygeum africanum* bark exhibits androgen antagonistic activity, inhibits AR nuclear translocation and prostate cancer cell growth. *Invest New Drugs* 2009 Sep 23
- *Papaioannou et al: The natural compound atraric acid is an antagonist of the human androgen receptor inhibiting cellular invasiveness and prostate cancer cell growth. *J Cell Mol Med* 2008 Jul 4
- *Shenouda et al: Phytosterol *Pygeum africanum* regulates prostate cancer in vitro and in vivo. *Endocrine* 2007 Feb;31(1):72-81
- *Suzuki et al: Pharmacological effects of saw palmetto extract in the lower urinary tract. *Life Sci* 2004 Apr 23;74(23):2897-908
- *van Copenolle et al: Pharmacological effects of the lipidosterolic extract of *Serenoa repens* (Permixon) on rat prostate hyperplasia induced by hyperprolactinemia: comparison with finasteride. *Prostate* 2000 Apr 1;43(1):49-58
- *Yang et al: Saw Palmetto induces growth arrest and apoptosis of androgen-dependent prostate cancer LNCaP cells via inactivation of STAT 3 and androgen receptor signaling. *Int J Oncol* 2007 Sep;31(3):593-600

Saw palmetto, Lycopene and **Selenium** work well together in preventing prostate inflammation and urinary bladder obstruction.

- *Bonvissuto et al: Effect of *Serenoa repens*, lycopene, and selenium on proinflammatory phenotype activation: an in vitro and in vivo comparison study. *Urology* 2011 Jan;77(1):248:e9-16

Saw Palmetto, Nettle, Curcumin and Quercetin is another combination that improves the effects of the antibiotic prulifloxacin (fluoroquinolone) in treating bacterial prostatitis.

*Cai et al: *Serenoa repens* associated with *Urtica dioica* (ProstaMEV) and curcumin and quercetin (FlogMEV) extracts are able to improve the efficacy of prulifloxacin in bacterial prostatitis patients: results from a prospective randomised study. *Int J Antimicrob Agents* 2009 Jun;33(6):549-53

Seaweeds (brown – kelp, wakame) contain carotenoids called fucoidans which prevent the formation of prostate cancer cells.

*Kotake-Nara et al: Carotenoids affect proliferation of human prostate cancer cells. *J Nutr* 2001 Dec;131(12):3303-6

Selenium is an important mineral for prostate health, reducing PSA levels in those with enlarged prostates. **Do not use sodium selenate/selenite.** This form is very toxic. Sodium selenate is a by-product of the copper refining industry and disposed of in some selenium supplements, human and animal multivitamins, baby formulas, and “nutritional” shakes.

*Ghosh: Rapid induction of apoptosis in prostate cancer cells by selenium: reversal by metabolites of arachidonate 5-lipoxygenase. *Biochem Biophys Res Commun* 2004 Mar 12;315(3):624-35

*Kise et al: Inhibitory effect of selenium on hamster pancreatic cancer induction by N'-nitrosobis(2-oxopropyl)amine. *Int J Cancer* 1990 Jul 15;46(1):95-100

*108 Milligrams Of This Common “Nutrient” Can Kill A Person by Sayer Ji, GreenMedInfo, Saturday, January 21, 2012

*Zhang et al: Selenium glycinate supplementation increases blood glutathione peroxidase activities and decreases prostate-specific antigen readings in middle-aged US men. *Nutr Res* 2011 Feb;31(2):165-8

Selenium, Vitamin E, and/or Soy isoflavones reduce PSA levels, lowering the risk of prostate cancer.

*Joniau et al: Effect of nutritional supplement challenge in patients with isolated high-grade prostatic intraepithelial neoplasia. *Urology* 2007 Jun;69(6):1102-6

*Kim et al: Changes in serum proteomic patterns by presurgical alpha-tocopherol and L-selenomethionine supplementation in prostate cancer. *Cancer Epidemiol Biomarkers Prev* 2005 Jul;14(7):1697-702

*Lippman et al: Effect of selenium and vitamin E on risk of prostate cancer and other cancers. *JAMA* 2009;301(1):39-51

Sesame seeds contain compounds that stop the growth of a wide variety of tumor cells including leukemia, multiple myeloma, and cancers of the colon, prostate, breast, pancreas, and lung.

*Harikumar et al: Sesamin manifests chemopreventive effects through the suppression of NF-kappa B-regulated cell survival, proliferation, invasion, and angiogenic gene products. *Mol Cancer Res* 2010 May;8(5):751-61

Strawberries contain compounds that have antioxidant and anti-cancer effects against prostate cancer. However, be sure to buy only **organically-grown** strawberries as they are high on the pesticide-containing list.

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

*Zhang et al: Isolation and identification of strawberry phenolics with antioxidant and human cancer cell antiproliferative properties. *J Agric Food Chem* 2008 Feb 13;56(3):670-5

Tea and Soy (Genistein) contain active compounds that inhibit the formation of prostate cancer cells especially green tea and is recommended over coffee as a better health choice.

*Lee et al: Tea, coffee and prostate cancer. *Mol Nutr Food Res* 2009 Feb;53(2):256-65

*Zhou et al: Soy phytochemicals and tea bioactive components synergistically inhibit androgen-sensitive human prostate tumors in mice. *J Nutr* 2003 Feb;133(2):516-21

Tea Tree oil is safe to use externally on animal prostate abscesses. Tea tree is an anti-microbial that will help reduce infection.

*Kawakami et al: Treatment of prostatic abscesses by aspiration of the purulent matter and injection of tea tree oil into the cavities in dogs. *J Vet Med Sci* 2006 Nov;68(11):1215-7

Vitamin C supplementation prevents testosterone-induced prostate enlargement.

*Li et al: Vitamin C supplementation prevents testosterone-induced hyperplasia of rat prostate by down-regulating HIF-1alpha. *J Nutr Biochem* 2009 Aug 26

*Maramag et al: Effect of vitamin C on prostate cancer cells in vitro: effect on cell number, viability, and DNA synthesis. *Prostate* 1997 Aug 1;32(3):188-95

Vitamin D3 stops the growth of various cancers including that of the prostate. Although it is best to get it from the sun, Vitamin D3 is just as valuable as a supplement.

*Bodiwala et al: Prostate cancer risk and exposure to ultraviolet radiation: further support for the protective effect of sunlight. *Cancer Lett* 2003 Mar 31;192(2):145-9

*Colli et al: A novel vitamin D3 analog arrests prostate growth in patients with benign prostatic hyperplasia: a randomized clinical trial. *Eur Uro* 2006 Jan;49(1):82-86

*Fife et al: Effects of vitamin D3 on proliferation of cancer cells in vitro. *Cancer Lett* 1997 Nov 25;120(1):65-9

*Gilbert et al: Life course sun exposure and risk of prostate cancer: population-based nested case-control study and meta-analysis. *Int J Cancer* 2009 Sep 15;125(6):1414-23

Vitamin E (see more under Cancer) is important for prostate health and helps prevent cancer and increase prostate cancer survival. The best and most effectively complete vitamin E is one that has all 4 tocopherols and 4 tocotrienols (alpha, beta, delta, gamma).

*Alkhenizan & Hafez: The role of vitamin E in the prevention of cancer: a meta-analysis of randomized controlled trials. *Ann Saudi Med* 2007 Nov-Dec;27(6):409-14

*Barve et al: Mixed tocotrienols inhibit prostate carcinogenesis in TRAMP mice. *Nutr Cancer* 2010 Aug;62(6):789-94

*Heinonen et al: Prostate cancer and supplementation with alpha-tocopherol and beta-carotene: incidence and mortality in a controlled trial. *J Natl Cancer Inst* 1998 Mar 18;90(6):440-6

*Luk et al: Gamma-tocotrienol as an effective agent in targeting prostate cancer stem cell-like population. *Int J Cancer* 2010 Jul 8

*Watters et al: Associations between alpha-tocopherol, beta-carotene, and retinol and prostate cancer survival. *Cancer Res* 2009 May 1;69(9):3833-41

Vitamin E and Selenium induce programmed cell death of prostate cancer cells.

*Reagan-Shaw et al: Combination of vitamin E and selenium causes an induction of apoptosis of human prostate cancer cells by enhancing Bax/Bcl-2 ratio. *Prostate* 2008 Jul 30

Vitamin E, Green tea (EGCG), and Genistein work synergistically with the chemotherapy drug Taxol (paclitaxel) to kill prostate cancer cells.

*Ping et al: Taxol synergizes with antioxidants in inhibiting hormonal refractory prostate cancer cell growth. *Urol Oncol* 2008 Sep 23

Vitamin K is important in preventing prostate cancer. However, it should not be taken by anyone on blood thinners.

- *Nimptsch et al: Serum undercarboxylated osteocalcin as biomarker of vitamin K intake and risk of prostate cancer: a nested case-control study in the Heidelberg cohort of the European prospective investigation into cancer and nutrition. *Cancer Epidemiol Biomarkers Prev* 2009 Jan;18(1):49-56
- *Nimptsch et al: Dietary intake of vitamin K and risk of prostate cancer in the Heidelberg cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC-Heidelberg). *Am J Clin Nutr* 2008 Apr;87(4):985-92

Vitex (Chasteberry) is an herb often used by women to manage hormonal issues but it is also useful for men especially in preventing and treating an enlarged prostate.

- *Weisskopf et al: A Vitex agnus-castus extract inhibits cell growth and induces apoptosis in prostate epithelial cell lines. *Yao Xue Xue Bao* 2009 May;44(5):456-61
- *Weisskopf et al: A Vitex agnus-castus extract inhibits cell growth and induces apoptosis in prostate epithelial cell lines. *Planta Med* 2005 Oct;71(10):910-6

Walnut consumption improves prostate health, likely because of its omega fatty acid content.

- *Spaccarotella et al: The effect of walnut intake on factors related to prostate and vascular health in older men. *Nutr J* 2008 May 2;7:13

White button mushrooms and its major component CLA, prevent prostate tumor growth.

- *Adams et al: White button mushroom (*Agaricus bisporus*) exhibits antiproliferative and proapoptotic properties and inhibits prostate tumor growth in athymic mice. *Nutr Cancer* 2008;60(6):744-56

White mustard seeds contain phytosterols which prevent prostate inflammation and enlargement.

- *Wu et al: An experimental study(II) on the inhibition of prostatic hyperplasia by extract of seeds of *Brassica alba*. *Zhongguo Zhong Yao Za Zhi* 2003 Jul;28(7):643-6

Whole grains, Rye bran, and Soy protein (use only non-GMO and fermented) significantly reduce PSA counts in prostate cancer patients.

- *Bylund et al: Rye bran and soy protein delay growth and increase apoptosis of human LNCaP prostate adenocarcinoma in nude mice. *Prostate* 2000 Mar 1;42(4):304-14
- *Landberg et al: Rye whole grain and bran intake compared with refined wheat decreases urinary C-peptide, plasma insulin, and prostate specific antigen in men with prostate cancer. *J Nutr* 2010 Dec;140(12):2180-6

Zinc is a known healing mineral which also prevents various cancers including that of the prostate.

- *Costello & Franklin: Novel role of zinc in the regulation of prostate citrate metabolism and its implications in prostate cancer. *Prostate* 1998 June;35(4):285-96
- *Feng et al: Direct effect of zinc on mitochondrial apoptogenesis in prostate cells. *Prostate* 2002 Sept;52(4):311-18
- *Franklin and Costello: Zinc as an anti-tumor agent in prostate cancer and in other cancers. *Arch Biochem Biophys*. 2007 Jul 15;463(2):211-7
- *Liang et al: Inhibitory effect of zinc on human prostatic carcinoma cell growth. *Prostate* 1999 Aug;40(3):200-7
- *Wei et al: Differential expression of metallothioneins (MTs) 1, 2, and 3 in response to zinc treatment in human prostate normal and malignant cells and tissues. *Mol Cancer* 2008 Jan 21;7:7
- *Zaichick et al: Zinc in human prostate gland: Normal, hyperplastic and cancerous. *Int Urol Nephrol* 1997;29(5):565-74

Zyflamend by New Chapter is a potent anti-inflammatory that also kills various cancer cells including prostate while suppressing tumor growth.

- *Bemis et al: Zyflamend, a unique herbal preparation with nonselective COX inhibitory activity, induces apoptosis of prostate cancer cells that lack COX-2 expression. *Nutr Canc* 2005;52(2):202-12
- *Capodice et al: Zyflamend in men with high-grade prostatic intraepithelial neoplasia: results of a phase I clinical trial. *J Soc Integr Oncol* 2009 Spring;7(2):43-51
- *Kunnumakkara et al: Zyflamend suppresses growth and sensitizes human pancreatic tumors to gemcitabine in an orthotopic mouse model through modulation of multiple targets. *Int J Canc* 2011 Sept 20
- *Rafailov et al: The role of Zyflamend, an herbal anti-inflammatory, as a potential chemopreventive agent against prostate cancer: a case report. *Integr Cancer Ther* 2007 Mar;6(1):74-76
- *Sandur et al: Zyflamend, a polyherbal preparation, inhibits invasion, suppresses osteoclastogenesis, and potentiates apoptosis through down-regulation of NF-kappa B activation and NF-kappa B-regulated gene products. *Nutr Canc* 2007;57(1):78-87
- *Yang et al: Zyflamend reduces LTB4 formation and prevents oral carcinogenesis in a 7,12-dimethylbenz[alpha]anthracene (DMBA)-induced hamster cheek pouch model. *Carcinogen* 2008 Aug 6
- *Yang et al: Zyflamend-mediated inhibition of human prostate cancer PC3 cell proliferation: effects on 12-LOX and Rb protein phosphorylation. *Cancer Biol Ther* 2007 Feb;6(2):228-36



PSORIASIS

COMMON EXAMPLES:

retinoids – acitretin [Soriatane]

folic acid antagonist – methotrexate

steroids – triamcinolones [Aristocort, Kenacort] and others

others – anthralin [Anthraforte, Dithranol, Psoriatec] and others

DEplete:

A, beta carotene, B9, E, (plus many others if on Steroids)

☞ **Cholesterol-lowering drugs** are linked to numerous skin disorders including psoriasis.

*Proksch: Antilipemic drug-induced skin manifestations. *Hautarzt* 1995 Feb;46(2):76-80

☞ **Psoriasis** is just one of more than 80 diseases that come under the Autoimmune heading.

*Bergman et al: Psoriasis patients generate increased serum levels of autoantibodies to tumor necrosis factor-alpha and interferon-alpha. *J Dermatol Sci* 2009 Dec;56(3):163-7

*Silverberg: Pediatric psoriasis: an update. *Ther Clin Risk Manag* 2009;5:849-56

SUGGESTED ALTERNATIVES:

Aloe vera is a safe and effective treatment for psoriasis which can be used internally and externally.

*Syed et al: Management of psoriasis with Aloe vera extract in a hydrophilic cream: a placebo-controlled, double-blind study. *Trop Med Int Health* 1996 Aug;1(4):505-9

Almond oil has a wide range of therapeutic properties which may be of benefit for psoriasis if used topically.

*Ahmad: The uses and properties of almond oil. *Complement Ther Clin Pract* 2010 Feb;16(1):10-2

B12 in Avocado oil applied topically improves the condition.

*Stücker et al: Vitamin B(12) cream containing avocado oil in the therapy of plaque psoriasis. *Dermatol* 2001;203(2):141-7

Calaguala (*Polypodium decumanum*) is a fern that has been clinically documented in South America and Spain for the treatment of psoriasis, likely due to its high fatty acid content.

- *Vasänge-Tuominen et al: The fern *Polypodium decumanum*, used in the treatment of psoriasis, and its fatty acid constituents as inhibitors of leukotriene B4 formation. *Biochem Biophys Res Commun* 2007 Nov 3;362(4):951-7

Curcumin is the active part of Turmeric root and a potent antioxidant that improves many health conditions including psoriasis and other autoimmune disorders. It can also be applied topically for greater improvement.

- *Bright: Curcumin and autoimmune disease. *Adv Exp Med Biol* 2007;595:425-51
- *Heng et al: Drug-induced suppression of phosphorylase kinase activity correlates with resolution of psoriasis as assessed by clinical, histological and immunohistochemical parameters. *Br J Dermatol* 2000 Nov;143(5):937-49
- *Thangapazham et al: Beneficial role of curcumin in skin diseases. *Adv Exp Med Biol* 2007;595:343-57

Dehydration is linked to allergy symptoms and psoriasis which is not always preventable. Those with such skin diseases as psoriasis may have what is referred to as clinically normal skin but they also have reduced skin water content and increased transepidermal water loss. This means that although the skin may appear normal, there is a defective barrier that prevents normal hydration and water-retention capacity. Keeping well hydrated is important and equally important is keeping the skin well lubricated to hold in as much moisture as possible.

- *Berardesca et al: In vivo hydration and water-retention capacity of stratum corneum in clinically uninvolved skin in atopic and psoriatic patients. *Acta Derm Venereol* 1990;70(5):400-4
- *Kim et al: Evaluation of skin surface hydration in Korean psoriasis patients: a possible factor influencing psoriasis. *Clin Exp Dermatol* 2002 Mar;27(2):147-52
- *Tanaka et al: Decreased hydration state of the stratum corneum and reduced amino acid content of the skin surface in patients with seasonal allergic rhinitis. *Br J Dermatol* 1998 Oct;139(4):618-21

Edgar Cayce (1877-1945) diet proved effective in treating psoriasis. Based on his writings, the diet was reimplemented in later years and consists of fresh fruits and vegetables, small amounts of protein from fish and fowl, fiber supplements, olive oil, and no red meat, processed foods, or refined carbohydrates. Saffron tea and slippery elm bark water were consumed daily.

- *Brown et al: Medical nutrition therapy as a potential complementary treatment for psoriasis--five case reports. *Altern Med Rev* 2004 Sep;9(3):297-307

Gluten sensitivity is associated with the development of psoriasis and its progression. Those with Crohn's disease are 5 times more likely to develop psoriasis than normal (Silverberg). Celiac disease is also associated with gluten-sensitivity and psoriasis.

- *Damasiewicz-Bodzek & Wielkoszyński: Serologic markers of celiac disease in psoriatic patients. *J Eur Acad Dermatol Venereol* 2008 Sep;22(9):1055-61
- *Humbert et al: Gluten intolerance and skin diseases. *Eur J Dermatol* 2006 Jan-Feb;16(1):4-11
- *Michaëlsson et al: Gluten-free diet in psoriasis patients with antibodies to gliadin results in decreased expression of tissue transglutaminase and fewer Ki67+ cells in the dermis. *Acta Derm Venereol* 2003;83(6):425-9
- *Silverberg: Pediatric psoriasis: an update. *Ther Clin Risk Manag* 2009;5:849-56
- *Singh et al: Celiac disease-associated antibodies in patients with psoriasis and correlation with HLA Cw6. *J Clin Lab Anal* 2010;24(4):269-72
- *Skavland et al: In vitro screening for putative psoriasis specific antigens among wheat proteins and peptides. *Br J Dermatol* 2011 Sep 12

Homeopathics are safe and effective for treating psoriasis.

- *Bernstein et al: Treatment of mild to moderate psoriasis with Reliéva, a Mahonia aquifolium extract--a double-blind, placebo-controlled study. *Am J Ther* 2006 Mar-Apr;13(2):121-6
- *Bornhöft et al: Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. *Forsch Komplementmed* 2006;13 Suppl 2:19-29
- *Witt et al: Homeopathic treatment of patients with psoriasis--a prospective observational study with 2 years follow-up. *J Eur Acad Dermatol Venereol.* 2009 May;23(5):538-43)

Honey and Beeswax in Olive oil is an effective topical treatment for psoriasis.

- *Al-Waili: Topical application of natural honey, beeswax and olive oil mixture for atopic dermatitis or psoriasis: partially controlled, single-blinded study. *Complement Ther Med* 2003 Dec;11(4):226-34

Indigo naturalis (Quig dai) is a dark blue Chinese herb that has been successfully used to treat psoriasis since ancient times and without side effects, clearing 74% of the skin lesions in 12 weeks.

- *Lin: Indigo naturalis oil extract drops in the treatment of moderate to severe nail psoriasis: A small case series. *Arc Arch Dermatol* 2011;147(5):627-9
- *Lin et al: Treatment of psoriatic nails with Indigo naturalis oil extract: A non-controlled pilot study. *Dermatol* 2011;223(3):239-43
- *Lin et al: Anti-psoriatic effects of indigo naturalis on the proliferation and differentiation of keratinocytes with indirubin as the active component. *J Dermatol Sci* published online 12 July 2010
- *Lin et al: Anti-inflammatory effects of the extract of indigo naturalis in human neutrophils. *J Ethnopharmacol* 2009 Aug;125(1):51-58
- *Lin et al: Indigo naturalis (*Strobilanthes*) is a safe and effective treatment for psoriasis. *Arch Dermatol* 2008 Nov;144(11):1457-64
- *Lin et al: Successful treatment of recalcitrant psoriasis with Indigo naturalis ointment. *Clin Expl Dermatol* 2007 Jan;32(1):99-100
- *Lin et al: The efficacy and safety of topically applied indigo naturalis ointment in patients with plaque-type psoriasis. *Dermatol* 2007;214(2):155-61
- *Lin et al: Successful treatment of pediatric psoriasis with Indigo naturalis composite ointment. *Pediatr Dermatol* 2006 Sep-Oct;23(5):507-10

Omega-3 fatty acids contain EPA and DHA which improve conditions in those with psoriasis and psoriatic arthritis.

- *Grimminger et al: A double-blind, randomized, placebo-controlled trial of n-3 fatty acid based lipid infusion in acute, extended guttate psoriasis. Rapid improvement of clinical manifestations and changes in neutrophil leukotriene profile. *Life Sci* 2003 Dec 19;74(5):663-73
- *Lassus et al: Effects of dietary supplementation with polyunsaturated ethyl ester lipids (Angiosan) in patients with psoriasis and psoriatic arthritis. *J Int Med Res* 1990 Jan-Feb;18(1):68-73
- *Madland et al: Subjective improvement in patients with psoriatic arthritis after short-term oral treatment with seal oil. A pilot study with double blind comparison to soy oil. *J Rheumatol* 2006 Feb;33(2):307-10

Plant phenols have a beneficial role in treating psoriasis which stresses the importance of diet, and a plant-based one at that, in preventing and treating such diseases.

- *Hrenn et al: Plant phenolics inhibit neutrophil elastase. *Planta Med* 2006 Oct;72(12):1127-31

Pycnogenol is a potent antioxidant derived from pine bark. It reduces inflammation including those of the skin.

- *Bito et al: Pine bark extract pycnogenol downregulates IFN-gamma-induced adhesion of T cells to human keratinocytes by inhibiting inducible ICAM-1 expression. *Free Radic Biol Med* 2000 Jan 15;28(2):219-27

Vitamin D3 improves psoriatic conditions whether received through sunlight or supplement.

- *Huckins et al: Treatment of psoriatic arthritis with oral 1,25-dihydroxyvitamin D3: a pilot study. *Arthritis Rheum* 1990 Nov;33(11):1723-7
- *Morimoto et al: An open study of vitamin D3 treatment in psoriasis vulgaris. *Br J Dermatol*. 1986 Oct;115(4):421-9
- *Schauber & Gallo: Antimicrobial peptides and the skin immune defense system. *J Allergy Clin Immunol* 2009 Sep;124(3 Suppl 2):R13-8
- *Wu et al: Low prevalence of psoriasis among children and adolescents in a large multiethnic cohort in southern California. *J Am Acad Dermatol* 2011 Feb 7

Vitamin D3, A, and Calcium have a therapeutic effect on rosacea and psoriasis.

- *No authors listed: Kallikrein expression and cathelicidin processing are independently controlled in keratinocytes by calcium, vitamin D(3), and retinoic acid. *J Invest Dermatol* 2010 Jan 21

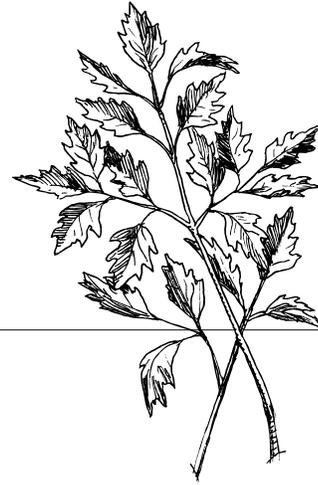
Vitamin E, CoQ10, and Selenium supplements significantly improve the skin condition.

- *Kharaeva et al: Clinical and biochemical effects of coenzyme Q(10), vitamin E, and selenium supplementation to psoriasis patients. *Dig Dis Sci* 2005 Oct;50(10):1951-8

Whey Protein isolate may have therapeutic effects for mild to moderate psoriasis.

- *Drouin et al: XP-828L (Dermylex), a new whey protein extract with potential benefit for mild to moderate psoriasis. *Can J Physiol Pharmacol* 2007 Sep;85(9):943-51
- *Poulin et al: XP-828L in the treatment of mild to moderate psoriasis: randomized, double-blind, placebo-controlled study. *J Exp Ther Oncol* 2005;5(2):81-91

SEDATIVES



(USED TO TREAT ANXIETY OR INSOMNIA)

COMMON EXAMPLES:

Antihistamines

diphenhydramine – Benedryl and others
hydroxyzine – Atarax and others
promethazine – Phenergan and others

Barbiturates

amobarbital – Amytal
butalbital – Axotal, Fiorinal, Fioricet, Fiorgan, Phrenilin, and many others
phenobarbital – Donnatal, Luminal, Nembutal, and others
secobarbital – Seconal
thiopental – Pentothal

Benzodiazepines

any of the **-pams**
diazepam – Valium and others
flurazepam – Dalmane and others
oxazepam – Novoxapam and others
... and others
any of the **-lams**
alprazolam – Xanax and others
midazolam – Versed
triazolam – Halcion and others
chlordiazepoxide – Librium and others
clorazepate – Tranxene and others

Others

bupirone – BuSpar
meprobamate – Equanil and others
zolpidem – Ambien and others

DEplete:

A, B1, B2, B3, B5, B6, B7, B9, B12, C, D, K, calcium, potassium, L-carnitine, melatonin

☞ **Mobile phones** interfere with sleep patterns.

*Lowden et al: Sleep after mobile phone exposure in subjects with mobile phone-related symptoms. *Bioelectromagnetics* 2010 Sep 20

☞ **Statins** for Cholesterol can cause insomnia as well as other adverse health conditions.

*Tuccori et al: Statin-associated psychiatric adverse events: a case/non-case evaluation of an Italian database of spontaneous adverse drug reaction reporting. *Drug Saf* 2008;31(12):1115-23

*Vgontzas et al: Effects of lovastatin and pravastatin on sleep efficiency and sleep stages. *Clin Pharmacol Ther* 1991 Dec;50(6):730-7

☞ **Sudden withdrawal of zolpidem** (Ambien) can cause seizures. Alzheimer's drugs, donepezil and memantine, induce a lower heart rate and raise the risk of seizures.

*Babai et al: Comparison of adverse drug reactions with donepezil versus memantine: analysis of the French Pharmacovigilance Database. *Therapie* 2010 May-Jun;65(3):255-9

*Cubala & Landowski: Seizure following sudden zolpidem withdrawal. *Prog Neuropsychopharmacol Biol Psych* 2007 Mar 30;31(2):539-40

SUGGESTED ALTERNATIVES:

Aromatherapy (inhalation or massage) using essential oils (Lavender, Roman Chamomile, Ylang-Ylang) relieve sleep problems especially with those under hospice care or are severely demented. Be aware that if you use massage, whatever is put on the skin is the same as eating it therefore, it is imperative that chemically-laden products be avoided.

*Goel et al: An olfactory stimulus modifies nighttime sleep in young men and women. *Chronobiol Int* 2005;22(5):889-904

*Lee & Lee: Effects of lavender aromatherapy on insomnia and depression in women college students. [Article in Korean] *Taehan Kanho Hakhoe Chi* 2006 Feb;36(1):136-43

*Lee and Lee: Effects of lavender aromatherapy on insomnia and depression in women college students. *Br J Pharmacol* 1999 Sep;128(2):380-4

*Lewith et al: A single-blinded, randomized pilot study evaluating the aroma of *Lavandula augustifolia* as a treatment for mild insomnia. *J Altern Complement Med* 2005 Aug;11(4):631-7

*Soden et al: A randomized controlled trial of aromatherapy massage in a hospice setting. *Palliat Med* 2004 Mar;18(2):87-92

*Wolfe & Joeherzber: Can aromatherapy oils promote sleep in severely demented patients? *Intnl J Geriat Psych Letters* 1996;11:926-7

Ashwagandha addresses stress-induced insomnia by improving sleep quality while decreasing the harmful effects of sleep loss.

*Kumar and Kalonia: Protective effect of *Withania somnifera* Dunal on the behavioral and biochemical alterations in sleep-disturbed mice. *Indian J Exp Biol* 2007 Jun;45(6):524-8

Gourd seeds are rich in tryptophan which improve insomnia.

*Hudson et al: Protein source tryptophan versus pharmaceutical grade tryptophan as an efficacious treatment for chronic insomnia. *Nutr Neurosci* 2005 Apr;8(2):121-7

Homeopathics are safely used by everyone from infants to aged adults for sleep. Studies show that Verum remedies significantly increased total sleep time as well as awakenings and stage changes.

- *Bell et al: Effects of homeopathic medicines on polysomnographic sleep of young adults with histories of coffee-related insomnia. *Sleep Med* 2011 May;12(5):505-11
- *La Pine et al: Night Shift: Can a homeopathic remedy alleviate shift lag? *Dimen Crit Care Nurs* 2006 May-Jun;25(3):130-36
- *Naudé et al: Chronic primary insomnia: Efficacy of homeopathic simillimum. *Homeopathy* 2010 Jan;99(1):63-68
- *Tuet et al: Homeopathic treatment of elderly patients--a prospective observational study with follow-up over a two year period. *BMC Geriatr* 2010;10:10

Kava is an herb that improves sleep quality and has long been used as a sedative worldwide. However, it is no longer allowed in Canada despite its many health benefits.

- *Shinomiya et al: Effects of kava-kava extract on the sleep-wake cycle in sleep-disturbed rats. *Psychopharmacol (Berl)* 2005 Jul;180(3):564-9

Kava and **Valerian** are effective for relieving stress-induced insomnia.

- *Wheatley: Kava and valerian in the treatment of stress-induced insomnia. *Phytother Res* 2001 Sep;15(6):549-51

Magnolia bark and **Jujube dates** have sleep-inducing qualities.

- *Koetter et al: Interactions of Magnolia and Ziziphus extracts with selected central nervous system receptors. *J Ethnopharmacol* 2009 Jul 30;124(3):421-5

Medicinal plants were studied and generally found to be effective for inducing sleep (hops, kava, melissa, passion flower, valerian).

- *van Geijlswijk et al: The use of exogenous melatonin in delayed sleep phase disorder: a meta-analysis. *Sleep* 2010 Dec;33(12):1605-14
- *Wheatley: Medicinal plants for insomnia: a review of their pharmacology, efficacy and tolerability. *J Psychopharmacol* July 2005;19(4):414-21

Melatonin improves insomnia in all age groups from children to the elderly; helps overcome **jet lag**; stimulates the anti-aging human growth hormone; reduces **tinnitus** intensity while improving sleep quality; reduces neurological damage associated with **sleep apnea**; and **increases bladder capacity** while **decreasing urine volume** associated with poor sleep quality.

- *Drake et al: Melatonin pharmacotherapy for nocturia in men with benign prostatic enlargement. *J Urol* 2004 Mar;171(3):1199-202
- *Herxheimer & Petrie: Melatonin for the prevention and treatment of jet lag. *Cochrane Database Syst Rev* 2002(2):CD001520
- *Hung et al: Protective effect of melatonin against hippocampal injury of rats with intermittent hypoxia. *J Pineal Res* 2008 Mar;44(2):214-21
- *Hurtuk et al: Melatonin: can it stop the ringing? *Ann Otol Rhinol Laryngol* 2011 Jul ;120(7):433-40
- *Matsuta et al: Melatonin increases bladder capacity via GABAergic system and decreases urine volume in rats. *J Urol* 2010 Jul;184(1):386-91
- *Meeking et al: Exercise-induced GH secretion is enhanced by the oral ingestion of melatonin in healthy adult male subjects. *Eur J Endocrinol* 1999 Jul;141(1):22-6
- *Megwalu et al: The effects of melatonin on tinnitus and sleep. *Otolaryngol Head Neck Surg* 2006 Feb;134(2):210-3
- *Petrie et al: Effect of melatonin on jet lag after long haul flights. *BMJ* 1989 Mar 18;298(6675):705-7

- *Rosenberg et al: Effect of melatonin on tinnitus. *Laryngoscope* 1998 Mar;108(3):305-10
- *Suhner et al: Comparative study to determine the optimal melatonin dosage form for the alleviation of jet lag. *Chronobiol Int* 1998 Nov;15(6):655-66
- *Wade et al: Efficacy of prolonged release melatonin in insomnia patients aged 55-80 years: quality of sleep and next-day alertness outcomes. *J Bone Miner Metab* 2000;18(4):216-22

Melissa (Lemon balm) is a calming herb that reduces stress, making it easier to fall asleep.

- *Kennedy et al: Attenuation of laboratory-induced stress in humans after acute administration of *Melissa officinalis* (Lemon Balm). *Psychosom Med* 2004 Jul-Aug;66(4):607-13

Passion flower is an herb that reduces anxiety that ultimately enhances sleep.

- *Movafegh et al: Preoperative oral *Passiflora incarnata* reduces anxiety in ambulatory surgery patients: a double-blind, placebo-controlled study. *Anesth Analg* 2008 Jun;106(6):1728-32

Schisandra is an herb that possesses potent sedative qualities.

- *Huang et al: Sedative and hypnotic activities of the ethanol fraction from *Fructus Schisandrae* in mice and rats. *J Ethnopharmacol* 2007 Apr 4;110(3):471-5

Tart cherry juice increases the body's production of melatonin which improves sleep quality and duration.

- *Howatson et al: Effect of tart cherry juice (*Prunus cerasus*) on melatonin levels and enhanced sleep quality. *Eur J Nutr* 2011 Oct 30
- *Pigeon et al: Effects of a tart cherry juice beverage on the sleep of older adults with insomnia: a pilot study. *J Med Food* 2010 Jun;13(3):579-83

Valerian root has effects comparable to the drug oxazepam in treating insomnia and improving sleep quality in postmenopausal women. It also helps those who are going through benzodiazepine and morphine withdrawal and helps reduce **restless leg syndrome**. Analysis of 16 studies indicates that Valerian improves sleep quality without producing side effects because of its action on GABA receptors.

- *Benke et al: GABA A receptors as in vivo substrate for the anxiolytic action of valerianic acid, a major constituent of valerian root extracts. *Neuropharmacol* 2008 Jun 17
- *Bent et al: Valerian for sleep: a systematic review and meta-analysis. *Am J Med* 2006 Dec;119(12):1005-12
- *Circosta et al: Biological and analytical characterization of two extracts from *Valeriana officinalis*. *J Ethnopharmacol* 2007 Jun 13;112(2):361-7
- *Cuellar & Ratcliffe: Does valerian improve sleepiness and symptom severity in people with restless legs syndrome? *Altern Ther Health Med* 2009 Mar-Apr;15(2):22-8
- *Lindahl & Lindwall: Double blind study of a valerian preparation. *Pharmacol Biochem Behav* 1989 Apr;32(4):1065-6
- *Murphy et al: *Valeriana officinalis* root extracts have potent anxiolytic effects in laboratory rats. *Phytomed* 2009 Dec 28
- *Sudati et al: In vitro antioxidant activity of *Valeriana officinalis* against different neurotoxic agents. *Neurochem Res* 2009 Aug;34(8):1372-9
- *Poyares et al: Can valerian improve the sleep of insomniacs after benzodiazepine withdrawal? *Prog Neuropsychopharmacol Biol Psych* 2002 Apr;26(3):539-45
- *Sharifzadeh et al: Effects of aqueous, methanolic and chloroform extracts of rhizome and aerial parts of *Valeriana officinalis* L. on naloxone-induced jumping in morphine-dependent mice. *Addict Biol* 2006 Jun;11(2):145-51
- *Taavoni et al: Effect of valerian on sleep quality in postmenopausal women: a randomized placebo-controlled clinical trial. *Menopause* 2011 Jul 14

*Ziegler et al: Efficacy and tolerability of valerian extract LI 156 compared with oxazepam in the treatment of non-organic insomnia--a randomized, double-blind, comparative clinical study. *Eur J Med Res* 2002 Nov 25;7(11):480-6

Valerian and **Hops** are herbs that are safely taken together to improve insomnia. **Hops** is a familiar herb used in the brewing industry but it also has calming effects that work well alone or with other herbs to induce sleep.

*Koetter et al: A randomized, double blind, placebo-controlled, prospective clinical study to demonstrate clinical efficacy of a fixed valerian hops extract combination (Ze 91019) in patients suffering from non-organic sleep disorder. *Phytother Res* 2007 Sep;21(9):847-51

Valerian and **Melissa** taken together reduces anxiety for a more effective sleep.

*Kennedy et al: Anxiolytic effects of a combination of *Melissa officinalis* and *Valeriana officinalis* during laboratory induced stress. *Phytother Res* 2006 Feb;20(2):96-102

SEIZURES/ANTI-CONVULSANTS



COMMON EXAMPLES:

Barbiturates

amobarbital – Amytal
phenobarbital – Luminal and others
primidone – Myidone and others
thiopental – Pentothal
... and others including **Sedatives**

Benzodiazepines

clonazepam – Klonopin
clorazepate – Tranxene
diazepam – Valium and others

Hydantoins

phenytoin – Dilantin and others

Succinamides

ethosuximide – Zarontin

Valproates

valproic acid – Depacon, Depakene, Depakote, and others

Others

acetazolamide – Diamox and others
carbamazepine – Tegretol and others
felbamate – Felbatol
gabapentin – Neurontin
pregabalin – Lyrica
zonisamide – Zonegran

... and more

DEplete:

A, B1, B2, B3, B6, B7, B9, B12, D, E, K, carnitine, choline, calcium, copper, potassium, selenium, zinc

☞ **Noni juice** and the herb **Ginkgo biloba** may interact with phenytoin.

*Chandra & Veeresham: Herb – drug interaction of noni juice and Ginkgo biloba with phenytoin. J Pharmacog 2010 Dec;2(18):33-42

☞ **Certain Vaccines (DPT, H1N1) and Drugs** (anti-depressants, anti-psychotics, and drugs for dementia) can cause seizures. WHO reports 71,471 seizures

from the top ten of the most frequently used convulsive-associated neuro-active drugs between 1968-2006. **Isoniazid**, an antibiotic used for tuberculosis, and **zolpidem**, a drug for insomnia, are also known to cause seizures.

- *Cubala & Landowski: Seizure following sudden zolpidem withdrawal. *Prog Neuropsychopharmacol Biol Psych* 2007 Mar 30;31(2):539-40
- *Kumlien & Lundberg: Seizure risk associated with neuroactive drugs: data from the WHO adverse drug reactions database. *Seizure* 2010 Mar;19(2):69-73
- *Murphy et al: Recurrent seizures after diphtheria, tetanus, and pertussis vaccine immunization. Onset less than 24 hours after vaccination. *Am J Dis Child* 1984 Oct;138(10):908-11
- *Pitchot & Ansseau: Zolpidem dependence and withdrawal seizure. *Rev Med Liege* 2009 Jul;64(7-8):407-8
- *Shah et al: Acute isoniazid neurotoxicity in an urban hospital. *Pediatrics* 1995 May;95(5):700-4
- *Temmerman et al: Acute isoniazid intoxication: seizures, acidosis and coma. *Acta Clin Belg* 1999 Aug;54(4):211-6

☞ **Prednisone (Steroid)** used by pregnant women can trigger low blood sugar seizures and adrenal insufficiency in the newborn.

- *Saulnier et al: Hypoglycaemic seizure and neonatal acute adrenal insufficiency after maternal exposure to prednisone during pregnancy: a case report. *Eur J Pediatr* 2010 Jun;169(6):763-5

☞ **Statin drugs** for Cholesterol cause seizures and rhabdomyolysis (destruction of the skeletal muscle tissue) and much more.

- *Guan et al: Rhabdomyolysis related to statin and seizures: report of 3 cases. *Nan Fang Yi Ke Da Xue Xue Bao* 2011 Oct;31(10):1795-6

SUGGESTED ALTERNATIVES:

Amla (Indian Gooseberry) protects against drug-induced seizures, oxidative stress and cognitive impairment.

- *Golechha et al: Hydroalcoholic extract of *Embllica officinalis* Gaertn. affords protection against PTZ-induced seizures, oxidative stress and cognitive impairment in rats. *Indian J Exp Biol* 2010 May;48(5):474-8

American ginseng has anti-convulsant and neuroprotective effects.

- *Lian et al: Anticonvulsant and neuroprotective effects of ginsenosides in rats. *Epilepsy Res* 2006 Aug;70(2-3):244-56

B6 and B7 may lower the risk of seizures. It is wise to take a complete B-complex with these added B vitamins to reduce the risk of creating a deficiency in one or more of the other family members.

- *Arslan et al: The effects of biotin supplementation on serum and liver tissue biotinidase enzyme activity and alopecia in rats which were administered to valproic acid. *Brain Dev* 2009 Jun;31(6):405-10
- *Ohtsuka et al: Treatment of the West syndrome with high-dose pyridoxal phosphate. *Brain Dev* 1987;9(4):418-21

Bacopa (Water hyssop) has neuroprotective effects and is beneficial in treating epilepsy.

- *Paulose et al: Neuroprotective role of *Bacopa monnieri* extract in epilepsy and effect of glucose supplementation during hypoxia: glutamate receptor gene expression. *Neurochem Res* 2008 Sep;33(9):1663-71

Berberine-containing plants (Barberry, Goldenseal, Goldentthread, Oregon grape) are strong anti-microbials but they also possess anti-convulsant activity.

*Bhutada et al: Anticonvulsant activity of berberine, an isoquinoline alkaloid in mice. *Epilepsy Behav* 2010 Jul;18(3):207-10

Blue skullcap has anticonvulsant activity.

*Zhang et al: Characterization of chemical ingredients and anticonvulsant activity of American skullcap (*Scutellaria lateriflora*). *Phytomed* 2009 May;16(5):485-93

Carnosine, an amino acid and precursor of histidine (another amino acid), reduces seizures.

*Wu et al: Carnosine, a precursor of histidine, ameliorates pentylentetrazole-induced kindled seizures in rat. *Neurosci Lett* 2006 May 29;400(1-2):146-9

Curcumin has anti-convulsant activity and neuro-protective effects.

*Bharal et al: Curcumin has anticonvulsant activity on increasing current electroshock seizures in mice. *Phytother Res* 2008 Dec;22(12):1660-4

*Gupta et al: Protective effect of curcumin against kainic acid induced seizures and oxidative stress in rats. *Indian J Physiol Pharmacol* 2009 Jan-Mar;53(1):39-46

*Jyoti et al: Curcumin protects against electrobehavioral progression of seizures in the iron-induced experimental model of epileptogenesis. *Epilepsy Behav* 2009 Feb;14(2):300-8

*Mehla et al: Protective effect of curcumin against seizures and cognitive impairment in a pentylentetrazole-kindled epileptic rat model. *Life Sci* 2010 Sep 16

*Sharma et al: Antioxidant potential of curcumin against oxidative insult induced by pentylentetrazol in epileptic rats. *Methods Find Exp Clin Pharmacol* 2010 May;32(4):227-32

*Sumanont et al: Prevention of kainic acid-induced changes in nitric oxide level and neuronal cell damage in the rat hippocampus by manganese complexes of curcumin and diacetylcurcumin. *Life Sci* 2006 Mar 13;78(16):1884-91

Essential oils have anti-seizure properties (Bay leaf, Nutmeg, Rose, Tarragon).

*Ramezani et al: The effect of *Rosa damascena* essential oil on the amygdala electrical kindling seizures in rat. *Pak J Biol Sci* 2008 Mar 1;11(5):746-51

*Sayyah et al: Anticonvulsant activity and chemical composition of *Artemisia dracunculus* L. essential oil. *Clin Cancer Res* 2008 Feb 15;14(4):1248-57

*Sayyah et al: Anticonvulsant activity of the leaf essential oil of *Laurus nobilis* against pentylentetrazole- and maximal electroshock-induced seizures. *Phytomed* 2002 Apr;9(3):212-6

*Wahab et al: Anticonvulsant activities of nutmeg oil of *Myristica fragrans*. *Phytother Res* 2009 Feb;23(2):153-8

Evening Primrose oil has benefits for epileptics.

*Puri: The safety of evening primrose oil in epilepsy. *Prostaglandins Leukot Essent Fatty Acids* 2007 Aug;77(2):101-3

Feverfew has beneficial effects on epilepsy and migraines.

*Jäger et al: Bioassay-guided isolation of apigenin with GABA-benzodiazepine activity from *Tanacetum parthenium*. *Phytother Res* 2009 Nov;23(11):1642-4

Gluten-free diet often benefits those prone to seizures. For instance, unexplained epilepsy with cerebral calcifications may be caused by undiagnosed celiac disease.

*Gobbi et al: Coeliac disease, epilepsy, and cerebral calcifications. The Italian Working Group on Coeliac Disease and Epilepsy. *Lancet* 1992 Aug 22;340(8817):439-43

*Peltola et al: Hippocampal sclerosis in refractory temporal lobe epilepsy is associated with gluten sensitivity. *J Neurol Neurosurg Psych* 2009 Jun;80(6):626-30

*Pfaender et al: Visual disturbances representing occipital lobe epilepsy in patients with cerebral calcifications and coeliac disease: a case series. *J Neurol Neurosurg Psych* 2004 Nov;75(11):1623-5

*Ventura et al: Coeliac disease, folic acid deficiency and epilepsy with cerebral calcifications. *Acta Paediatr Scand* 1991 May;80(5):559-62

Huperzine A from Chinese club moss is noted for helping with memory and focus but it is also helpful for treating seizures.

*Schneider et al: Clinical use of an herbal-derived compound (Huperzine A) to treat putative complex partial seizures in a dog. *Epilepsy Behav* 2009 Aug;15(4):529-34

Ketogenic diets (high fat, low carb, adequate protein) reduce seizures. Because this diet is designed to utilize fats for fuel, it is important to use good fats as opposed to “any type”. The same goes for proteins and carbohydrates. Sort out which ones are beneficial for health and which ones need to be avoided.

*Hansen et al: Ketogenic diet is antiepileptogenic in pentylenetetrazole kindled mice and decrease levels of N-acylethanolamines in hippocampus. *Neurochem Int* 2009 Mar-Apr;54(3-4):199-204

*Stafstrom: Dietary approaches to epilepsy treatment: old and new options on the menu. *Mol Nutr Food Res* 2009 Dec;53(12):1603-11

Magnesium deficiency causes seizures in those using PPIs (Acid Blockers) for a long time.

*Cundy & Dissanayake: Severe hypomagnesaemia in long-term users of proton-pump inhibitors. *Clin Endocrinol (Oxf)* 2008 Aug;69(2):338-41

Motherwort is an herb so named because it was used to calm pregnant women but it also has anti-convulsant activity.

*Bienvenu et al: Anticonvulsant activity of aqueous extract of *Leonotis leonurus*. *Phytomed* 2002 Apr;9(3):217-23

Noni juice improves neural damage in the brain. However, it should not be consumed if on medication.

*Harada et al: Preventive Effect of *Morinda citrifolia* fruit juice on neuronal damage induced by focal ischemia. *Bio Pharm Bulletin* 2009;32(3):405

Omega-3 fatty acids help prevent and treat epilepsy.

*Schlanger et al: Diet enriched with omega-3 fatty acids alleviates convulsion symptoms in epilepsy patients. *Epilepsia* 2002 Jan;43(1):103-4

*Scorza et al: The other side of the coin: Beneficiary effect of omega-3 fatty acids in sudden unexpected death in epilepsy. *J Agric Food Chem* 2009 Aug 27

Passion flower has a number of therapeutic benefits including as a treatment for epilepsy.

*Dhawan: Drug/substance reversal effects of a novel tri-substituted benzoflavone moiety (BZF) isolated from *Passiflora incarnata* Linn.--a brief perspective. *Addict Biol* 2003 Dec;8(4):379-86

Valerian root, often used to induce sleep, also has anticonvulsive properties.

*Rezvani et al: Anticonvulsant effect of aqueous extract of *Valeriana officinalis* in amygdala-kindled rats: possible involvement of adenosine. *J Ethnopharmacol* 2010 Feb 3;127(2):313-8

Vitamin D deficiency is prevalent in children with epilepsy.

*Shellhaas et al: Prevalence and risk factors for vitamin D insufficiency among children with epilepsy. *Pediatr Neurol* 2010 Jun;42(6):422-6

Vitex (Chasteberry) is an herb often used to help regulate female hormones but it has other properties including the control or reduction of epileptic episodes.

*Saber et al: The antiepileptic activity of Vitex agnus castus extract on amygdala kindled seizures in male rats. *Neurosci Lett* 2008 Aug 22;441(2):193-6



STEROIDS/CORTICOSTEROIDS

(USED TO TREAT DIFFICULT INFLAMMATIONS)

COMMON EXAMPLES:

Corticosteroids

beclomethasone – Beclodisk, Beconase, and others

betamethasone – Betnelan, Celestone, and others

budesonide – Entocort, Pulmicort, and others

cortisone – Cortone

dexamethasone – Decadron, Hexadrol, and others

fludrocortisone – Florinef

hydrocortizone – Cortisol, Cortef, Hycort, Westcort, and others

methylprednisolones – Medrol, Unimed, and others

mometasone – Elocon

pimecrolimus – Elldel

prednisolone – Delta-Cortef, Inflamase, Prelone, Pediapred, and others

prednisone – Deltasone, Meticorten, Orasone, Panasol-S, Winpred, and others

tacrolimus – Prograf

triamcinolone – Aristocort, Kenalog, and others

... and many others

DEplete:

A, B6, B9, C, D, E, calcium, chromium, iron, magnesium, potassium, selenium, strontium, zinc, DHEA

☞ **Corticosteroids/Steroids** belong to a class of prescription drugs that are based on hormones formed in the adrenal glands and generally used to reduce inflammation. They are divided into two groups: Glucocorticoids (anti-inflammatories) and Mineralocorticoids (control salt and water balance). **Anabolic steroids** are a group of synthetic hormones used by athletes and body builders to stimulate muscle growth and strength. They are generally illegal and not addressed in this book.

☞ **Corticosteroids** are linked to an increased risk of lymphoma.

*Schneeweiss et al: Topical treatments with pimecrolimus, tacrolimus and medium- to high-potency

corticosteroids, and risk of lymphoma. *Dermatol* 2009;219(1):7-21

☞ **Corticosteroids** are widely used in veterinary medicine and can trigger adverse reactions in animals just as they can in humans. In this study, healthy dogs were given corticosteroids for 30 days after which, a 14% bone mass loss was noted.

*Costa et al: Bone demineralization in the lumbar spine of dogs submitted to prednisone therapy. *J Vet Pharmacol Ther* 2010 Dec;33(6):583-6

☞ **Inhaled steroids** increase the risk of pneumonia in those with COPD and are linked to low blood sugar and adrenal suppression. Internal use of steroids in COPD patients also suppresses the hypothalamic-pituitary-adrenal-axis which may be linked to obesity.

*Dunlop et al: Hypoglycemia due to adrenal suppression secondary to high-dose nebulized corticosteroid. *Pediatr Pulmonol* 2002 Jul;34(1):85-6

*Schuetz et al: Effect of a 14-day course of systemic corticosteroids on the hypothalamic-pituitary-adrenal-axis in patients with acute exacerbation of chronic obstructive pulmonary disease. *BMC Pulm Med* 2008;8:1

*Singh & Loke: Risk of pneumonia associated with long-term use of inhaled corticosteroids in chronic obstructive pulmonary disease: a critical review and update. *Curr Opin Pulm Med* 2010 Mar;16(2):118-22

☞ **Injections** of steroids to treat tendinopathy may relieve immediate pain but ultimately contribute to long-term damage, delayed healing, and a significant increase in recurrence.

*Coombes et al: Efficacy and safety of corticosteroid injections and other injections for management of tendinopathy: a systematic review of randomised controlled trials. *Lancet* 2010 Nov 20;376(9754):1751-67

☞ **Steroids** increase the risk of atrial fibrillation (heart arrhythmia) especially in pregnant women.

*Carmichael et al: Maternal corticosteroid use and orofacial clefts. *Am J Obstet Gynecol* 2007;197:585.e1-7

*Liu et al: Androgens and atrial fibrillation: friends or foes? *Int J Cardiol* 2010 Nov 19;145(2):365-7

*Park-Wyllie et al: Birth defects after maternal exposure to corticosteroids: Prospective cohort study and meta-analysis of epidemiological studies. *Teratol* 2000;62:385-92

*Sullivan et al: Atrial fibrillation and anabolic steroids. *J Emerg Med* 1999 Sep-Oct;17(5):851-7

*van der Hooft et al: Corticosteroids and the risk of atrial fibrillation. *Arch Intern Med* 2006 May 8;166(9):1016-20

☞ **Steroids** are linked to mood and behavioral changes similar to bipolar disorder. They also contribute to muscle weakness in those with cystic fibrosis.

*Barry & Gallagher: Corticosteroids and skeletal muscle function in cystic fibrosis. *J Appl Physiol* 2003 Oct;95(4):1379-84

*Brown: Effects of glucocorticoids on mood, memory, and the hippocampus. Treatment and preventive therapy. *Ann N Y Acad Sci* 2009 Oct;1179:41-55

☞ **Topical steroids** used in the diaper area causes immunosuppression, infection and Cushing's disease (caused by an over-production of cortisol).

*Semiz et al: Two cases of Cushing's syndrome due to overuse of topical steroid in the diaper area. *Pediatr Dermatol* 2008 Sep-Oct;25(5):544-7

SUGGESTED ALTERNATIVES TO DRUGS:

Apigenin is a flavonoid found in a variety of fruits and vegetables that not only has anti-cancer properties but suppresses inflammations found in a number of diseases treated with steroids including lupus, psoriasis, rheumatoid arthritis, and Crohn's.

*Kang et al: Apigenin, a non-mutagenic dietary flavonoid, suppresses lupus by inhibiting autoantigen presentation for expansion of autoreactive Th1 and Th17 cells. *Arthritis Res Ther* 2009;11(2):R59

Arnica is superior to steroids or NSAIDs for reducing pain and it does not affect blood clotting as do the medications.

*Alfredo et al: Effects of phonophoresis with Arnica montana onto acute inflammatory process in rat skeletal muscles: an experimental study. *Ultrasonics* 2009 May;49(4-5):466-71

*Lüdtke & Hacke: On the effectiveness of the homeopathic remedy Arnica montana. *Wien Med Wochenschr* 2005 Nov;155(21-22):482-90

*Baillargeon et al: The effects of Arnica Montana on blood coagulation. Randomized controlled trial. *Can Fam Physician* 1993 Nov;39:2362-7

*Ekenäs et al: Screening for anti-inflammatory activity of 12 Arnica (Asteraceae) species assessed by inhibition of NF-kappaB and release of human neutrophil elastase. *Hum Exp Toxicol* 2002 Apr;21(4):223-30

*Kawakami et al: Inflammatory process modulation by homeopathic arnica montana 6CH: The role of individual variation. *Evid Based Complement Alternat Med* 2011;2011:917541

*Lyss et al: Helenalin, an anti-inflammatory sesquiterpene lactone from Arnica, selectively inhibits transcription factor NF-kappaB. *Biol Chem* 1997 Sep;378(9):951-61

*Lyss et al: The anti-inflammatory sesquiterpene lactone helenalin inhibits the transcription factor NF-kappaB by directly targeting p65. *J Biol Chem* 1998 Dec 11;273(50):33508-16

*Macêdo et al: Anti-inflammatory activity of Arnica montana 6ch: preclinical study in animals. *Homeopathy* 2004 Apr;93(2):84-7

*Merfort: Arnica: new insights on the molecular mode of action of a traditional medicinal plant. *Teratology* 1999 Apr;59(4):252-60

*Totonchi & Guyuron: A randomized, controlled comparison between arnica and steroids in the management of postrhinoplasty ecchymosis and edema. *Plast Reconstr Surg*. 2007 Jul;120(1):271-4

*Widrig et al: Choosing between NSAID and arnica for topical treatment of hand osteoarthritis in a randomised, double-blind study. *Rheumatol Int* 2007 Apr;27(6):585-91

Beta-carotene, Curcumin, and Vitamin C prevent steroid-induced deaths of healthy body cells.

*Ahmad et al: Amelioration of genotoxic damage by certain phytoproducts in human lymphocyte cultures. *Int J Radiat Oncol Biol Phys* 2002 Jan 1;52(1):212-23

Black Cumin seed contains a substance that proves superior to fluticasone in treating asthma.

*Boskabady et al: Antiasthmatic effect of Nigella sativa in airways of asthmatic patients. *Phytomed* 2010 Feb 8

*Boskabady et al: The possible prophylactic effect of Nigella sativa seed extract in asthmatic patients. *An Med Interna* 1995 Oct;12(10):501-2

*Keyhanmanesh et al: The effect of thymoquinone, the main constituent of Nigella sativa on tracheal responsiveness and white blood cell count in lung lavage of sensitized guinea pigs. *J Ethnopharmacol* 2009 Oct 29;126(1):102-7

*Mansour & Tornhamre: Inhibition of 5-lipoxygenase and leukotriene C4 synthase in human blood cells by thymoquinone. *J Enzyme Inhib Med Chem* 2004 Oct;19(5):431-6

Chamomile proves better than steroids for stomach ulcers.

*Martins et al: Comparative analysis between Chamomilla recutita and corticosteroids on wound healing. An in vitro and in vivo study. *Phytother Res*. 2008 Sep 19

Chinese skullcap contains a substances called wogonin which prevents steroid-induced immune suppression although it does not have any anti-inflammatory effects.

*Enomoto et al: Wogonin prevents immunosuppressive action but not anti-inflammatory effect induced by glucocorticoid. *Dig Dis Sci* 2008 Jul;53(7):1774-84

Creatine is a supplement well known to body builders but it also has other qualities important to those with muscular or neurotoxic disorders including Parkinson's or Huntington's. In addition, creatine is proving to be a useful treatment for young people who experience reduced growth due to steroid use, for whatever reason. Creatine has no detrimental effect on the kidneys and is safely taken by diabetics and those on dialysis.

*Gualano et al: Creatine supplementation does not impair kidney function in type 2 diabetic patients: a randomized, double-blind, placebo-controlled, clinical trial. *Eur J Appl Physiol* 2010 Oct 26

*Gualano et al: Effects of creatine supplementation on renal function: a randomized, double-blind, placebo-controlled clinical trial. *Eur J Appl Physiol* 2008 May;103(1):33-40

*Roy et al: Dietary supplementation with creatine monohydrate prevents corticosteroid-induced attenuation of growth in young rats. *Can J Physiol Pharmacol* 2002 Oct;80(10):1008-14

Curcumin prevents steroid-induced deaths of healthy cells and reverses steroid-resistance, common in COPD patients.

*Chen et al: Effect of curcumin on the expression of collagen type I protein and transforming growth factor-beta1mRNA in pulmonary fibrosis rats. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi*. 2008 May;26(5):257-61

*Lal et al: Efficacy of curcumin in the management of chronic anterior uveitis. *Phytother Res* 1999 Jun;13(4):318-22

*Marwick et al: Oxidative stress and steroid resistance in asthma and COPD: pharmacological manipulation of HDAC-2 as a therapeutic strategy. *Expert Opin Ther Targets* 2007 Jun;11(6):745-55

*Meja et al: Curcumin restores corticosteroid function in monocytes exposed to oxidants by maintaining HDAC2. *Am J Respir Cell Mol Biol* 2008 Sep;39(3):312-23

*Xu et al: Effects of curcumin in treatment of experimental pulmonary fibrosis: a comparison with hydrocortisone. *J Ethnopharmacol*. 2007 Jun 13;112(2):292-9

*Zhou et al: Curcumin protects PC12 cells from corticosterone-induced cytotoxicity: possible involvement of the ERK1/2 pathway. *Basic Clin Pharmacol Toxicol* 2009 Mar;104(3):236-40

Dill weed reverses steroid-induced type 2 diabetes.

*Panda: The effect of Anethum graveolens L. (dill) on corticosteroid induced diabetes mellitus: involvement of thyroid hormones. *Phytother Res* 2008 Sep 23

Echinacea is an herb most recognized as one to improve the immune system during the cold and flu season but echinacea is a safe alternative in treating some steroid-dependent illnesses. Those who did not receive echinacea required longer periods of steroid use.

*Neri et al: Oral Echinacea purpurea extract in low-grade, steroid-dependent, autoimmune idiopathic uveitis: a pilot study. *Obstet Gynecol* 2008 Aug;112(2 Pt1):265-70

Elemental Diet is superior to steroids in treating Crohn's disease, even in children. An elemental diet consists of liquids that contain nutritional supplementation, giving the digestive system time to rest and heal.

- *Jones: Comparison of total parenteral nutrition and elemental diet in induction of remission of Crohn's disease. Long-term maintenance of remission by personalized food exclusion diets. *J Med Food* 2004;7(1):7-12
- *Okada et al: Controlled trial comparing an elemental diet with prednisolone in the treatment of active Crohn's disease. *Hepatogastroenterol* 1990 Feb;37(1):72-80
- *Papadopoulou et al: Remission following an elemental diet or prednisolone in Crohn's disease. *Acta Paediatr* 1995 Jan;84(1):79-83
- *Sanderson et al: Remission induced by an elemental diet in small bowel Crohn's disease. *Arch Dis Child* 1987 Feb;62(2):123-7
- *Verma et al: Does adjuvant nutritional support diminish steroid dependency in Crohn disease? *Scand J Gastroenterol* 2001 Apr;36(4):383-8
- *Zoli et al: A randomized controlled study comparing elemental diet and steroid treatment in Crohn's disease. *Aliment Pharmacol Ther* 1997 Aug;11(4):735-40

Genistein is an isoflavone found in high concentrations in such foods as soy and fava beans and kudzu (a pea plant considered to be a noxious weed in many places). Genistein has protective effects against steroid-induced bone disease and the formation of cancerous liver cells.

- *Bitto et al: Protective effect of genistein aglycone on the development of osteonecrosis of the femoral head and secondary osteoporosis induced by methylprednisolone in rats. *J Ethnopharmacol* 2009 Oct 29;126(1):134-42
- *Mousavi & Adlercreutz: Genistein is an effective stimulator of sex hormone-binding globulin production in hepatocarcinoma human liver cancer cells and suppresses proliferation of these cells in culture. *Steroids* 1993 Jul;58(7):301-4

Glucosamine is a safer treatment than steroids for inflammatory bowel disease in children.

- *Salvatore et al: A pilot study of N-acetyl glucosamine, a nutritional substrate for glycosaminoglycan synthesis, in paediatric chronic inflammatory bowel disease. *Aliment Pharmacol Ther* 2000 Dec;14(12):1567-79

Gluten-free diet is beneficial for treating the lung disease associated with Celiac disease in children who were able to wean off the steroids. Gluten sensitivity is often misdiagnosed as lupus.

- *Hadjivassiliou et al: Gluten sensitivity masquerading as systemic lupus erythematosus. *Ann Rheum Dis* 2004 Nov;63(11):1501-3
- *Sethi et al: Benefit of gluten-free diet in idiopathic pulmonary hemosiderosis in association with celiac disease. *Pediatr Pulmonol* 2010 Oct 21

Gymnena and **Inula racemosa** (herb) helps reverse steroid-induced diabetes.

- *Gholap & Kar: Effects of *Inula racemosa* root and *Gymnema sylvestre* leaf extracts in the regulation of corticosteroid induced diabetes mellitus: involvement of thyroid hormones. *Pharmazie* 2003 Jun;58(6):413-5

Gynura procumbens has anti-diabetic and steroidal properites.

- *Iskander et al: Antiinflammatory screening of the medicinal plant *Gynura procumbens*. *Plant Foods Hum Nutr* 2002;57(3-4):233-44

Horny Goat Weed is an herb usually sold to improve circulation but it has other beneficial effects including reducing the adverse effects of long-term use of steroids.

- *Wu et al: Experimental study on antagonizing action of herba *Epimedii* on side effects induced by glucocorticoids. *Zhongguo Zhong Yao Za Zhi* 1996 Dec;21(12):748-51,763

Hyaluronic acid injections are just as effective as steroids but without the side effects since hyaluronic acid is a substance needed throughout the body.

*Leopold et al: Corticosteroid compared with hyaluronic acid injections for the treatment of osteoarthritis of the knee. A prospective, randomized trial. *J Bone Joint Surg Am* 2003 Jul;85-A(7):1197-203

Immune stimulating herbs include alfalfa, astragalus, echinacea, licorice root.

Melatonin, often used to induce sleep, has many other benefits including neuroprotective qualities that are superior to prednisone in spinal cord injuries.

*Cayli et al: Effect of combined treatment with melatonin and methylprednisolone on neurological recovery after experimental spinal cord injury. *Eur Spine J* 2004 Dec;13(8):724-32

*Gül et al: Dose-dependent neuroprotective effects of melatonin on experimental spinal cord injury in rats. *Surg Neurol*. 2005 Oct;64(4):355-61

*Kaptanoglu et al: Comparison of the effects of melatonin and methylprednisolone in experimental spinal cord injury. *J Neurosurg* 2000 Jul;93(1 Suppl):77-84

Milk Thistle is an herb with a long history of protecting the liver especially from drug-induced damage.

*Radovanović et al: Hepatoprotective effects of silymarin in androgenic-anabolic steroid-induced liver damage. *Med Pregl* 2003;56 Suppl 1:79-83

Multivitamins and **Phosphatidyl complexes** protect the liver from steroid-induced damage.

*Pagonis et al: Multivitamins and phospholipids complex protects the hepatic cells from androgenic-anabolic-steroids-induced toxicity. *Clin Toxicol (Phila)* 2008 Jan;46(1):57-66

Noni fruit is as effective as analgesics and steroids for reducing pain and inflammation.

*Basar et al: Analgesic and antiinflammatory activity of *Morinda citrifolia* L. (Noni) fruit. *Phytother Res* 2010 Jan;24(1):38-42

*Basar et al: Analgesic and antiinflammatory activity of *Morinda citrifolia* L. (Noni) fruit. *Phytother Res* 2009 Jun 22

*Buia et al: Polysaccharide composition of the fruit juice of *Morinda citrifolia* (Noni). *Phytochem* 2006 June;67(12):1271-75

*Chan-Blanco et al: The noni fruit (*Morinda citrifolia* L.): A review of agricultural research, nutritional and therapeutic properties. *J Food Comp Anal* 2006 Sept-Nov;19(6-7):645-654

*Dixon et al: Ferment this: The transformation of Noni, a traditional polynesian medicine (*Morinda Citrifolia*, Rubiaceae). *Econ Bot* 53(1):51-68

*Dussossoy et al: Characterization, anti-oxidative and anti-inflammatory effects of Costa Rican noni juice (*Morinda citrifolia* L.). *J Ethnopharmacol* 2010 Sep 19

*McClatchey: From Polynesian healers to health food stores: Changing perspectives of *Morinda citrifolia* (Rubiaceae). *Integ Canc Ther* 2002 June;1(2):110-120

*McKoy et al: Preliminary investigation of the anti-inflammatory properties of an aqueous extract from *Morinda citrifolia* (Noni). *Proc West Pharmacol Soc* 2002 45:76-78

*Nuansanit et al: Damnacanthol-induced anti-inflammation is associated with inhibition of NF- κ B Activity. *Inflamm Allergy Drug Targets* 2011 Nov 1

*Potterat & Hamburger: *Morinda citrifolia* (Noni) Fruit - Phytochemistry, Pharmacology, Safety. *Planta Med* 2007;73(3):191-199

*West et al: A double-blind clinical safety study of noni fruit juice. *Pac Health Dialog* 2009 Nov;15(2):21-32

Omega 3 fatty acids taken during pregnancy and while breast feeding significantly reduce the risk of infantile eczema.

*Furuhjelm et al: Fish oil supplementation in pregnancy and lactation may decrease the risk of infant allergy. *Acta Paediatr* 2009 Sep;98(9):1461-7

- *Thijs et al: Fatty acids in breast milk and development of atopic eczema and allergic sensitisation in infancy. *Environ Sci Technol* 2010 Feb 15;44(4):1458-63

Panax Ginseng reduces side effects caused by steroids.

- *Dou et al: Active constituents reducing side-effects of prednisone acetate in leaves of Panax ginseng C.A.Mey. *Zhongguo Zhong Yao Za Zhi* 1997 Mar;22(3):174-6,192

Prednisone used by pregnant women can trigger low blood sugar, seizures and adrenal insufficiency in the newborn.

- *Saulnier et al: Hypoglycaemic seizure and neonatal acute adrenal insufficiency after maternal exposure to prednisone during pregnancy: a case report. *Eur J Pediatr* 2010 Jun;169(6):763-5

Probiotics are vital for preventing and treating eczema, even in children and much safer than using steroids internally or externally.

- *Abrahamsson et al: Probiotics in prevention of IgE-associated eczema: a double-blind, randomized, placebo-controlled trial. *J Allergy Clin Immunol* 2007 May;119(5):1174-80
- *Böttcher et al: Low breast milk TGF-beta2 is induced by Lactobacillus reuteri supplementation and associates with reduced risk of sensitization during infancy. *Pediatr Allergy Immunol* 2008 Sep;19(6):497-504
- *Gerasimov et al: Probiotic supplement reduces atopic dermatitis in preschool children: a randomized, double-blind, placebo-controlled, clinical trial. *Am J Clin Dermatol* 2010;11(5):351-61
- *Kalliomäki & Isolauri: Pandemic of atopic diseases--a lack of microbial exposure in early infancy? *Curr Drug Targets Infect Disord* 2002 Sep;2(3):193-9
- *Kim et al: Effect of probiotic mix (Bifidobacterium bifidum, Bifidobacterium lactis, Lactobacillus acidophilus) in the primary prevention of eczema: a double-blind, randomized, placebo-controlled trial. *Pediatr Allergy Immunol* 2010 Mar;21(2 Pt 2):e386-93
- *Kukkonen et al: Probiotics and prebiotic galacto-oligosaccharides in the prevention of allergic diseases: a randomized, double-blind, placebo-controlled trial. *J Allergy Clin Immunol* 2007 Jan;119(1):192-8
- *Michail et al: Efficacy of probiotics in the treatment of pediatric atopic dermatitis: a meta-analysis of randomized controlled trials. *Ann Allergy Asthma Immunol* 2008 Nov;101(5):508-16
- *West et al: Probiotics during weaning reduce the incidence of eczema. *Pediatr Allergy Immunol* 2009 Aug;20(5):430-7
- *Weston et al: Effects of probiotics on atopic dermatitis: a randomised controlled trial. *Arch Dis Child* 2005 Sep;90(9):892-7
- *Wickens et al: A differential effect of 2 probiotics in the prevention of eczema and atopy: a double-blind, randomized, placebo-controlled trial. *J Allergy Clin Immunol* 2008 Oct;122(4):788-94
- *Zhu et al: Meta analysis of lactic acid bacteria as probiotics for the primary prevention of infantile eczema. *Zhongguo Dang Dai Er Ke Za Zhi* 2010 Sep;12(9):734-9

Resveratrol is superior to steroids in treating COPD and has a better effect than methylprednisolone in treating experimental spinal cord injury.

- *Ates et al: Effects of resveratrol and methylprednisolone on biochemical, neurobehavioral and histopathological recovery after experimental spinal cord injury. *Acta Pharmacol Sin* 2006 Oct;27(10):1317-25
- *Knobloch et al: Resveratrol impairs the release of steroid-resistant inflammatory cytokines from human airway smooth muscle cells in chronic obstructive pulmonary disease. *J Pharmacol Exp Ther* 2010 Dec;335(3):788-98

Selenium improves rheumatoid arthritis and decreases the need for steroids or NSAIDs. **Do not use sodium selenate/selenite.** This form is very toxic. Sodium selenate is a by-product of the copper refining industry and disposed of in some selenium supplements, cheaper human and animal multivitamins, baby formulas, and “nutritional” shakes.

*Heinle et al: Selenium concentration in erythrocytes of patients with rheumatoid arthritis. Clinical and laboratory chemistry infection markers during administration of selenium. *Med Klin (Munich)* 1997 Sep 15;92 Suppl 3:29-31

*108 Milligrams Of This Common "Nutrient" Can Kill A Person by Sayer Ji, GreenMedInfo, Saturday, January 21, 2012

Tripterygium wilfordii (a Chinese herb) suppresses abnormal immune reactions to steroids used in Guillan-Barre syndrome.

*Zhang et al: Effect of Tripterygium polyglycoside on interleukin-6 in patients with Guillain-Barre syndrome. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2000 May;20(5):332-4

Vegetarian diet improves skin conditions without the use of steroids.

*Tanaka et al:Vegetarian diet ameliorates symptoms of atopic dermatitis through reduction of the number of peripheral eosinophils and of PGE2 synthesis by monocytes. *J Physiol Anthropol Appl Human Sci* 2001 Nov;20(6):353-61

Vitamin B12 topically is a safer and more effective choice to use on children with eczema.

*Januchowski et al: Evaluation of topical vitamin B(12) for the treatment of childhood eczema. *J Altern Complement Med* 2009 Apr;15(4):387-9

Vitamins B6, B9, B12 (used to decrease homocysteine levels) are decreased even more during steroid use, meaning that homocysteine levels will rise.

*Martinez-Taboada et al: Homocysteine levels in polymyalgia rheumatica and giant cell arteritis: influence of corticosteroid therapy. *Rheumatology (Oxford)* 2003 Sep;42(9):1055-61

Vitamin D3 decreases adverse effects in children taking steroids for asthma.

*Majak et al: The effect of oral steroids with and without vitamin D3 on early efficacy of immunotherapy in asthmatic children. *Clin Exp Allergy* 2009 Oct 7

Vitamins D3 and K2 protect against bone loss caused by steroid use.

*Yonemura et al: Protective effect of vitamins K2 and D3 on prednisolone-induced loss of bone mineral density in the lumbar spine. *Am J Kidney Dis* 2004 Jan;43(1):53-60

Wobenzym is superior to Lynestrenol (a synthetic progestogen hormone).

*Rammer & Friedrich: Enzyme therapy in treatment of mastopathy. A randomized double-blind clinical study. *Nutr Cancer* 1996;25(3):297-304

Wormwood, often used as an anti-parasitic, is more effective than steroids for treating Crohn's disease. It was also found to improve mood and quality of life which was not achieved with standard medications.

*Steroid-sparing effect of wormwood (*Artemisia absinthium*) in Crohn's disease: a double-blind placebo-controlled study. *Phytomed* 2007 Feb;14(2-3):87-95

THYROID HORMONE REPLACEMENT



(USED TO TREAT LOW [HYPO] THYROID CONDITIONS)

COMMON EXAMPLES:

desiccated thyroid – Armour Thyroid

liotrix – Euthroid, Thyrolar, and others

liothyronine – Cytomel, Triostat

levothyroxine – Synthroid, Levothyroid, Levoxyl, Thyro-tabs, Eltroxin, L-thyroxine, LT4, and others

teriparatide – Forteo

DEplete:

calcium, iodine, iron, phosphorus, zinc

⚠ **Levothyroxine** reduces the effects of bisphosphonates taken for Osteoporosis.

*Panico et al: Osteoporosis and thyrotropin-suppressive therapy: reduced effectiveness of alendronate. *Thyroid* 2009 May;19(5):437-42

⚠ **Pesticides** (organochlorine compounds, DDT, simazine, lindane and some of their active constituents) have long been associated with the development of cancer but they are also linked to numerous other dangerous health conditions including affecting the thyroid. Exposure to **other chemicals** such as BPA, PBDE, HBCD, perchlorate, petroleum products also have the same effect.

*Alvarez-Pedrerol et al: Organochlorine compounds, iodine intake, and thyroid hormone levels during pregnancy. *Environ Sci Technol* 2009 Oct 15;43(20):7909-15

*Bogazzi et al: Effects of a mixture of polychlorinated biphenyls (Aroclor 1254) on the transcriptional activity of thyroid hormone receptor. *J Endocrinol Invest* 2003 Oct;26(10):972-8

*Donato & Zani: Chronic exposure to organochlorine compounds and health effects in adults: diabetes and thyroid diseases. *Ann Ig* 2010 May-Jun;22(3):185-98

*Goldner et al: Pesticide use and thyroid disease among women in the Agricultural Health Study. *Am J Epidemiol* 2010 Feb 15;171(4):455-64

*Greer et al: Health effects assessment for environmental perchlorate contamination: the dose response for inhibition of thyroidal radioiodine uptake in humans. *Environ Health Perspect* 2002 Sep;110(9):927-37

*Ji et al: Transthyretin-binding activity of hexabromocyclododecanes (HBCDs) and its thyroid hormone disrupting effects after developmental exposure. *Huan Jing Ke Xue* 2010 Sep;31(9):2191-5

*Julvez et al: Thyroid Dysfunction as a Mediator of Organochlorine Neurotoxicity in Preschool Children. *Environ Health Perspect* 2011 Jun 30

*Lacasaña et al: Interaction between organophosphate pesticide exposure and PON1 activity on

thyroid function. *Toxicol Appl Pharmacol* 2010 Aug 5

- *Meeker & Ferguson: Relationship between Urinary Phthalate and Bisphenol A Concentrations and Serum Thyroid Measures in U.S. Adults and Adolescents from NHANES 2007-08. *Environ Health Perspect* 2011 Jul 11
- *Patrick: Thyroid disruption: mechanism and clinical implications in human health. *Altern Med Rev* 2009 Dec;14(4):326-46
- *Terasaki et al: Assessment of thyroid hormone activity of halogenated bisphenol A using a yeast two-hybrid assay. *Chemosphere* 2011 May 6
- *Turyk et al: Hormone disruption by PBDEs in adult male sport fish consumers. *Environ Health Perspect* 2008 Dec;116(12):1635-41
- *Uzma et al: Impact of organic solvents and environmental pollutants on the physiological function in petrol filling workers. *Int J Environ Res Public Health* 2008 Sep;5(3):139-46

☞ **Thyroid disorders** are linked to breast cancer and celiac disease.

- *Cuoco et al: Prevalence and early diagnosis of coeliac disease in autoimmune thyroid disorders. *Ital J Gastroenterol Hepatol* 1999 May;31(4):283-7
- *Giani et al: Relationship between breast cancer and thyroid disease: relevance of autoimmune thyroid disorders in breast malignancy. *J Clin Endocrinol Metab* 1996 Mar;81(3):990-4
- *Muller et al: High prevalence of breast cancer in patients with benign thyroid diseases. *J Endocrinol Invest* 2010 Jul 1
- *Turken et al: Breast cancer in association with thyroid disorders. *Life Sci* 1982 Dec 13;31(24):2693-7

☞ **Thyroid nodules** are detected in about 68% of healthy people who use high sensitivity ultrasound diagnostic equipment (mammograms, ultrasounds etc) especially 13 Mhz scanners.

- *Guth et al: Very high prevalence of thyroid nodules detected by high frequency (13 MHz) ultrasound examination. *Eur J Clin Invest* 2009 Aug;39(8):699-706
- *Guth et al: Very high prevalence of thyroid nodules detected by high frequency (13 MHz) ultrasound examination. *HNO* 2010 Jul;58(7):680-5

☞ **Triclosan**, a chemical used in such products as deodorants, cleaners, and hand sanitizers, decreases thyroxine secretion in mothers and infants. Thyroxine is the body's main metabolic hormone which is secreted by the thyroid gland.

- *Paul et al: Developmental triclosan exposure decreases maternal and neonatal thyroxine in rats. *Environ Toxicol Chem* 2010 Dec;29(12):2840-4

SUGGESTED ALTERNATIVES:

Ashwagandha reverses the hypothyroid effects caused by Metformin, a Diabetes drug.

- *Jatwa & Kar: Amelioration of metformin-induced hypothyroidism by *Withania somnifera* and *Bauhinia purpurea* extracts in Type 2 diabetic mice. *Phytother Res* 2009 Aug;23(8):1140-5

B-complex deficiency is associated with thyrotoxicosis caused by hyperthyroidism which goes on to cause an increase in homocysteine levels resulting in a higher risk of cardiovascular events.

- *Colleran et al: Potential association of thyrotoxicosis with vitamin B and folate deficiencies, resulting in risk for hyperhomocysteinemia and subsequent thromboembolic events. *Endocr Pract* 2003 Jul-Aug;9(4):290-5

Berberine reduces thyroxine-induced diarrhea. Berberine is a compound found within such plants as Barberry, Goldenseal, Goldenthread, and Oregon grape, that has anti-cancer effects.

*Cheng et al: Berberine against gastrointestinal peptides elevation and mucous secretion in hyperthyroid diarrheic rats. *J Korean Med Sci* 2001 Dec;16 Suppl:S42-53

Calcium and **Vitamin D** reduce symptoms of hyperparathyroidism in the elderly.

*Chapuy et al: Calcium and vitamin D supplements: effects on calcium metabolism in elderly people. *Am J Clin Nutr* 1987;46:324-8

Catechin, a compound found in green tea and cacao, reduces thyroxine-induced oxidative stress on the liver and male testes.

*Chandra et al: Thyroxine induced stress and its possible prevention by catechin. *Indian J Exp Biol* 2010 Jun;48(6):559-65

*Chandra et al: Thyroxine induced stress and its possible prevention by catechin. *J Med Case Reports* 2009;3:9295

*Sahoo et al: Protective effects of vitamin E and curcumin on L-thyroxine-induced rat testicular oxidative stress. *Chem Biol Interact* 2008 Nov 25;176(2-3):121-8

Citrus fruits help regulate thyroid and insulin levels by reducing oxidative stress that contributes to diabetes and thyroid irregularities.

*Parmar & Kar: Medicinal values of fruit peels from *Citrus sinensis*, *Punica granatum*, and *Musa paradisiaca* with respect to alterations in tissue lipid peroxidation and serum concentration of glucose, insulin, and thyroid hormones. *J Med Food* 2008 Jun;11(2):376-81

*Ramful et al: Citrus fruit extracts reduce Advanced Glycation End Products (AGEs)- and H₂O₂-induced oxidative stress in human adipocytes. *J Agric Food Chem* 2010 Sep 30

Curcumin may somewhat stimulate proper function of the thyroid but has little or no such effect in the aged.

*Papiez et al: Age-dependent different action of curcumin in thyroid of rat. *Folia Histochem Cytobiol* 2008;46(2):205-11

Curcumin with Vitamin E prevents thyroid hormone-induced oxidative stress damage to the kidneys and male testes.

*Jena et al: Regulation of expression of antioxidant enzymes by vitamin E and curcumin in L-thyroxine-induced oxidative stress in rat renal cortex. *Mol Biol Rep* 2011 Feb;38(2):1047-54

*Sahoo et al: Protective effects of vitamin E and curcumin on L-thyroxine-induced rat testicular oxidative stress. *Chem Biol Interact* 2008 Nov 25;176(2-3):121-8

*Venditti & Meo: Thyroid hormone-induced oxidative stress. *Cell Mol Life Sci* 2006 Feb;63(4):414-34

Custard apple is more effective than thiouracil for controlling hyperthyroidism.

*Panda and Kar: *Annona squamosa* seed extract in the regulation of hyperthyroidism and lipid-peroxidation in mice: possible involvement of quercetin. *Phytomedicine*. 2007 Dec;14(12):799-805

Iodine deficiency increases oxidative stress and DNA changes in the thyroid which can lead to nodules and/or thyroid cancer. Since it is a trace element, not much is needed. However, an increased consumption of processed food has placed the majority of the population in the deficiency range. Adding seaweed and unprocessed sea salt (coloured, not white), enough iodine can be obtained.

*Paschke: Molecular pathogenesis of nodular goiter. *Langenbecks Arch Surg* 2011 Apr 14

Magnesium decreases severity of hyperthyroidism. Collard greens prove to have the best absorption of magnesium from a food source.

*Gilroy et al: Evaluation of ionized and total serum magnesium concentrations in hyperthyroid cats. *Can J Vet Res* 2006 Apr;70(2):137-42

*Schwartz et al: Magnesium absorption in human subjects from leafy vegetables, intrinsically labeled with stable ²⁶Mg. *Am J Clin Nutr* 1984 Apr;39(4):571-6

Mangoes and Melons decrease the risks of hypothyroidism and abnormal cholesterol and blood sugar levels.

*Parmar & Kar: Possible amelioration of atherogenic diet induced dyslipidemia, hypothyroidism and hyperglycemia by the peel extracts of *Mangifera indica*, *Cucumis melo* and *Citrullus vulgaris* fruits in rats. *Biofactors* 2008;33(1):13-24

Melatonin, Quercetin and NAC (n-acetyl-cysteine) reduce oxidative stress in the patients with Grave's Disease, an autoimmune disorder associated with the thyroid.

*Tang et al: Oxidative stress in Graves' disease patients and antioxidant protection against lymphocytes DNA damage in vitro. *Pharmazie* 2005 Sep;60(9):696-700

Potassium iodide reduces radiation damage to the thyroid but **only** if taken within the period of two days before exposure to approximately 8 hours after.

*Zanzonico & Becker: Effects of time of administration and dietary iodine levels on potassium iodide (KI) blockade of thyroid irradiation by ¹³¹I from radioactive fallout. *Chest* 2005 Dec;128(6):3817-27

Seaweed suppresses any effect that radioactive iodine might have on the thyroid.

*Maruyama & Yamamoto: Suppression of ¹²⁵I-uptake in mouse thyroid by seaweed feeding: possible preventative effect of dietary seaweed on internal radiation injury of the thyroid by radioactive iodine. *J Cancer Res Clin Oncol* 1992;118(6):447-52

Selenium deficiency is associated with an enlarged thyroid and Hashimoto's disease. **Do not use sodium selenate/selenite.** This form is very toxic. Sodium selenate is a by-product of the copper refining industry and disposed of in some selenium supplements, most human and animal multivitamins, baby formulas, and "nutritional" shakes.

*Gärtner et al: Selenium supplementation in patients with autoimmune thyroiditis decreases thyroid peroxidase antibodies concentrations. *J Clin Endocrinol Metab* 2002 Apr;87(4):1687-91

*Maeda et al: Seaweed carotenoid, fucoxanthin, as a multi-functional nutrient. *Immunopharmacol Immunotoxicol* 2009 Jun;31(2):314-9

*108 Milligrams Of This Common "Nutrient" Can Kill A Person by Sayer Ji, GreenMedInfo, Saturday, January 21, 2012

*Rasmussen et al: Selenium status, thyroid volume, and multiple nodule formation in an area with mild iodine deficiency. *Eur J Endocrinol* 2011 Apr;164(4):585-90

*Zagrodzki & Ratajczak: Selenium supplementation in autoimmune thyroiditis female patient--effects on thyroid and ovarian functions (case study). *Biol Trace Elem Res* 2008 Winter;126(1-3):76-82

Sweet Orange peel has therapeutic action for hyperthyroidism. It is best to buy **organically** grown oranges as they are on the list of high pesticide content.

*Parmar & Kar: Medicinal values of fruit peels from *Citrus sinensis*, *Punica granatum*, and *Musa paradisiaca* with respect to alterations in tissue lipid peroxidation and serum concentration of glucose, insulin, and thyroid hormones. *J Med Food* 2008 Jun;11(2):376-81

*The Full List: 53 Fruits and Veggies. Environmental Working Group. www.ewg.org/foodnews/list/

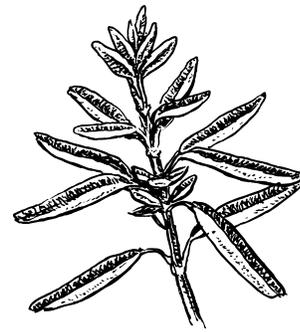
Tyrosine is an amino acid whose action proves to be superior to liothyronine and levothyroxine.

*Palinkas et al: Psychoneuroendocrine effects of combined thyroxine and triiodothyronine versus tyrosine during prolonged Antarctic residence. *South Med J*. 2004 Jan;97(1):30-4

Zinc deficiency is associated with an abnormal thyroid function.

- *Ertek et al: Relationship between serum zinc levels, thyroid hormones and thyroid volume following successful iodine supplementation. *Hormones (Athens)* 2010 Jul-Sep;9(3):263-8
- *Maxwell & Volpe: Effect of zinc supplementation on thyroid hormone function. A case study of two college females. *Ann Nutr Metabol* 2007;51(2):188-94

VACCINES



Vaccines may be necessary at times but not nearly in the quantity or frequency that is now being recommended. Pick and choose the ones you feel are necessary and the timing of them, especially when it comes to your children. It is your responsibility to research all vaccines and each side of the issue in order to make informed decisions.

List of Canadian Vaccines

Public Health Agency - www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php

List of UK Vaccines

Department of Health - immunisation.dh.gov.uk/

List of USA Vaccines

Center for Disease Control - www.cdc.gov/vaccines/vpd-vac/vaccines-list.htm

List of Vaccinations required in the USA before age 6 – with ingredients

Are we overvaccinating our children? - 49 Doses of 14 vaccines before age 6? - National Vaccine Information Center pdf download from - www.nvic.org/Vaccine-Laws/state-vaccine-requirements.aspx

List of Vaccinations required in Canada

www.phac-aspc.gc.ca/im/is-cv/#a

Vaccine ingredients: Not every ingredient listed here is found in all vaccines at any one time.

- Acetic acid (Sodium acetate)
- Aluminum (hydroxide, phosphate, sulfate)
- Ammonium sulfate
- Antibiotics
- Benzethonium chloride (antimicrobial)
- Boric acid (Sodium borate)
- Calcium phosphate
- Carbonyl iron
- Egg albumin
- Formaldehyde
- Formalin
- Gelatin
- Gluteraldehyde
- Human and Animal DNA
- Hydrochloric acid
- Hydrogen peroxide
- Lab altered viruses and bacteria

Lactose
Mercury
Mineral oil based adjuvants
MSG (monosodium glutamate)
Peanut oil
Phenols (carbolic acid)
Phenoxyethanol
Polysorbates (Tween-20 and Tween-80)
Salt (Sodium chloride)
Squalene (MF59, AS03)
Sweeteners (sucrose, sorbitol, aspartame)
Thimerosal (Mercury)
Triton-X 100
Unidentified contaminants

- *Autism is only the tip of the iceberg. Koren Publications
 - *Do you know what's in a vaccine? Koren Publications
 - *Do you know what's in a flu shot? Koren Publications
 - *How Many Vaccines will your child get? Koren Publications
 - *Informed Choice - www.informedchoice.info/cocktail.html
 - *National Vaccine Information Center - www.vaccine-tlc.org/
 - *Potential bio-hazard found in Gardasil vaccine, September 2011, VRAN
 - *Rense.com
 - *SaneVax (Safe Affordable Necessary Effective vaccines and vaccination practices through education and information)
 - *Vaccine Education - www.vaccinationeducation.com/
 - *VRAN (Vaccine Risk Awareness Network) - vran.org/
 - *WAVE (World Association for Vaccine Education) - www.novaccine.com/
 - *Whale.to - www.whale.to/a/adjuvants_bibliography.html and www.whale.to/vaccines/ingredients.html
- Vaccine Ingredients: Governmental reasoning behind vaccines
- *CDC - www.cdc.gov/vaccines/vac-gen/additives.htm
 - *Health Canada - www.phac-aspc.gc.ca/publicat/cig-gci/p01-tab01-eng.php

Vaccinations, technically, are not mandatory in Canada or the USA but enforcement is being pushed with choices no longer being tolerated. However, while no federal law exists – yet – there are state laws that have mandatory vaccination requirements for schools.

- *Adams: Vaccination rights attorney Patricia Finn threatened with criminal charges; New York State demands she surrender names of all clients. 2012 February 28
- *CDC - www.cdc.gov/vaccines/vac-gen/laws/state-reqs.htm
- *Immunization is Not Mandatory in Canada. VRAN
- *Lendman: Readyng Americans for Dangerous, Mandatory Vaccinations. Global Research
- *O' Shea: End of vaccine exemptions in California? The Doctor Within newsletter April 2011, reprinted with permission by GreenMedInfo March 2, 2012
- *Walkinshaw: Mandatory vaccinations: The Canadian picture. CMAJ 2011 Nov 8;183(16)

Medical Professionals around the world have joined forces to “counter the messages asserted by pharmaceutical companies, the government and medical agencies that vaccines are safe, effective and harmless.”

- *International Medical Council on Vaccinations - www.vaccinationcouncil.org

Adjuvants are agents used in vaccines to stimulate the immune system into increasing its response to the vaccine as well as to modify the effect of other ingredients. According to the CDC, aluminum is the only adjuvant **licensed** in the US for vaccine use yet it, and many others, are used. In Canada, aluminum adjuvants are still used in some vaccines (MF59 in seasonal flu, for example). Adjuvants are linked to numerous adverse side effects.

- *Braun & Ellenberg: Descriptive epidemiology of adverse events after immunization: reports to the Vaccine Adverse Event Reporting System (VAERS), 1991-1994. *J Pediatr* 1997 Oct;131(4):529-35
- *Canada-U.S. may go differently on vaccine production. *Canadian Press*, June 30, 2009
- *CDC - www.cdc.gov/vaccinesafety/concerns/adjuvants.html
- *Chirumbolo et al: Use of basophil activation test in the investigation of adverse effects to vaccines. *Hum Vaccin* 2011 Aug 1 ;7(8)
- *Gherardi et al: Lessons from macrophagic myofasciitis: towards definition of a vaccine adjuvant-related syndrome. *Rev Neurol (Paris)* 2003 Feb;159(2):162-4
- *Health Canada - www.phac-aspc.gc.ca/publicat/ccdr-rmtc/11vol37/acs-dcc-6/index-eng.php
- *Satoh et al: Induction of lupus autoantibodies by adjuvants. *J Autoimmun* 2003 Aug;21(1):1-9

Aluminum is an adjuvant with toxic effects that are linked to motor neuron degeneration, autism, immunodeficiency, and Gulf War syndrome.

- *Exley et al: A role for the body burden of aluminium in vaccine-associated macrophagic myofasciitis and chronic fatigue syndrome. *Med Hypotheses* 2009 Feb;72(2):135-9
- *Mahieu et al: Aluminum toxicity. Hematological effects. *Toxicol Lett* 2000 Jan 5;111(3):235-42
- *Nakayama: Influenza vaccine and adjuvant. *Yakugaku Zasshi* 2011;131(12):1723-31
- *Petrik et al: Aluminum adjuvant linked to Gulf War illness induces motor neuron death in mice. *Neuro-molecular Med* 2007;9(1):83-100
- *Shaw & Petrik: Aluminum hydroxide injections lead to motor deficits and motor neuron degeneration. *J Inorg Biochem* 2009 Nov;103(11):1555-62
- *Tomljenovic & Shaw: Mechanisms of aluminum adjuvant toxicity and autoimmunity in pediatric populations. *Lupus* 2012;21(2):223-30
- *Tomljenovic & Shaw: Do aluminum vaccine adjuvants contribute to the rising prevalence of autism? *J Inorg Biochem* 2011 Nov;105(11):1489-99
- *Tomljenovic & Shaw: Aluminum Vaccine Adjuvants: Are they Safe? *Curr Med Chem* 2011 May 16

Animal cells used in vaccines are linked to retrovirus infections, producing chronic fatigue and prostate cancer. **Aborted human fetal cells** (diploid) are used in most vaccines: measles, mumps, rabies, rubella, polio, smallpox, hepatitis, chickenpox, herpes zoster, flu, respiratory syncytial, para-influenza viruses, HIV, West Nile virus, Ebola, Marburg, Lassa, foot and mouth disease, Japanese encephalitis, dengue, tuberculosis, anthrax, plague, tetanus and malaria.

- *Calderón: Vaccines, biotechnology and their connection with induced abortion. *Cuad Bioet* 2008 May-Aug;19(66):321-53
- *Miyazawa: Endogenous retroviruses as potential hazards for vaccines. *Biologicals* 2010 May;38(3):371-6

Anthrax vaccine is linked to birth defects in newborns when pregnant women were vaccinated within the first trimester and cause the most adverse reactions compared to other vaccines. Reactions at the site of injection are significant and occur twice as often in women as men.

- *Baillie et al: Is new always better than old?: The development of human vaccines for anthrax. *Hum Vaccin* 2009 Dec;5(12):806-16
- *Geier & Geier: Gastrointestinal adverse reactions following anthrax vaccination: an analysis of the Vaccine Adverse Events Reporting System (VAERS) database. *Hepatogastroenterol* 2004 May-Jun;51(57):762-7
- *McNeil et al: Short-term reactogenicity and gender effect of anthrax vaccine: analysis of a 1967-1972 study and review of the 1955-2005 medical literature. *Pharmacoepidemiol Drug Saf* 2007 Mar ;16(3):259-74
- *Ryan et al: Birth defects among infants born to women who received anthrax vaccine in pregnancy. *Am J Epidemiol* 2008 Aug 15 ;168(4):434-42
- *Zakowska et al: Selected research problems of anthrax vaccine development. *Przegl Epidemiol* 2009;63(4):505-12

Boric Acid (Sodium borate) is an antifungal and insecticide found in some vaccines, including HPV. It is linked to adverse fetal development (teratogenicity) and death. It also increases cancer cell growth because of its estrogen-like effects, as well as affecting the male reproductive system.

- *Appel et al: Effects of moisture on the toxicity of inorganic and organic insecticidal dust formulations to German cockroaches (Blattodea: Blattellidae). *J Econ Entomol* 2004 Jun;97(3):1009-16
- *Cherrington & Chernoff: Periods of vertebral column sensitivity to boric acid treatment in CD-1 mice in utero. *Reprod Toxicol* 2002 May-Jun;16(3):237-43
- *Di Renzo et al: Boric acid inhibits embryonic histone deacetylases: a suggested mechanism to explain boric acid-related teratogenicity. *Toxicol Appl Pharmacol* 2007 Apr 15;220(2):178-85
- *Fukuda et al: Collaborative work to evaluate toxicity on male reproductive organs by repeated dose studies in rats 24). Testicular toxicity of boric acid after 2- and 4-week administration periods. *J Toxicol Sci* 2000 Oct;25 Spec No:233-9
- *Harrouk et al: Effects of hyperthermia and boric acid on skeletal development in rat embryos. *Birth Defects Res B Dev Reprod Toxicol* 2005 Jun;74(3):268-76
- *Heindel et al: The developmental toxicity of boric acid in mice, rats, and rabbits. *Environ Health Perspect* 1994 Nov;102 Suppl 7:107-12
- *Heindel et al: Developmental toxicity of boric acid in mice and rats. *Fundam Appl Toxicol* 1992 Feb;18(2):266-77
- *Kudo et al: Collaborative work to evaluate toxicity on male reproductive organs by repeated dose studies in rats 23). A comparative 2- and 4-week repeated oral dose testicular toxicity study of boric acid in rats. *J Toxicol Sci* 2000 Oct;25 Spec No:223-32
- *Narotsky et al: Effects of boric acid on axial skeletal development in rats. *Biol Trace Elem Res* 1998;66(1-3):373-94
- *Price et al: The developmental toxicity of boric acid in rabbits. *Fundam Appl Toxicol* 1996 Dec;34(2):176-87
- *Qureshi et al: Boric acid enhances in vivo Ehrlich ascites carcinoma cell proliferation in Swiss albino mice. *Toxicol* 2001 Aug 13;165(1):1-11
- *Rowe et al: The response of trout and zebrafish embryos to low and high boron concentrations is U-shaped. *Biol Trace Elem Res* 1998;66(1-3):261-70
- *Sabuncuoglu et al: Effects of subacute boric acid administration on rat kidney tissue. *Clin Toxicol (Phila)* 2006;44(3):249-53
- *Wang et al: Experimental study on the estrogen-like effect of boric Acid. *Biol Trace Elem Res* 2008 Feb;121(2):160-70
- *Wéry et al: Defects in cervical vertebrae in boric acid-exposed rat embryos are associated with anterior shifts of hox gene expression domains. *Birth Defects Res A Clin Mol Teratol* 2003 Jan;67(1):59-67
- *Xue et al: Application of boric acid baits to plant foliage for adult mosquito control. *J Am Mosq Control Assoc* 2006 Sep;22(3):497-500
- *Xue & Barnard: Boric acid bait kills adult mosquitoes (Diptera: Culicidae). *J Econ Entomol* 2003 Oct;96(5):1559-62

*Yoshizaki et al: Availability of sperm examination for male reproductive toxicities in rats treated with boric acid. *J Toxicol Sci* 1999 Aug;24(3):199-208

*Zurek et al: Boric acid dust as a component of an integrated cockroach management program in confined swine production. *J Econ Entomol* 2003 Aug;96(4):1362-6

Boric acid and Diphenhydramine (Benadryl) are toxic to the developing embryo if taken together by pregnant women.

*Peters et al: Evaluation of the embryotoxic potency of compounds in a newly revised high throughput embryonic stem cell test. *Toxicol Sci* 2008 Oct;105(2):342-50

Calcium phosphate is a vaccine adjuvant linked to rheumatic disease.

*Ea & Lioté: Advances in understanding calcium-containing crystal disease. *Curr Opin Rheumatol* 2009 Mar;21(2):150-7

*Goto et al: Studies on the toxicities of aluminium hydroxide and calcium phosphate as immunological adjuvants for vaccines. *Vaccine* 1993;11(9):914-8

*He et al: Calcium phosphate nanoparticle adjuvant. *Clin Vaccine Immunol* 2000 Nov;7(6):899-903

*Relyveld: Preparation and use of calcium phosphate adsorbed vaccines. *Dev Biol Stand* 1986;65:131-6

Calcium phosphate and Aluminum are toxic to the immune system and blood-stream which can lead to anemia.

*Goto et al: Local tissue irritating effects and adjuvant activities of calcium phosphate and aluminium hydroxide with different physical properties. *Vaccine* 1997 Aug-Sep;15(12-13):1364-71

*Goto et al: Studies on the toxicities of aluminium hydroxide and calcium phosphate as immunological adjuvants for vaccines. *Vaccine* 1993;11(9):914-8

Carbonyl iron is an adjuvant that is linked to acute brain and spinal cord inflammation.

*Levine & Saltzman: The hyperacute form of allergic encephalomyelitis produced in rats without the aid of pertussis vaccine. *J Neuropathol Exp Neurol* 1989 May;48(3):255-62

*Miljković et al: It is still not for the old iron: adjuvant effects of carbonyl iron in experimental autoimmune encephalomyelitis induction. *J Neurochem* 2011 May 10

Combination vaccinations are associated with significant adverse reactions which decreased when the vaccines were given separately.

*Shneyer et al: Reduced rate of side effects associated with separate administration of MMR and DTaP-Hib-IPV vaccinations. *J Radiol Prot* 2009 Sep;29(3):429-43

DNA and Contraceptive vaccines are being developed as a possible means of population control. There are at least 76 factors involved in the establishment of pregnancy which become targets for vaccine-induced abortion or contraception. DNA vaccines also carry under-reported risks associated with structural instability. The use of dead tissue to produce biologicals, vaccines and feedstuffs may be contributing to transmissible encephalopathies.

*Cashman: Transmissible spongiform encephalopathies: vaccine issues. *Dev Biol (Basel)* 2001;106:455-9; discussion 460-1, 465-75

*Gupta & Talwar: Contraceptive vaccines. *Adv Contracept Deliv Syst* 1994;10(3-4):255-65

*Jones: Vaccination for contraception. *Aust NZ J Obstet Gynaecol* 1994 Jun;34(3):320-9

*Lemons & Naz: Contraceptive vaccines targeting factors involved in establishment of pregnancy. *Am J Reprod Immunol* 2011 Jul;66(1):13-25

*Naz: Contraceptive vaccines. *Drugs*. 2005;65(5):593-603

*Oliveira et al: Analysis of DNA repeats in bacterial plasmids reveals the potential for recurrent instability events. *Appl Microbiol Biotechnol* 2010 Aug;87(6):2157-67

- *Robinson: Transmissible encephalopathies and biopharmaceutical production. *Dev Biol Stand* 1996;88:237-41
- *Xiang et al: Construction of the plasmid pCMV4-rZPC' DNA vaccine and analysis of its contraceptive potential. *Biol Reprod* 2003 May ;68(5):1518-24
- *Yu et al: Evidence for the inhibition of fertilization in vitro by anti-ZP3 antisera derived from DNA vaccine. *Vaccine* 2011 Jul 12 ;29(31):4933-9

DTP (Diphtheria, Tetanus, Pertussis [whooping cough]) vaccine is associated with an increased risk of asthma, allergies, seizures and SIDS (sudden infant death syndrome).

- *Baraff et al: Possible temporal association between diphtheria-tetanus toxoid-pertussis vaccination and sudden infant death syndrome. *Otol Neurotol* 2002 Jul;23(4):447-51
- *Claesson: Immunological Links to Nonspecific Effects of DTwP and BCG Vaccines on Infant Mortality. *J Trop Med* 2011 ;2011:706304
- *Hurwitz & Morgenstern: Effects of diphtheria-tetanus-pertussis or tetanus vaccination on allergies and allergy-related respiratory symptoms among children and adolescents in the United States. *J Manipulative Physiol Ther* 2000 Feb;23(2):81-90
- *Kaur & Handa: Erythema multiforme following vaccination in an infant. *Indian J Dermatol Venereol Leprol* 2008 May-Jun;74(3):251-3
- *Murphy et al: Recurrent seizures after diphtheria, tetanus, and pertussis vaccine immunization. Onset less than 24 hours after vaccination. *Am J Dis Child* 1984 Oct;138(10):908-11
- *Nakajima et al: Is childhood immunisation associated with atopic disease from age 7 to 32 years? *Thorax* 2007 Mar;62(3):270-5
- *Prandota: Urinary tract diseases revealed after DTP vaccination in infants and young children: cytokine irregularities and down-regulation of cytochrome P-450 enzymes induced by the vaccine may uncover latent diseases in genetically predisposed subjects. *Reprod Biomed Online* 2010 Jul;21(1):100-8
- *Roberts: Vaccination and cot deaths in perspective. *Arch Dis Child* 1987 Jul;62(7):754-9
- *Walker et al: Diphtheria-tetanus-pertussis immunization and sudden infant death syndrome. *Am J Public Health* 1987 Aug;77(8):945-51

Flu vaccines, according to study conclusions, have not been proven to be safe, effective or reduce mortality in any age group with benefits being substantially overestimated. Flu vaccines actually prevent the immune system from functioning properly and have been linked to increased risks of developing autoimmune disorders, diabetes, and skeletal muscle destruction. Pregnant women receiving the flu vaccine have significant increased rates of pre-eclampsia and preterm births. Acute renal failure in those taking Statin drugs for Cholesterol is also attributed to the flu vaccine.

- *Adams: CDC admits flu vaccines don't work (which is why you need a new one every year). May 29, 2011
- *Bakshi & Mazziotta: Acute transverse myelitis after influenza vaccination: magnetic resonance imaging findings. *J Neuroimaging* 1996 Oct;6(4):248-50
- *Birck et al: ANCA-associated vasculitis following influenza vaccination: causal association or mere coincidence? *J Ethnopharmacol* 2000 Aug;71(3):457-63
- *Black et al: Effectiveness of influenza vaccine during pregnancy in preventing hospitalizations and outpatient visits for respiratory illness in pregnant women and their infants. *Am J Perinatol* 2004 Aug;21(6):333-9
- *Blanco-Marchite et al: Miller Fisher syndrome, internal and external ophthalmoplegia after flu vaccination]. *Kidney Int* 2008 Dec;74(11):1461-7
- *Bodewes et al: Annual vaccination against influenza virus hampers development of virus-specific CD8+ T cell immunity in children. *J Virol* 2011 Nov ;85(22):11995-2000
- *Christian et al: Inflammatory responses to trivalent influenza virus vaccine among pregnant women. *Vaccine* 2011 Sep 20

- *Dharmaraj & Smyth: Vaccines for preventing influenza in people with cystic fibrosis. Cochrane Database Syst Rev 2009 Oct 7(4):CD001753
- *Fireman et al: Influenza vaccination and mortality: differentiating vaccine effects from bias. Am J Epidemiol 2009;170(5):650-6
- *Hottes et al: Influenza vaccine effectiveness in the elderly based on administrative databases: change in immunization habit as a marker for bias. PLoS One 2011;6(7):e22618
- *Kaur & Handa: Erythema multiforme following vaccination in an infant. Indian J Dermatol Venereol Leprol 2008 May-Jun;74(3):251-3
- *Jackson et al: Bias alone could account for benefit attributed to flu vaccine, study finds. BMJ 2008;337
- *Jackson et al: Evidence of bias in estimates of influenza vaccine effectiveness in seniors. Int J Epidemiol 2006 Apr;35(2):337-44
- *Jefferson et al: Vaccines for preventing influenza in healthy adults. Cochrane Database Syst Rev 2010(7):CD001269
- *Jefferson et al: Vaccines for preventing influenza in the elderly. Cochrane Database Syst Rev 2010(2):CD004876
- *Jefferson et al: Vaccines for preventing influenza in healthy children. Altern Ther Heal Med 2009 Sep-Oct;15(5):44-6
- *Lanza et al: Inflammation-related effects of adjuvant influenza A vaccination on platelet activation and cardiac autonomic function. J Intern Med 2010 Sep 1
- *Mallory et al: Shedding of Ann Arbor strain live attenuated influenza vaccine virus in children 6-59 months of age. Vaccine 2011 Apr 20
- *Nachamkin et al: Anti-ganglioside antibody induction by swine (A/NJ/1976/H1N1) and other influenza vaccines: insights into vaccine-associated Guillain-Barré syndrome. J Infect Dis 2008 Jul 15;198(2):226-33
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- *Piñol-Ripoll et al: Chronic bronchitis and acute infections as new risk factors for ischemic stroke and the lack of protection offered by the influenza vaccination. Cerebrovasc Dis 2008;26(4):339-47
- *Plotkin et al: Influenza vaccine--a possible trigger of rhabdomyolysis induced acute renal failure due to the combined use of cerivastatin and bezafibrate. Nephrol Dial Transplant 2000 May ;15(5):740-1
- *Rizzo et al: Influenza-related mortality in the Italian elderly: no decline associated with increasing vaccination coverage. Vaccine 2006 Oct 30;24(42-43):6468-75
- *Shoamanesh et al: Postvaccination miller fisher syndrome. Arch Neurol 2011 Oct;68(10):1327-9
- *Simonsen et al: Mortality benefits of influenza vaccination in elderly people: an ongoing controversy. Lancet Infect Dis 2007 Oct;7(10):658-66
- *Simonsen et al: Impact of influenza vaccination on seasonal mortality in the US elderly population. Arch Intern Med 2005 Feb 14;165(3):265-72
- *Smith et al: Vaccines for preventing influenza in healthy children. Cochrane Database Syst Rev 2006 Jan 25;(1):CD004879
- *Souayah et al: Guillain-Barré syndrome after vaccination in United States: data from the Centers for Disease Control and Prevention/Food and Drug Administration Vaccine Adverse Event Reporting System (1990-2005). J Clin Neuromuscul Dis 2009 Sep;11(1):1-6
- *Szilagyi et al: Influenza vaccine effectiveness among children 6 to 59 months of age during 2 influenza seasons: a case-cohort study. Anticancer Res 2009 Nov;29(11):4629-32
- *Thomas et al: Influenza vaccination for healthcare workers who work with the elderly. Cochrane Database Syst Rev 2010(2):CD005187
- *Wada et al: Hepatitis B virus-related vasculitis manifesting as severe peripheral neuropathy following influenza vaccination. J Cardiovasc Pharmacol 2003 Sep;42(3):329-38
- *Yasuda et al: Development of fulminant Type 1 diabetes with thrombocytopenia after influenza vaccination: a case report. Diabet Med 2011 Jul 22

Flu vaccine of 2008/2009 was associated with an increase of H1N1 infection the same year. In fact, in England, the flu vaccine given for the supposed H1N1 pandemic

of 2008/2009 proved to have virtually no effect but instead caused the development of Guillain-Barré syndrome.

- *Janjua et al: Seasonal influenza vaccine and increased risk of pandemic A/H1N1-related illness: first detection of the association in British Columbia, Canada. *Clin Infect Dis* 2010 Nov 1;51(9):1017-1027
- *Pebody et al: No effect of 2008/09 seasonal influenza vaccination on the risk of pandemic H1N1 2009 influenza infection in England. *Vaccine* 2011 Jan 31
- *Skowronski et al: Association between the 2008-09 seasonal influenza vaccine and pandemic H1N1 illness during Spring-Summer 2009: four observational studies from Canada. *PLoS Med* 2010;7(4):e1000258
- *Tremblay et al: Guillain-Barré syndrome following H1N1 immunization in a pediatric patient. *Ann Pharmacother* 2010 Jul-Aug;44(7-8):1330-3

Formaldehyde and Mineral oil adjuvants injected into subjects are used to induce arthritis in lab models.

- *Nair et al: Evaluation of the disease modifying activity of Colchicum luteum Baker in experimental arthritis. *J Ethnopharmacol* 2010 Oct 19

Heart inflammation (myopericarditis) had almost a 4-fold increase in military personnel vaccinated for smallpox. Other cardiovascular events are also linked to the smallpox vaccine and would be significantly higher and costly if a mass smallpox vaccination program was carried out.

- *Halsell et al: Myopericarditis following smallpox vaccination among vaccinia-naive US military personnel. *JAMA* 2003 Jun 25;289(24):3283-9
- *Ortega-Sanchez et al: Economics of cardiac adverse events after smallpox vaccination: lessons from the 2003 US Vaccination Program. *J Rheumatol* 1994 Jul;21(7):1305-9

H1N1 (see under Squalene below)

Hepatitis B vaccine given to white males are linked to a 3-fold increased risk for autism before 1999. Non-white males had a higher risk. Coincidentally, in the same year, 1999, the CDC admitted that the mercury in vaccines was neurotoxic and replaced it with another toxic substance, aluminum. Today, autism is 1500% higher than it was before the vaccine push. **HepB vaccine** is also strongly linked to several autoimmune and connective tissue disorders, degeneration of the central nervous system, liver problems, arthritis, and the altering of at least 144 genes in the liver – damaging the very organ it was supposedly designed to protect. Many doctors refuse to give it to their children, likely because it has been linked to anaphylactic shock and death in infants. In 1985, the **HepB vaccine** proved to be **-58%** effective when given to children in Minnesota (Osterholm).

- *Agmon-Levin et al: Ten cases of systemic lupus erythematosus related to hepatitis B vaccine. *Lupus* 2009 Nov;18(13):1192-7
- *Alp et al: Bell's palsy as a possible complication of hepatitis B vaccination in a child. *J Health Popul Nutr* 2009 Oct;27(5):707-8
- *Altman et al: HBV vaccine and dermatomyositis: is there an association? *Rheumatol Int* 2008 Apr;28(6):609-12
- *Bogdanos et al: A study of molecular mimicry and immunological cross-reactivity between hepatitis B surface antigen and myelin mimics. *Clin Dev Immunol* 2005 Sep;12(3):217-24
- *Brézin et al: Acute posterior multifocal placoid pigment epitheliopathy after hepatitis B vaccine. *Arch Ophthalmol* 1995 Mar;113(3):297-300
- *Comenge & Girard: Multiple sclerosis and hepatitis B vaccination: adding the credibility of molecular biology to an unusual level of clinical and epidemiological evidence. *Med Hypotheses* 2006;66(1):84-6

- *de Carvalho & Shoenfeld: Status epilepticus and lymphocytic pneumonitis following hepatitis B vaccination. *Eur J Intern Med* 2008 Jul;19(5):383-5
- *Dórea et al: Neonate exposure to thimerosal mercury from hepatitis B vaccines. *Am J Perinat* 2009 Aug;26(7):523-7
- *Erguven et al: Optic neuritis following hepatitis B vaccination in a 9-year-old girl. *J Chin Med Assoc* 2009 Nov;72(11):594-7
- *Faure: Multiple sclerosis and hepatitis B vaccination: could minute contamination of the vaccine by partial hepatitis B virus polymerase play a role through molecular mimicry? *Med Hypoth* 2005;65(3):509-20
- *Fisher et al: Adverse events associated with hepatitis B vaccine in U.S. children less than six years of age, 1993 and 1994. *Ann Epidemiol* 2001 Jan;11(1):13-21
- *Fisher & Eklund: Hepatitis B vaccine and liver problems in U.S. children less than 6 years old, 1993 and 1994. *Epidemiol* 1999 May;10(3):337-9
- *Fraunfelder et al: Hepatitis B vaccine and uveitis: an emerging hypothesis suggested by review of 32 case reports. *Cutan Ocul Toxicol* 2010 Mar;29(1):26-9
- *Gallagher & Goodman: Hepatitis B vaccination of male neonates and autism diagnosis, NHIS 1997-2002. *J Toxicol Environ Health A* 2010 Jan;73(24):1665-77
- *Geier & Geier: A case-series of adverse events, positive re-challenge of symptoms, and events in identical twins following hepatitis B vaccination: analysis of the Vaccine Adverse Event Reporting System (VAERS) database and literature review. *Clin Chim Acta* 2006 Feb;364(1-2):196-204
- *Geier & Geier: A case-control study of serious autoimmune adverse events following hepatitis B immunization. *Autoimmun* 2005 Jun;38(4):295-301
- *Geier & Geier: Hepatitis B vaccination and adult associated gastrointestinal reactions: a follow-up analysis. *Hepatogastroenterol* 2002 Nov-Dec;49(48):1571-5
- *Geier & Geier: A one year followup of chronic arthritis following rubella and hepatitis B vaccination based upon analysis of the Vaccine Adverse Events Reporting System (VAERS) database. *Clin Exp Rheumatol* 2002 Nov-Dec;20(6):767-71
- *Girard: Autoimmune hazards of hepatitis B vaccine. *Autoimmun Rev* 2005 Feb;4(2):96-100
- *Grézard et al: Cutaneous lupus erythematosus and buccal aphthosis after hepatitis B vaccination in a 6-year-old child. *Ann Dermatol Venereol* 1996;123(10):657-9
- *Hamza et al: Hepatitis B vaccine induces apoptotic death in Hepa1-6 cells. *Apoptosis* 2012 Jan 17
- *Hamza et al: In vivo study of hepatitis B vaccine effects on inflammation and metabolism gene expression. *Mol Biol Rep* 2011 Jun 21
- *Hernán et al: Recombinant hepatitis B vaccine and the risk of multiple sclerosis: a prospective study. *Neurol* 2004 Sep 14;63(5):838-42
- *Karaali-Savrun et al: Hepatitis B vaccine related-myelitis? *Eur J Neurol* 2001 Nov;8(6):711-5
- *Kaur & Handa: Erythema multiforme following vaccination in an infant. *Indian J Dermatol Venereol Leprol* 2008 May-Jun;74(3):251-3
- *Khamaisi et al: Guillain-Barré syndrome following hepatitis B vaccination. *Clin Exp Rheumatol* 2004 Nov-Dec;22(6):767-70
- *Mikaeloff et al: Hepatitis B vaccine and the risk of CNS inflammatory demyelination in childhood. *Reprod Toxicol* 2002 May-Jun;16(3):237-43
- *Montella et al: Assessment of iatrogenic transmission of HCV in Southern Italy: was the cause the Salk polio vaccination? *J Med Virol* 2003 May;70(1):49-50
- *Osterholm et al: Lack of efficacy of Haemophilus b polysaccharide vaccine in Minnesota. *JAMA* 1988 Sep 9;260(10):1423-8
- *Posfay-Barbe et al: How do physicians immunize their own children? Differences among pediatricians and nonpediatricians. *Pediatrics* 2005 Nov;116(5):e623-33
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- *Santoro et al: HLA haplotype in a patient with systemic lupus erythematosus triggered by hepatitis B vaccine. *Clin Nephrol* 2010 Aug;74(2):150-3

- *Sindern et al: Inflammatory polyradiculoneuropathy with spinal cord involvement and lethal [correction of letal] outcome after hepatitis B vaccination. *J Neurol Sci* 2001 May 1;186(1-2):81-5
- *Souayah et al: Guillain-Barré syndrome after vaccination in United States: data from the Centers for Disease Control and Prevention/Food and Drug Administration Vaccine Adverse Event Reporting System (1990-2005). *J Clin Neuromuscul Dis* 2009 Sep;11(1):1-6
- *Stajich et al: Iatrogenic exposure to mercury after hepatitis B vaccination in preterm infants. *Chin Med* 2008 Mar 29;3:4
- *Stajich et al: Iatrogenic exposure to mercury after hepatitis B vaccination in preterm infants. *J Pediatr* 2000 May;136(5):679-81
- *Stübgen et al: Neuromuscular disorders associated with Hepatitis B vaccination. *J Neurol Sci* 2010 May 15;292(1-2):1-4. Epub 2010 Mar 7
- *Vital et al: Postvaccinal inflammatory neuropathy: peripheral nerve biopsy in 3 cases. *J Peripher Nerv Syst* 2002 Sep;7(3):163-7
- *Waisbren: Acquired autoimmunity after viral vaccination is caused by molecular mimicry and antigen complementarity in the presence of an immunologic adjuvant and specific HLA patterns. *Med Hypot* 2008;70(2):346-8
- *Wang et al: Analysis on the adverse events following immunization of 10 infants death after hepatitis B vaccination. *Adv Exp Med Biol* 1990;272:183-95

HPV (Human Papillomavirus) vaccine is associated with numerous profound side effects, including Guillain-Barré Syndrome (GBS), lupus and death. The vaccine has no effect in those who already have the virus. (see more under Anti-virals).

- *Bigman et al: Effective or ineffective: attribute framing and the human papillomavirus (HPV) vaccine. *Patient Educ Couns* 2010 Sep 17
- *DiMario et al: A 16-year-old girl with bilateral visual loss and left hemiparesis following an immunization against human papilloma virus. *J Child Neurol* 2010 Mar;25(3):321-7
- *Fagan: Merck, FDA expand Gardasil warnings. *Washington Times* July 10, 2008
- *Hildesheim et al: Effect of human papillomavirus 16/18 L1 viruslike particle vaccine among young women with preexisting infection: a randomized trial. *JAMA* 2007 Aug 15;298(7):743-53
- *Kanduc et al: Quantifying the possible cross-reactivity risk of an HPV16 vaccine. *J Exp Ther Oncol* 2009;8(1):65-76
- *Katoulis et al: Erythema multiforme following vaccination for human papillomavirus. *Dermatol* 2010;220(1):60-2
- *Paul-Ebhohimhen et al: HPV vaccination: vaccine acceptance, side effects and screening intentions. *Commun Pract* 2010 Jun;83(6):30-3
- *Rojas et al: Adverse effects of the human papillomavirus vaccine. *Aten Primaria* 2010 Dec 14
- *Slade et al: Postlicensure safety surveillance for quadrivalent human papillomavirus recombinant vaccine. *JAMA* 2009 Aug 19;302(7):750-7
- *Soldevilla et al: Systemic lupus erythematosus following HPV immunization or infection? *Lupus* 2012;21(2):158-61
- *Souayah et al: Guillain-Barré syndrome after Gardasil vaccination: data from Vaccine Adverse Event Reporting System 2006-2009. *Vaccine* 2010 Sep 23
- *Sutton et al: CNS demyelination and quadrivalent HPV vaccination. *Mult Scler* 2009 Jan;15(1):116-9
- *Wacholder et al: Risk of miscarriage with bivalent vaccine against human papillomavirus (HPV) types 16 and 18: pooled analysis of two randomised controlled trials. *BMJ* 2010;340:c712

Infant Mortality decreased when the number of vaccines given to infants under three months, also decreased. In one study undertaken for the years 1991-1994, “38,787 adverse events” including infant death (highest in 1-3 month olds) after vaccination were reported (Braun).

- *Braun & Ellenberg: Descriptive epidemiology of adverse events after immunization: reports to the Vaccine Adverse Event Reporting System (VAERS), 1991-1994. *J Pediatr* 1997 Oct;131(4):529-35

- *Claesson: Immunological Links to Nonspecific Effects of DTwP and BCG Vaccines on Infant Mortality. *J Trop Med* 2011;2011:706304
- *Jonville-Bera et al: Sudden infant death syndrome and diphtheria-tetanus-pertussis-poliomyelitis vaccination status. *Fundam Clin Pharmacol* 1995;9(3):263-70
- *Kuhnert et al: A modified self-controlled case series method to examine association between multi-dose vaccinations and death. *Stat Med* 2011 Mar 15;30(6):666-77
- *Miller & Goldman: Infant mortality rates regressed against number of vaccine doses routinely given: Is there a biochemical or synergistic toxicity? *Hum Exp Toxicol* 2011 May 4
- *Moulton et al: Evaluation of non-specific effects of infant immunizations on early infant mortality in a southern Indian population. *Trop Med Int Health* 2005 Oct;10(10):947-55
- *Silvers et al: The epidemiology of fatalities reported to the vaccine adverse event reporting system 1990-1997. *Pharmacoepidemiol Drug Saf* 2001 Jun-Jul;10(4):279-85

Measles vaccine is associated with autoimmunity in children with autism and increased death rates in female children given the vaccine before the age of 9 months. It is also noted that measles vaccination given in developing countries has resulted in higher than normal infant mortality rates.

- *Aaby et al: Increased female-male mortality ratio associated with inactivated polio and diphtheria-tetanus-pertussis vaccines: Observations from vaccination trials in Guinea-Bissau. *Pediatr Infect Dis J* 2007 Mar;26(3):247-52
- *Aarby et al: High-titer measles vaccination before 9 months of age and increased female mortality: do we have an explanation? *Semin Pediatr Infect Dis* 2003 Jul;14(3):220-32
- *Hall & Cutts: Lessons from measles vaccination in developing countries. *BMJ* 1993 Nov 20;307(6915):1294-5
- *Knudsen et al: Child mortality following standard, medium or high titre measles immunization in West Africa. *Int J Epidemiol* 1996 Jun;25(3):665-73
- *Singh & Jensen: Elevated levels of measles antibodies in children with autism. *Pediatr Neurol* 2003 Apr;28(4):292-4

MMR (Measles Mumps Rubella) vaccine causes a significantly higher risk of multiple sclerosis, febrile convulsions, autism, immune disorders, and ulcerative colitis.

- *Ahlgren et al: A population-based case-control study on viral infections and vaccinations and subsequent multiple sclerosis risk. *Eur J Epidemiol* 2009;24(9):541-52
- *Bertuola et al: Association between drug and vaccine use and acute immune thrombocytopenia in childhood: a case-control study in Italy. *Drug Saf* 2010;33(1):65-72
- *Black et al: MMR vaccine and idiopathic thrombocytopenic purpura. *Br J Clin Pharmacol* 2003 Jan;55(1):107-11
- *France et al: Risk of immune thrombocytopenic purpura after measles-mumps-rubella immunization in children. *Pediatrics* 2008 Mar;121(3):e687-92
- *Jacobsen et al: Observational safety study of febrile convulsion following first dose MMRV vaccination in a managed care setting. *Vaccine* 2009 Jul 23;27(34):4656-61
- *Kawashima et al: Detection and sequencing of measles virus from peripheral mononuclear cells from patients with inflammatory bowel disease and autism. *Dig Dis Sci* 2000 Apr;45(4):723-9
- *LeBaron et al: Evaluation of potentially common adverse events associated with the first and second doses of measles-mumps-rubella vaccine. *Pediatrics* 2006 Oct;118(4):1422-30
- *Mehta & Munir: Does the MMR vaccine and secretin or its receptor share an antigenic epitope? *Med Hypotheses* 2003 May;60(5):650-3
- *Singh et al: Abnormal measles-mumps-rubella antibodies and CNS autoimmunity in children with autism. *J Biomed Sci* 2002 Jul-Aug;9(4):359-64

Mercury (Thimerosal/Thiomersal) is linked to several neurodevelopmental disorders in children including autism spectrum disorders, brain damage, premature puberty,

tics, and delayed speech. When it was removed from some childhood vaccines, the rate of such disorders decreased.

- *Ball et al: An assessment of thimerosal use in childhood vaccines. *Pediatrics* 2001 May;107(5):1147-54
- *Drum et al: Are toxic biometals destroying your children's future? *J Pediatr* 2009 Apr;154(4):514-520.e4
- *Duszczyk-Budhathoki et al: Administration of thimerosal to infant rats increases overflow of glutamate and aspartate in the prefrontal cortex: Protective Role of Dehydroepiandrosterone Sulfate. *Neurochem Res* 2011 Oct 21
- *Geier et al: The biological basis of autism spectrum disorders: Understanding causation and treatment by clinical geneticists. *Acta Neurobiol Exp (Wars)* 2010;70(2):209-26
- *Geier et al: Blood mercury levels in autism spectrum disorder: Is there a threshold level? *Acta Neurobiol Exp (Wars)* 2010;70(2):177-86
- *Geier: Thimerosal exposure&increasing trends of premature puberty in the vaccine safety datalink. *Indian J Med Res* 2010 Apr;131:500-7
- *Geier et al: A review of Thimerosal (Merthiolate) and its ethylmercury breakdown product: specific historical considerations regarding safety and effectiveness. *J Toxicol Environ Health B Crit Rev* 2007 Dec;10(8):575-96
- *Geier & Geier: A case series of children with apparent mercury toxic encephalopathies manifesting with clinical symptoms of regressive autistic disorders. *J Toxicol Environ Health A* 2007 May 15;70(10):837-51
- *Geier & Geier: A meta-analysis epidemiological assessment of neurodevelopmental disorders following vaccines administered from 1994 through 2000 in the United States. *Neuro Endocrinol Lett* 2006 Aug;27(4):401-13
- *Geier & Geier: An evaluation of the effects of thimerosal on neurodevelopmental disorders reported following DTP and Hib vaccines in comparison to DTPH vaccine in the United States. *J Toxicol Environ Health A* 2006 Aug;69(15):1481-95
- *Geier & Geier: An assessment of downward trends in neurodevelopmental disorders in the United States following removal of Thimerosal from childhood vaccines. *Med Sci Monit* 2006 Jun;12(6):CR231-9
- *Geier & Geier: A two-phased population epidemiological study of the safety of thimerosal-containing vaccines: a follow-up analysis. *Med Sci Monit* 2005 Apr;11(4):CR160-70
- *Geier & Geier: Neurodevelopmental disorders following thimerosal-containing childhood immunizations: a follow-up analysis. *Int J Toxicol* 2004 Nov-Dec;23(6):369-76
- *Geier & Geier: A comparative evaluation of the effects of MMR immunization and mercury doses from thimerosal-containing childhood vaccines on the population prevalence of autism. *Med Sci Monit* 2004 Mar;10(3):PI33-9
- *Geier & Geier: Neurodevelopmental disorders after thimerosal-containing vaccines: a brief communication. *Exp Biol Med (Maywood)* 2003 Jun;228(6):660-4
- *Havarinasab et al: Immunosuppressive and autoimmune effects of thimerosal in mice. *Toxicol Appl Pharmacol* 2005 Apr 15;204(2):109-21
- *Hewitson et al: Delayed acquisition of neonatal reflexes in newborn primates receiving a thimerosal-containing hepatitis B vaccine: influence of gestational age and birth weight. *J Toxicol Environ Health A* 2010 Jan;73(19):1298-313
- *Makani et al: Biochemical and molecular basis of thimerosal-induced apoptosis in T cells: a major role of mitochondrial pathway. *Genes Immun* 2002 Aug;3(5):270-8
- *Marques et al: Hair mercury in breast-fed infants exposed to thimerosal-preserved vaccines. *Eur J Pediatr* 2007 Sep;166(9):935-41
- *Olczak et al: Lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal. *Folia Neuropathol* 2010;48(4):258-69
- *Olczak et al: Neonatal administration of a vaccine preservative, thimerosal, produces lasting impairment of nociception and apparent activation of opioid system in rats. *Brain Res* 2009 Dec 8;1301:143-51
- *Patrizi et al: Sensitization to thimerosal in atopic children. *Contact Dermatitis* 1999 Feb;40(2):94-7

- *Verstraeten et al: Safety of thimerosal-containing vaccines: a two-phased study of computerized health maintenance organization databases. *Pediatrics* 2003 Nov;112(5):1039-48
- *Yel et al: Thimerosal induces neuronal cell apoptosis by causing cytochrome c and apoptosis-inducing factor release from mitochondria. *Int J Mol Med* 2005 Dec;16(6):971-7
- *Young et al: Thimerosal exposure in infants and neurodevelopmental disorders: an assessment of computerized medical records in the Vaccine Safety Datalink. *J Neurol Sci* 2008 Aug 15;271(1-2):110-8
- *Young et al: Thimerosal exposure in infants and neurodevelopmental disorders: an assessment of computerized medical records in the Vaccine Safety Datalink. *Pediatr Nephrol* 2006 Jun;21(6):807-10

Mineral oils are generally considered non-toxic but studies show they may be linked to certain autoimmune diseases as well as tissue destruction. Examples of mineral oil adjuvants would be Bayol F (incomplete Freund's adjuvant, IFA). Mineral oil component examples would be **Squalene** (see below) and **n-hexadecane** which are often used to induce experimental disorders in lab models.

- *Kato et al: Role of endothelial nitric oxide synthase in aggravation of indomethacin-induced gastric damage in adjuvant arthritic rats. *J Physiol Pharmacol* 2009 Dec;60(4):147-55
- *Kuroda et al: Induction of lupus-related specific autoantibodies by non-specific inflammation caused by an intraperitoneal injection of n-hexadecane in BALB/c mice. *Toxicol* 2006 Feb;218(2-3):186-96
- *Kuroda et al: Distinctive patterns of autoimmune response induced by different types of mineral oil. *Toxicol Sci* 2004 Apr;78(2):222-8
- *Stills: Adjuvants and antibody production: dispelling the myths associated with Freund's complete and other adjuvants. *ILAR J* 2005;46(3):280-93

Mosquitoes are being genetically engineered to act as flying vaccine syringes.

- *Enserink: Researchers Turn Mosquitoes Into Flying Vaccinators. *Science Now*, March 18, 2010
- *Matsuoka et al: Production of a transgenic mosquito expressing circumsporozoite protein, a malarial protein, in the salivary gland of *Anopheles stephensi* (Diptera: Culicidae). *Acta Med Okayama* 2010 Aug;64(4):233-41

Pertussis vaccine (for Whooping Cough) not only does not give full protection, it activates a predisposition for brain disfunction (encephalopathy), decreases muscle function (hypotonic-hyporesponsive episodes – HHEs) and contributes to SIDS (sudden infant death syndrome). Despite high rates of immunization, incidents of the disease are increasing and **under-estimation** is common regarding central nervous system damage.

- *Christie et al: The 1993 epidemic of pertussis in Cincinnati. Resurgence of disease in a highly immunized population of children. *N Engl J Med* 1994 Jul 7;331(1):16-21
- *Coulter: Hypotonic-Hyporesponsive Episodes to Immunisation. *MedSafe* July 1998
- *Ehregut: Bias in evaluating CNS complications following pertussis immunization. *Acta Paediatr Jpn* 1991 Aug;33(4):421-7
- *Gold: Hypotonic-hyporesponsive episodes following pertussis vaccination: a cause for concern? *Drug Saf* 2002;25(2):85-90
- *Geier & Geier: An evaluation of serious neurological disorders following immunization: a comparison of whole-cell pertussis and acellular pertussis vaccines. *Brain Dev* 2004 Aug;26(5):296-300
- *McIntosh et al: Effects of vaccination on onset and outcome of Dravet syndrome: a retrospective study. *Cytotechnol* 2002 Nov;40(1-3):139-49
- *Tan et al: Epidemiology of pertussis. *Pediatr Infect Dis J* 2005 May;24(5 Suppl):S10-8
- *Vandebriel et al: Lung pathology and immediate hypersensitivity in a mouse model after vaccination with pertussis vaccines and challenge with *Bordetella pertussis*. *Vaccine* 2007 Mar 8;25(12):2346-60
- *Wilson et al: Revisiting the possibility of serious adverse events from the whole cell pertussis vaccine: were metabolically vulnerable children at risk? *Pharmazie* 2007 Apr;62(4):299-304

Pneumonia vaccine given to pregnant women does not protect the developing fetus nor does it prevent ear infections in children or reduce pneumonia deaths in adults.

- *Dear et al: Vaccines for preventing pneumococcal infection in adults. *Cochrane Database Syst Rev* 2003(4):CD000422
- *Lopes et al: Ineffectiveness for infants of immunization of mothers with pneumococcal capsular polysaccharide vaccine during pregnancy. *Braz J Infect Dis* 2009 Apr;13(2):104-6
- *Straetemans et al: Pneumococcal vaccines for preventing otitis media. *Cochrane Database Syst Rev* 2002(2):CD001480
- *van Kempen et al: Pneumococcal conjugate vaccination in children with recurrent acute otitis media: a therapeutic alternative? *Int J Pediatr Otorhinolaryngol* 2006 Feb;70(2):275-85
- *Veenhoven et al: Effect of conjugate pneumococcal vaccine followed by polysaccharide pneumococcal vaccine on recurrent acute otitis media: a randomised study. *Lancet* 2003 Jun 28;361(9376):2189-95

Polio vaccine may actually cause the disease with a 25-fold increased risk of developing paralytic poliomyelitis. The vaccine is also associated with an increase in female deaths and emerged as the #1 vaccine-associated disease in the US from 1980 to 1990. In addition, contaminated vaccine is linked to HIV/AIDS when it was grown in SIV infected chimpanzee kidney cells during the late 1950's.

- *Aaby et al: Increased female-male mortality ratio associated with inactivated polio and diphtheria-tetanus-pertussis vaccines: Observations from vaccination trials in Guinea-Bissau. *Pediatr Infect Dis J* 2007 Mar;26(3):247-52
- *Hooper: Experimental oral polio vaccines and acquired immune deficiency syndrome. *Mol Nutr Food Res* 2010 Jan 28
- *Oliveira & Struchiner: Vaccine-associated paralytic poliomyelitis in Brazil, 1989-1995. *Rev Panam Salud Publica* 2000 Apr;7(4):219-24
- *Strebel et al: Epidemiology of poliomyelitis in the United States one decade after the last reported case of indigenous wild virus-associated disease. *Clin Infect Dis* 1992 Feb;14(2):568-79
- *Wyatt: Injections and poliomyelitis: what are the risks of vaccine associated paralysis? *Dev Biol Stand* 1986;65:123-6

Polysorbates (Tween) are often used as emulsifiers in food and vaccines. There are strong links between them and damaged reproductive organs.

- *Coors et al: Polysorbate 80 in medical products and nonimmunologic anaphylactoid reactions. *Ann Aller Asthma Immunol* 2005 Dec;95(6):593-99
- *Gajdova et al: Delayed effects of neonatal exposure to Tween 80 on female reproductive organs in rats. *Food Chem Toxicol* 1993 Mar;31(3):183-90

Preservatives used in vaccines exhibit significant toxicity and revealed that "None of the compounds commonly used as preservatives in US licensed vaccine/biological preparations can be considered an ideal preservative, and their ability to fully comply with the requirements of the US Code of Federal Regulations (CFR) for preservatives is in doubt. Future formulations of US licensed vaccines/biologics should be produced in aseptic manufacturing plants as single dose preparations, eliminating the need for preservatives and an unnecessary risk to patients."

- *Geier et al: The relative toxicity of compounds used as preservatives in vaccines and biologics. *Med Sci Monit* 2010 Apr 28;16(5):SR21-7

Rabies vaccine is not only ineffective during symptoms of the disease but may contribute to an early death.

- *Blancou & Sitte: Increased mortality in mice infected with rabies virus and subsequently vaccinated against rabies. *Comp Immunol Microbiol Infect Dis* 1988;11(2):139-42

*Willoughby: "Early death" and the contraindication of vaccine during treatment of rabies. *Vaccine* 2009 Nov 27;27(51):7173-7

Rotavirus vaccination is associated with an increased risk of a certain type of bowel obstruction in infants. Intussusception is the most common infantile abdominal emergency and occurs when the bowel slides into another part, much like pieces of a telescope.

*Cortese et al: Underestimates of intussusception rates among US infants based on inpatient discharge data: implications for monitoring the safety of rotavirus vaccines. *J Infect Dis* 2009 Nov 1;200 Suppl 1:S264-70

*Haber et al: An analysis of rotavirus vaccine reports to the vaccine adverse event reporting system: more than intussusception alone? *Pediatrics* 2004 Apr;113(4):e353-9

*Zanardi et al: Intussusception among recipients of rotavirus vaccine: reports to the vaccine adverse event reporting system. *Pediatrics* 2001 Jun;107(6):E97

Rubella (German measles) vaccine causes fetal malformations and brain damage as well as significantly contributing to abortions when given to pregnant women.

*Boniuk: Rubella. *Int Ophthalmol Clin* 1975;15(4):229-41

*Duvanel et al: Antibodies directed against rubella virus induce demyelination in aggregating rat brain cell cultures. *J Neurosci Res* 2001 Sep 1;65(5):446-54

*Preblud et al: Fetal risk associated with rubella vaccine. *JAMA* 1981 Sep 25;246(13):1413-7

*Siegel: Unresolved issues in the first five years of the rubella immunization program. *Am J Obstet Gynecol* 1976 Feb 15;124(4):327-32

Smallpox vaccine is linked to several important complications including the heart.

*Cono et al: Smallpox vaccination and adverse reactions. Guidance for clinicians. *MMWR Recomm Rep* 2003 Feb 21;52(RR-4):1-28

*Mora et al: Cardiac complications after smallpox vaccination. *South Med J* 2009 May 7

*Morgan et al: Myocarditis, pericarditis, and dilated cardiomyopathy after smallpox vaccination among civilians in the United States, January-October 2003. *Clin Infect Dis* 2008 Mar 15;46 Suppl 3:S242-50

*Onishchenko et al: Isolation and identification of the smallpox virus which caused iatrogenic vaccinia in children in the city of Vladivostok. *Zh Mikrobiol Epidemiol Immunobiol* 2001 Mar-Apr(2):40-5

Squalene (MF59, AS03) is an oil often obtained from shark livers and used as an adjuvant in some vaccines, including **H1N1 (Swine flu, Influenza-A)** and **Anthrax**. It is strongly associated with the development of Gulf War Syndrome, anemia, autism, lupus, delayed focal lipotrophy (loss of muscle tissue after nerve injury), heart disease and seizures.

*Akkad et al: Longitudinally extensive transverse myelitis following vaccination with nasal attenuated novel influenza A(H1N1) vaccine. *Arch Neurol* 2010 Aug;67(8):1018-20

*Asa et al: Antibodies to squalene in recipients of anthrax vaccine. *Neuropharmacol* 2011 Feb-Mar;60(2-3):252-8

*Asa et al: Antibodies to squalene in Gulf War syndrome. *Exp Mol Pathol* 2000 Feb;68(1):55-64

*Bhakdi et al: Possible hidden hazards of mass vaccination against new influenza A/H1N1: have the cardiovascular risks been adequately weighed? *Med Microbiol Immunol* 2009 Oct 23

*Carlson et al: The endogenous adjuvant squalene can induce a chronic T-cell-mediated arthritis in rats. *Am J Pathol* 2000 June;156(6):2057-65

*Jacobucci: Million TIMES More Squalene In H1N1 Vax Than Caused GWII! *Rense.com Exclusive*, August 8, 2009

*Javelle et al: Delayed focal lipotrophy after AS03-adjuvanted influenza A (H1N1) 2009 vaccine. *Vaccine* 2010 Dec 17

- *Kuroda et al: Induction of lupus-related specific autoantibodies by non-specific inflammation caused by an intraperitoneal injection of n-hexadecane in BALB/c mice. *Minerva Cardioangiol* 2004 Jun;52(3):195-208
- *Kuroda et al: Distinctive patterns of autoimmune response induced by different types of mineral oil. *Toxicol Sci* 2004 Apr;78(2):222-8
- *Minami et al: Induction of metallothionein in mouse cerebellum and cerebrum with low-dose thimerosal injection. *Cell Biol Toxicol* 2009 Apr 9
- *Montagnani et al: Autoimmune hemolytic anemia following MF59-adjuvanted influenza vaccine administration: a report of two cases. *Ann Pharmacother* 2011 Jan;45(1):e8
- *No authors listed: Possible association of new-onset seizure with the H1N1 influenza vaccine. *Pharmacother* 2011 Jan;31(1):113
- *Oztürk: Swine flu vaccine adjuvants and multiple sclerosis - Is there potential for harmful effect? *Med Hypoth* 2010 Feb 18

Tetanus booster can cause leukemia, which first manifests itself as severe skin lesions. It was designed to have anti-fertility action and given to women in the Philippines.

- *Guinovart et al: Leukemia cutis arising at the site of injection of a tetanus vaccine booster. *Actas Dermosifiliogr* 2010 Oct;101(8):727-9
- *No authors listed: Tetanus vaccine may be laced with anti-fertility drug. International/developing countries. *Vaccine Wkly* 1995 May 29 - Jun 5:9-10

Tdap (Tetanus Diphtheria Acellular Pertussis) vaccine is recommended by the CDC for teens and for postpartum women before hospital discharge in order to prevent whooping cough in the newborn but it is proving to have no effect. When it is given to female infants along with the measles vaccine, the combination increases the death rate and contributes to stunted growth. It is also associated with recurring seizures.

- *Aaby et al: DTP vaccination and child survival in observational studies with incomplete vaccination data. *Trop Med Int Health* 2007 Jan;12(1):15-24
- *Aaby et al: The introduction of diphtheria-tetanus-pertussis vaccine and child mortality in rural Guinea-Bissau: an observational study. *Int J Epidemiol* 2004 Apr;33(2):374-80
- *Agergaard et al: Diphtheria-tetanus-pertussis vaccine administered simultaneously with measles vaccine is associated with increased morbidity and poor growth in girls. A randomised trial from Guinea-Bissau. *Vaccine* 2011 Jan 10;29(3):487-500
- *Castagnini et al: Impact of maternal postpartum tetanus and diphtheria toxoids and acellular pertussis immunization on infant pertussis infection. *Clin Infect Dis* 2011 Nov 10
- *Murphy et al: Recurrent seizures after diphtheria, tetanus, and pertussis vaccine immunization. Onset less than 24 hours after vaccination. *Am J Dis Child* 1984 Oct;138(10):908-11

Thrombocytopenia (low blood platelets) is a significant risk after vaccinations.

- *Woo et al: Thrombocytopenia after vaccination: case reports to the US Vaccine Adverse Event Reporting System, 1990-2008. *Vaccine* 2010 Nov 29

Tuberculosis vaccine (BCG - Bacillus Calmette-Guérin) increases the death rates of young children who received it. Leg ulcers and kidney disease are other known side effects.

- *Ghattaura et al: A case of extensive ulcerating vasculitis following a BCG vaccination. *J Plast Reconstr Aesthet Surg* 2009 Aug;62(8):e286-9
- *Hyla-Klekot et al: Necrotizing glomerulonephritis in decursu vasculitis after vaccination against influenza. *Pol Merkur Lekarski* 2005 Jul;19(109):75-7
- *Roth et al: Effect of revaccination with BCG in early childhood on mortality: randomised trial in Guinea-Bissau. *BMJ* 2010;340:c671

Vaccinations are linked to brain damage, neuropathy, spinal cord inflammation (transverse myelitis), connective tissue disorders, anemia, autism, autoimmune diseases, deep morphea (patches of hardened skin), site-associated sarcoma, and death. Single, multiple, and simultaneous vaccines given to premature infants cause heart and respiratory problems and death. The number of vaccine-induced abortions during pregnancy are substantial and under-reported.

- *Aaby et al: Age-specific changes in the female-male mortality ratio related to the pattern of vaccinations: an observational study from rural Gambia. *Vaccine* 2006 May 29;24(22):4701-8
- *Agmon-Levin et al: Transverse myelitis and vaccines: a multi-analysis. *Lupus* 2009 Nov;18(13):1198-204
- *Alikhan et al: Vaccination as a probable cause of incontinentia pigmenti reactivation. *Pediatr Dermatol* 2010 Jan-Feb;27(1):62-4
- *Balci et al: Simultaneous sudden infant death syndrome. *J Forensic Leg Med* 2007 Feb;14(2):87-91
- *Blaylock: A possible central mechanism in autism spectrum disorders, part 1. *Altern Ther Health Med* 2008 Nov-Dec;14(6):46-53
- *Carrasco-Garrido et al: Incidence of adverse reactions to vaccines in a paediatric population. *Clin Drug Investig* 2004;24(8):457-63
- *Cave: The history of vaccinations in the light of the autism epidemic. *Clin Exp Pharmacol Physiol* 2004 Dec;31 Suppl 2:S51-3
- *Chang et al: Elective termination of pregnancy after vaccination reported to the Vaccine Adverse Event Reporting System (VAERS): 1990-2006. *Vaccine* 2008 May 2;26(19):2428-32
- *D'Errico et al: Beta-tryptase and quantitative mast-cell increase in a sudden infant death following hexavalent immunization. *Forensic Sci Int* 2008 Aug 6;179(2-3):e25-9
- *Hsieh & Lin: Thrombocytopenic purpura following vaccination in early childhood: experience of a medical center in the past 2 decades. *J Chin Med Assoc* 2010 Dec;73(12):634-7
- *Huynh et al: Post-vaccination encephalomyelitis: literature review and illustrative case. *J Clin Neurosci* 2008 Dec;15(12):1315-22
- *Kirpensteijn: Feline injection site-associated sarcoma: Is it a reason to critically evaluate our vaccination policies? *Vet Microbiol* 2006 Oct 5;117(1):59-65
- *Molina & Shoenfeld: Infection, vaccines and other environmental triggers of autoimmunity. *Autoimmun* 2005 May;38(3):235-45
- *Naleway et al: Risk of immune hemolytic anemia in children following immunization. *Vaccine* 2009 Dec 9;27(52):7394-7
- *Older et al: Can immunization precipitate connective tissue disease? Report of five cases of systemic lupus erythematosus and review of the literature. *Semin Arthritis Rheum* 1999 Dec;29(3):131-9
- *Ottaviani et al: Sudden infant death syndrome (SIDS) shortly after hexavalent vaccination: another pathology in suspected SIDS? *Virchows Arch* 2006 Jan;448(1):100-4
- *Pourcyrus et al: Primary immunization of premature infants with gestational age<35 weeks: cardio-respiratory complications and C-reactive protein responses associated with administration of single and multiple separate vaccines simultaneously. *J Pediatr* 2007 Aug ;151(2):167-72
- *Rajantie et al: Vaccination associated thrombocytopenic purpura in children. *Vaccine* 2007 Feb 26;25(10):1838-40
- *Singh: Phenotypic expression of autoimmune autistic disorder (AAD): a major subset of autism. *Ann Clin Psych* 2009 Jul-Sep;21(3):148-61
- *Souayah et al: Small fiber neuropathy following vaccination for rabies, varicella or Lyme disease. *Vaccine* 2009 Dec 9;27(52):7322-5
- *Stratton et al: Adverse events associated with childhood vaccines other than pertussis and rubella. Summary of a report from the Institute of Medicine. *JAMA* 1994 May 25;271(20):1602-5
- *Torrelo et al: Deep morphea after vaccination in two young children. *Pediatr Dermatol* 2006 Sep-Oct;23(5):484-7
- *Wei et al: Adverse effects of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine in 6- to 7-year-old children. *Pediatr Neonatol* 2011 Feb;52(1):38-41
- *Zanusso et al: Molecular analysis of iatrogenic scrapie in Italy. *J Gen Virol* 2003 Apr;84(Pt 4):1047-52

Vaccination Incentives include food vouchers, Hallmark greeting cards, financial assistance, church recruitments, and more. When incentives fail to work would **Mandated vaccinations** be next? “In recent decades there has been a distressing decline in the numbers of healthy volunteers who participate in clinical trials. If progression of promising vaccines from the lab to the clinic is to remain unaffected and financial inducement is an ethically unacceptable solution to the recruitment shortage, other strategies need to be considered. Compulsory involvement in vaccine studies is one alternative solution that is not as outlandish as it might seem...” (Sheehy & Meyer). Are epidemics being manufactured in order to force “volunteers” to participate?

- *Adams: Health insurance company preys upon the poor with junk food reward program for vaccinating your baby. NaturalNews January 23, 2012
- *Adams: Hallmark now distributing vaccine shot compliance cards targeting newborns across America. December 9, 2011
- *Banerjee et al: Improving immunisation coverage in rural India: clustered randomised controlled evaluation of immunisation campaigns with and without incentives. BMJ 2010;340:c2220
- *Chandir et al: Effect of food coupon incentives on timely completion of DTP immunization series in children from a low-income area in Karachi, Pakistan: a longitudinal intervention study. Vaccine 2010 Apr 26;28(19):3473-8
- *Elliott & Abadie: Exploiting a research underclass in phase 1 clinical trials. N Engl J Med 2008;358(22):2316-17
- *Fujiwara: Is mandatory vaccination legal in time of epidemic? Virtual Mentor 2006 Apr;8(4):227-29
- *Grady: Payment of clinical research subjects. J Clin Invest 2005;115(7):1681-87
- *Permuth-Wey & Borenstein: Financial remuneration for clinical and behavioral research participation: ethical and practical considerations. Ann Epidemiol 2009;19(4):280-5
- *Sheehy & Meyer: Should participation in vaccine clinical trials be mandated? Virtual Mentor 2012 Jan;14(1):35-38
- *Stones & McMillan: Payment for participation in research: a pursuit for the poor? J Med Ethics 2010;36(1):34-36
- *Vaccine Money Incentive Quotes - www.whale.to/vaccine/quotes15.html
- *Viscidi & Shah: Should Human Papillomavirus Vaccination Be Mandatory? Virtual Mentor 2007, Dec;9(12):823-26

Vaccine Trial killed babies but company was only fined.

- *GSK fined after over vaccine trials; 14 babies reported dead. By Javier Cardenal Taján, Buenos Aires Herald, January 31, 2012
- *GSK fined measly \$90,000 by Argentine court for killing 14 babies in illegal vaccine trials; drug giant actually appealing. By Ethan Huff, NaturalNews, January 31, 2012

Vaccines are not developed with a focus on helping people which is evidenced by the number of serious to deadly side effects. They are also being encouraged instead of breastfeeding.

- *Fedson: Measuring protection: efficacy versus effectiveness. Dev Biol Stand 1998;95:195-201
- *Huff: CDC researchers say mothers should stop breastfeeding to boost ‘efficacy’ of vaccines. NaturalNews, Sunday, January 22, 2012
- *Moon et al: Inhibitory effect of breast milk on infectivity of live oral rotavirus vaccines. Pediatr Infect Dis J 2010 Oct;29(10):919-923
- *Orbach et al: Vaccines and autoimmune diseases of the adult. Discov Med 2010 Feb;9(45):90-7
- *Schoenfeld & Aron-Maor: Vaccination and autoimmunity-‘vaccinosis’: a dangerous liaison? J Autoimmun 2000 Feb;14(1):1-10

Varicella vaccine for Chickenpox is linked to several adverse reactions in thousands of recipients and an increase in shingles (herpes zoster) during the same time period.

In addition, one or two doses do not prevent school outbreaks and, yes, vaccine-associated rashes are contagious.

- *Angelini et al: Aplastic anemia following varicella vaccine. *Pediatr Infect Dis J* 2009 Aug;28(8):746-8
- *Chaves et al: Safety of varicella vaccine after licensure in the United States: experience from reports to the vaccine adverse event reporting system, 1995-2005. *J Infect Dis* 2008 Mar 1;197 Suppl 2:S170-7
- *Chouliaras et al: Vaccine-associated herpes zoster ophthalmicus [correction of ophthalmicus] and encephalitis in an immunocompetent child. *Pediatrics* 2010 Apr;125(4):e969-72
- *Gould et al: An outbreak of varicella in elementary school children with two-dose varicella vaccine recipients--Arkansas, 2006. *Pediatr Infect Dis J* 2009 Aug;28(8):678-81
- *Italiano et al: Prolonged varicella viraemia and streptococcal toxic shock syndrome following varicella vaccination of a health care worker. *Med J Aust* 2009 Apr 20;190(8):451-3
- *Iyer et al: Herpes zoster and meningitis resulting from reactivation of varicella vaccine virus in an immunocompetent child. *Ann Emerg Med* 2009 Jun;53(6):792-5
- *LaRussa et al: Transmission of vaccine strain varicella-zoster virus from a healthy adult with vaccine-associated rash to susceptible household contacts. *J Infect Dis* 1997 Oct;176(4):1072-5
- *Levin et al: Herpes zoster with skin lesions and meningitis caused by 2 different genotypes of the Oka varicella-zoster virus vaccine. *J Infect Dis* 2008 Nov 15;198(10):1444-7
- *Levin et al: Development of resistance to acyclovir during chronic infection with the Oka vaccine strain of varicella-zoster virus, in an immunosuppressed child. *J Infect Dis* 2003 Oct 1;188(7):954-9
- *Lopez et al: One dose of varicella vaccine does not prevent school outbreaks: is it time for a second dose? *Pediatrics* 2006 Jun;117(6):e1070-7
- *Nelson et al: Evidence of increasing frequency of herpes zoster management in Australian general practice since the introduction of a varicella vaccine. *Med J Aust* 2010 Jul 19;193(2):110-3
- *Salzman et al: Transmission of varicella-vaccine virus from a healthy 12-month-old child to his pregnant mother. *Homeopathy* 2009 Apr;98(2):77-82

SUGGESTED ALTERNATIVES THAT REDUCE TOXIC EFFECTS OF VACCINES:

Beta Glucans are polysaccharides derived from oats, mushrooms, or yeasts. Beta glucans are particularly effective for priming and **normalizing** the immune system and protecting the body from a number of viruses in those who have been vaccinated and those who have not. (see more under Anti-virals).

- *Moyad et al: Immunogenic yeast-based fermentate for cold/flu-like symptoms in nonvaccinated individuals. *J Altern Complement Med* 2010 Feb;16(2):213-8

Calotropis procera (Roostertree) protects against Mineral-oil-induced arthritis.

- *Kumar & Roy: Protective effect of latex of *Calotropis procera* in Freund's Complete Adjuvant induced monoarthritis. *Phytother Res* 2009 Jan;23(1):1-5

Clean Lifestyle (diet, exercise, and avoiding as many chemicals as possible) keeps the immune system strong enough to ward off disease. See more suggestions under alternatives for **Antivirals** (which most pandemics are) and **Antibiotics** (for bacterial infestations). Above all, study and use common sense. Ask yourself, how could any chemical be good for me? We eat, breathe, and put chemicals on our skin, but many of these can be avoided, if we choose to do so. Do not give up the right to choose.

Coconut oil effectively treats aluminum poisoning.

- *Shadnia et al: Successful treatment of acute aluminium phosphide poisoning: possible benefit of coconut oil. *Hum Exp Toxicol* 2005 Apr;24(4):215-8

Homeopathic Vaccines have been proven safe and effective by those who use them.

- *Dr. Isaac Golden Natural Immunisation Research (Australia) - www.homstudy.net/Research/
- *Homeopathic Immunizations: A Proven Alternative to Vaccinations. Little Mountain Homeopathy, Vancouver, BC, January 27, 2010
- *Pitcairn: Homeopathic Alternatives to Vaccines. ThinkTwice Global Vaccine Institute

Olive leaf is a strong anti-microbial that also decreases the effects of Mineral-oil-induced encephalomyelitis.

- *Miljkovi et al: Dry olive leaf extract ameliorates experimental autoimmune encephalomyelitis. *Clin Nutr* 2009 Jun;28(3):346-50

Plant-based vaccines have been developed and tested for years with encouraging results.

- *Carter & Langridge: Plant-based vaccines for protection against infectious and autoimmune diseases. *Crit Rev Plant Sci* 2002;21(2):93-109
- *D'Aoust et al: The production of hemagglutinin-based virus-like particles in plants: a rapid, efficient and safe response to pandemic influenza. *Plant Biotechnol J* 2010 June;8(5):607-19
- *Daniell et al: Medical molecular farming: production of antibodies, biopharmaceuticals and edible vaccines in plants. *Trends Plant Sci* 2001 May 1;6(5):219-26
- *Horn et al: Advantageous Features of Plant-based Systems for the Development of HIV Vaccines. *J Drug Target* 2003 Jan;11(8-10):539-45
- *Karasev et al: Plant based HIV-1 vaccine candidate: Tat protein produced in spinach. *Vaccine* 2005 Mar 7;23(15):1875-80
- *Licciardi PV, Underwood JR. Identification of a novel vaccine adjuvant that stimulates and maintains diphtheria toxoid immunity. *Vaccine* 2010;28(22):3865-3873
- *Mason et al: Edible plant vaccines: applications for prophylactic and therapeutic molecular medicine. *Trends Molec Med* 2002 July 1;8(7):324-29
- *Medina-Bolivar et al: A non-toxic lectin for antigen delivery of plant-based mucosal vaccines. *Vaccine* 2003 Feb 14;21(9-10):997-1005
- *Rybicki: Plant-made vaccines for humans and animals. *Plant Biotech J* 2010 June;8(5):620-37
- *Salyaev et al: Development of plant-based mucosal vaccines against widespread infectious diseases. *Exp Rev Vaccines* 2010 Aug;9(8):937-46
- *Shchelkunov et al: Immunogenicity of a novel, bivalent, plant-based oral vaccine against hepatitis B and human immunodeficiency viruses. *Biotechnol Lett* 2006 Jul;28(13):959-67
- *Smith et al: Plant-derived immunocontraceptive vaccines. *Reprod Fert Dev* 1997;9(1):85-9
- *Streatfield: Mucosal immunization using recombinant plant-based oral vaccines. *Methods* 2006 Feb;38(2):150-57
- *Streatfield & Howard: Plant-based vaccines. *Int J Parasitol* 2003 May;33(5-6):479-93
- *Streatfield et al: Plant-based vaccines: unique advantages. *Vaccine* 2001 Mar;19(17-19):2742-48
- *Tacket: Plant-based vaccines against diarrheal diseases. *Trans Am Clin Climatol Assoc* 2007;118:79-87
- *Thomas et al: Evolution of plant-made pharmaceuticals. *Int J Mol Sci* 2011;12(5):3220-36
- *Tregoning et al: Protection against tetanus toxin using a plant-based vaccine. *Eur J Immunol* 2005 Apr;35(4):1320-26
- *Webster et al: The development of a plant-based vaccine for measles. *Vaccine* 2005 Mar;15(7):1859-65
- *Wen et al: A plant-based oral vaccine to protect against systemic intoxication by Shiga toxin type 2. *PNAS* 2006 Apr 25; Published online before print
- *Yu & Langridge: A plant-based multicomponent vaccine protects mice from enteric diseases. *Nat Biotechnol* 2001;19:548-52
- *Yusibov et al: Expression in plants and immunogenicity of plant virus-based experimental rabies vaccine. *Vaccine* 2002 Aug 19;20(25-26):3155-64

Premna corymbosa is a plant used in Ayurvedic medicine which reverses the effects from mineral-oil-induced (Freund's adjuvant) arthritis.

- *Karthikeyan & Deepa: Effect of ethanolic extract of *Premna corymbosa* (Burm. f.) Rottl.&Willd. leaves in complete Freund's adjuvant-induced arthritis in Wistar albino rats. *J Basic Clin Physiol Pharmacol* 2010;21(1):15-26

Probiotics keep the immune system healthy in non-vaccinated individuals and are effective against a variety of pathogens. They can also diminish the harmful effects of vaccinations, especially in infants.

- *Amdekar et al: Probiotics: multifarious oral vaccine against infectious traumas. *FEMS Immunol Med Microbiol* 2010;58(3):299-306
- *Anuradha & Rajeshwari: Probiotics in health and disease. *J Indian Acad Clin Med* 2005;6(1):67-72
- *Boge et al: A probiotic fermented dairy drink improves antibody response to influenza vaccination in the elderly in two randomised controlled trials. *Vaccine* 2009 Jul 15
- *Casey et al: A five-strain probiotic combination reduces pathogen shedding and alleviates disease signs in pigs challenged with *Salmonella enterica* Serovar Typhimurium. *Appl Environ Microbiol* 2007;73:1858-63
- *Chang et al: Inhibition of HIV infectivity by a natural human isolate of *Lactobacillus jensenii* engineered to express functional two-domain CD4. *Proc Natl Acad Sci USA* 2003;100:11672-7
- *Corr et al: Bacteriocin production as a mechanism for the antiinfective activity of *Lactobacillus salivarius* UCC118. *Proc Natl Acad Sci USA* 2007;104:7617-21
- *Davidson et al: *Lactobacillus* GG as an immune adjuvant for live-attenuated influenza vaccine in healthy adults: a randomized double-blind placebo-controlled trial. *Eur J Clin Nutr* 2011;65(4):501-7
- *De Gutierrez et al: Protective effect of intranasally inoculated *Lactobacillus fermentum* against *Streptococcus pneumoniae* challenge on the mouse respiratory tract. *FEMS Immunol Med Microbiol* 2001;31(3):187-195
- *De Vrese et al: Probiotic bacteria stimulate virus-specific neutralizing antibodies following a booster polio vaccination. *Eur J Nutr* 2005;44(7):406-13
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- *Gill & Rutherford: Viability and dose-response studies on the effects of the immunoenhancing lactic acid bacterium *Lactobacillus rhamnosus* in mice. *Br J Nutr* 2001;86(2):285-9
- *Heyman: Effect of lactic acid bacteria on diarrheal diseases. *J Am Coll Nutr* 2000;19:137S-46S
- *Ichinohe et al: Microbiota regulates immune defense against respiratory tract influenza A virus infection. *Proc Natl Acad Sci USA* 2011;108(13):5354-5359
- *Isolauri et al: Improved immunogenicity of oral D x RRV reassortant rotavirus vaccine by *Lactobacillus casei* GG. *Vaccine* 1995;13(3):310-12
- *Kalina & Mohamadzadeh: *Lactobacilli* as natural enhancer of cellular immune response. *Discov Med* 2005 Apr;5(26):199-203
- *Kukkonen et al: Long-term safety and impact on infection rates of postnatal probiotic and prebiotic (synbiotic) treatment: randomized, double-blind, placebo-controlled trial. *Pediatrics* 2008;122(1):8-12
- *Kukkonen et al: Effect of probiotics on vaccine antibody responses in infancy--a randomized placebo-controlled double-blind trial. *Pediatr Allergy Immunol* 2006 Sep;17(6):416-21
- *Lagenaur & Berger: An anti-HIV microbicide comes alive. *Proc Natl Acad Sci USA* 2005;102:12294-5
- *Mohamadzadeh & Owen: Reprogramming intestinal immunity is the answer to induced pathogenic inflammation. *Immunother* 2011 Dec;3(12):1415-7

- *Mohamadzadeh et al: Targeted expression of anthrax protective antigen by *Lactobacillus gasseri* as an anthrax vaccine. *Future Microbiol* 2010 Aug;5(8):1289-96
- *Mohamadzadeh: Induction of protective immunity against microbial challenge by targeting antigens expressed by probiotic bacteria to mucosal dendritic cells. *Curr HIV Res* 2010 Jun;8(4):323-9
- *Mohamadzadeh & Klaenhammer: Specific *Lactobacillus* species differentially activate Toll-like receptors and downstream signals in dendritic cells. *Expert Rev Vaccines* 2008 Oct;7(8):1155-64
- *Mohamadzadeh et al: Targeting mucosal dendritic cells with microbial antigens from probiotic lactic acid bacteria. *Expert Rev Vaccines*. 2008 Mar;7(2):163-74
- *Mohamadzadeh et al: *Lactobacilli* activate human dendritic cells that skew T cells toward T helper 1 polarization. *Proc Natl Acad Sci USA* 2005 Feb 22;102(8):2880-5
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- *Moyad et al: Immunogenic yeast-based fermentate for cold/flu-like symptoms in nonvaccinated individuals. *J Altern Complement Med* 2010 Feb;16(2):213-8
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Vitamin C can treat whooping cough. According to Suzanne Humphries, MD, who states that "...natural immunity to whooping cough lasts at least 30 years, whereas the immunity from a vaccine lasts 3 years, and after adult boosters, all antibodies have disappeared within a year" and that "Pertussis toxin can be neutralized in 12 hours with correct vitamin C dosing. "

- *Humphries: The vitamin c treatment of whooping cough . Intl Med Council on Vacc 2011 Dec 20 pdf download
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Vitamin D3 is vitally important to a proper functioning immune system. Supplementing it with Probiotics is a good defensive maneuver against most pathogens as well as preventing the development of autoimmune diseases. **Vitamins A** and **E** are others that have proven to be important. Basically, overall nutrition is the best line of defence, critically important for maintaining health and diminishing the side effects of vaccinations.

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APPENDIX

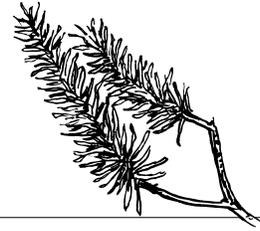


B VITAMIN LIST

Since B vitamins work together and are water-soluble, when one is listed as being depleted, it is likely that the others are affected as well even though they may not have “officially” made the list. When taking B vitamins as a supplement, it is wise to take a complex in addition to the singles needed to correct a problem.

- B1 – Thiamin
- B2 – Riboflavin
- B3 – Niacin
- B5 – Pantothenic acid
- B6 – Pyridoxine
- B7 – Biotin
- B8 – Inositol
- B9 – Folic acid
- B12 – Methylcobalamine
- B13 – Orotic acid
- B15 – Pangamic acid
- B17 – Laetrile
 - Choline
 - PABA (Para-aminobenzoic acid)

AMINO ACID LIST



Although there are differences of opinion, the following is basically correct.

Essential * (the body cannot make them so they must be obtained from food)

Non-essential ** (can be made in the body from other amino acids)

Conditionally essential*** (not normally required but if needed, the health status of an individual will determine whether the body needs to make them or obtain from the diet)

Alanine**	Arginine***
Asparagine***	Aspartic Acid**
Carnitine***	Carnosine**
Citrulline***	Cysteine/Cystine***
Glutamic Acid**	Glutamine***
Glycine***	Histidine***
Homocysteine**	Isoleucine*
Leucine*	Lysine*
Methionine*	Ornithine***
Phenylalanine*	Proline***
Serine**	Taurine***
Threonine*	Tryptophan*
Tyrosine***	Valine*

GLUTEN-FREE FOODS



Agar	Amaranth
Arabic Gum	Arrowroot
Bean Flours	Buckwheat (not a grain)
Carob	Cassava
Cellulose	Corn (maize)
Dahl	Dextrose
Dried Legumes (beans, peas)	Flax
Garbanzos (chickpeas)	Glutamine
Glutinous Rice	Guar gum
Harina	Kasha
Maltodextrin	Maltitol
Millet	Nuts & nut flours
Poi	Polenta (corn mush)
Potato	Quinoa
Rice (all types)	Sago (from palm plants)
Sorghum (a cereal grass)	Soy
Succotash (corn & bean mix)	Tapioca
Teff (a cereal grass)	Xanthan gum

GLUTEN-CONTAINING FOODS

Baking powder	Barley
Beer	Bulgur (wheat)
Cereal binding	Couscous (semolina wheat dish)
Durum (wheat)	Einkorn (wheat)
Emmer (wheat)	Farina (wheat)
Farro (a variety of wheat)	Fillers
Graham (wheat flour)	Hydrolysed Plant Proteins
Kamut (wheat)	Licorice
Malt & malt flavorings	Maltose

Nama shoyu (raw soy sauce but has wheat)

Pilaf mixes

Rye

Semolina (wheat)

Spelt/Dinkel (a variety of wheat)

Wheat

Wheat Germ

Oats & oat gum

Roux (wheat & fat mix)

Seitan (wheat meat substitute)

Soy sauce (contains wheat)

Triticale (a variety of wheat)

Wheat Bran

JUICE AND MEDICATION INTERACTION STUDIES



GRAPEFRUIT JUICE

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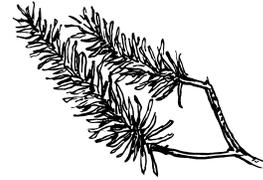
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INDEX



Forward.v
Acknowledgements	vii
About the book	ix
Introduction.	xi
Cautionsxiii
Appendix	
B-vitamin list	485
Amino Acid list	486
Gluten list	487
Juice-drug interaction studies	489
References	497
Acid Blockers	15
Acne	35
ADHD (attention deficit hypertension disorder)	40
Alcohol	47
Alzheimer's	56
Analgesics/Anti-inflammatories	72
Antiarrhythmics/Cardiac Regulators	170
Antibiotics	91
Antidepressants	107
Antifungals	114
Antihistamines	122
Antiparasitics (external)	133
Antiparasitics (internal)	136
Antipsychotics	139
Antispasmodics/Muscle relaxants	146
Antivirals/Antiretrovirals	148
Anxiety	165

Blood Pressure	177
Blood Thinners/Anti-platelets/Anti-coagulants	190
Bronchodilators	196
Caffeine	205
Cancer	212
Cholesterol	262
Circulation	287
Corticosteroids/Steroids	448
Diabetes	291
Diuretics	312
Erectile Dysfunction	318
Eyesight.	322
Fat Blockers.	331
Fluoride	335
Gout	346
Hormone Replacements (HRTs)	349
Immunosuppressants	357
Laxatives	367
Muscle Relaxants	372
Narcolepsy	40
Nausea	376
Nicotine	379
NSAIDs (non-steroidal anti-inflammatories)	72
Nitrates	382
Opioids	72
Oral Contraceptives	349
Osteoporosis	386
Pancreas	401
Parkinson's	404

Prostate	411
Psoriasis	434
Sedatives	438
Seizures/Anticonvulsants	443
Steroids/Corticosteroids	448
Thyroid	456
Vaccines	461

