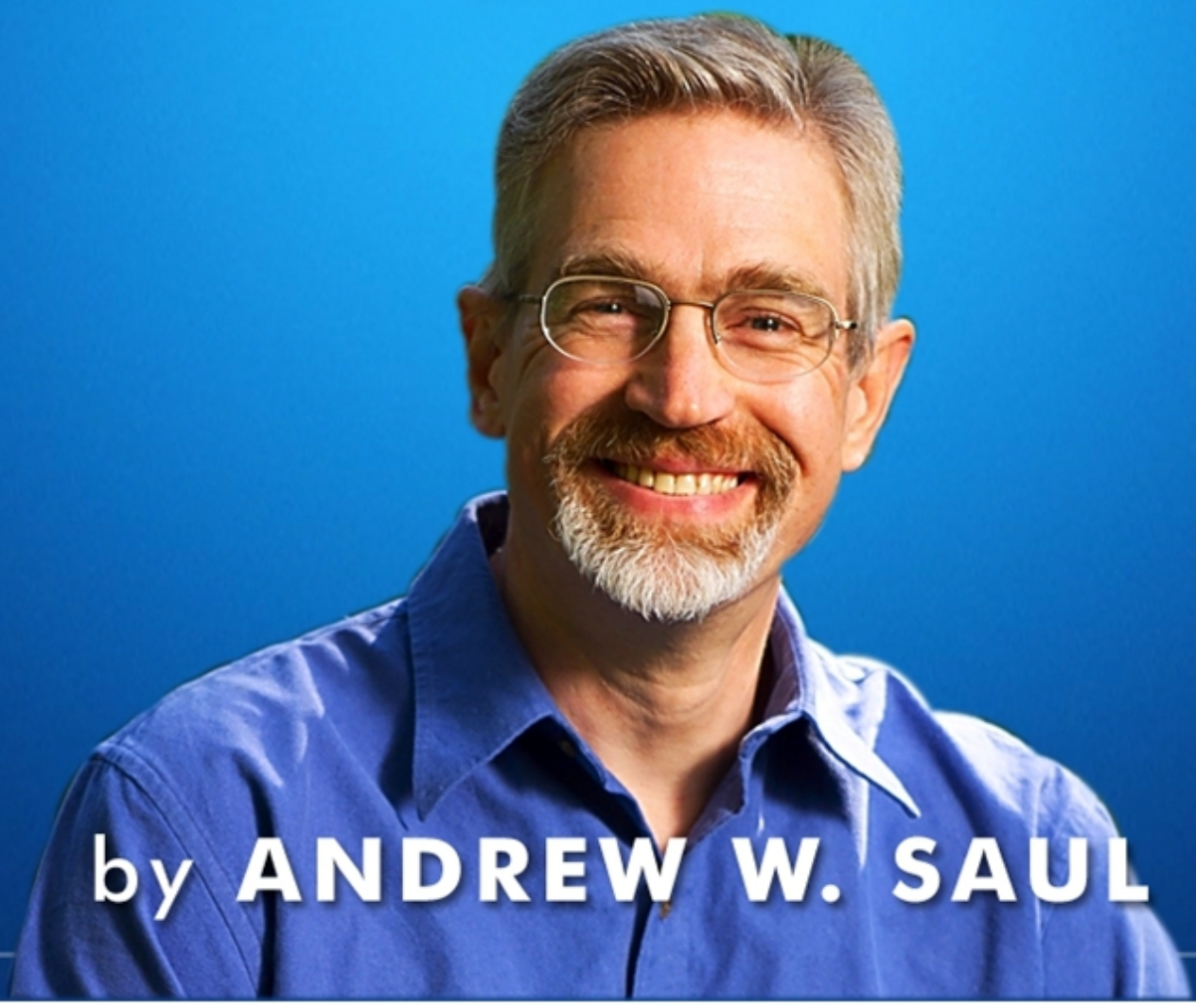
VITAMINS & SUPPLEMENTS FOR SUGAR ISSUES

A Starting Point



by ANDREW W. SAUL

WAYS TO MAKE NUTRITIONAL PROGRESS AGAINST DIABETES

(Introduction by Abram Hoffer, M.D.)

Reading this PDF will report what can be done over and above the use of insulin and classical dietetics. I am very familiar with Type I (insulin dependent diabetes or juvenile diabetes), as two members of my family have it. As this is not a medical text, the author does not describe the symptomatology and treatment using insulin. (By the way, doctors who treat diabetes are practicing orthomolecular medicine without knowing it, for they are using a hormone that is naturally present in the body.) Andrew W. Saul lists and describes both positive and negative factors in dealing with this condition. Thus for Type I, we have on the positive side the B complex vitamins, especially vitamin B-3, and vitamin C. The negative factors are diets which are too rich in free sugars and not rich enough in the complex carbohydrates. Negative factors also include milk, fluoride, coffee and vaccinations.

When it is started at an early age, niacinamide will prevent diabetes from developing in many children born to families prone to the disease. I have also found niacin very helpful in preventing patients from suffering the long term ravages of diabetes, which are not directly due to high blood sugars, but to the side effects involving the vascular system. Niacin lowers total cholesterol, elevates HDL, and prevents the development of arteriosclerosis. Therefore these patients are less apt to become blind and lose their legs. With medical supervision, it may be used safely in dealing with diabetics, but you will need to find a doctor who knows niacin. Dr. Saul provides supporting references to the literature, which physicians will benefit from seeing. I was especially pleased to see that he cited my friend Dr. Emanuel Cheraskin's seven papers on the subject.

Type II Non-insulin dependent Diabetes Mellitus (NIDDM) was formerly known as hyperinsulinism or hypoglycemia. The term "hypoglycemia" turned the establishment red with fury. But over time, many books and papers have been published dealing with this very common condition. Positive factors listed are magnesium, exercise, weight control, chromium, fiber, vitamin E, vanadium, vitamin C, and complex carbohydrates. Negative factors are iatrogenic, such as drugs that may actually cause this type of diabetes. I have been using the positive factors for the past 40 years. When patients followed such a program, the results are very good.

This PDF provides complementary physicians who are interested in treating diabetes with information about nutrients that will make their treatment even better. I am convinced that if this information were to be used preventively, it would protect many persons from developing this disease. - A. Hoffer)

Diabetes: General Considerations about Supplements

Millions of Americans are on insulin for their diabetes. Much blindness, many amputations, and many deaths result from the circulatory complications of diabetes. Even if a single natural measure can prevent this disease only in part and in just some persons, it is still well worth doing. How much better would be trying all these techniques together? Important note: Expect success. This means that if you are on diabetic medication, you may need to have your drug or insulin dosage adjusted DOWN. Is this bad? Is a tax cut BAD? *See your doctor frequently, and before you begin as well, to plan and monitor your progress.*

B-Complex Vitamins
One of the first nutrition zingers I ever read was Dr Carlton Fredericks comment (in *Food Facts and Fallacies*) to the effect that diabetics could be weaned off of insulin with extremely high doses of B-complex vitamins. I am a conservative person and I have my sincere doubts if a Type I diabetic could ever be free of the need to take insulin. On the other hand, I have personally seen diabetics require significantly less insulin when they take a 100 mg balanced B-complex tablet every two to three hours. The potential benefits are so great that I think diabetics should demand a suitably cautious therapeutic trial of megavitamin therapy with insulin dosage adjustment made and supervised by their physician.

Niacin/Niacinamide, one of the B-complex vitamins
A daily dosage of 1,500 to 2,500 mg of niacin or niacinamide may improve carbohydrate tolerance in diabetics. Niacin or niacinamide diminished the requirements of insulin needed to keep the blood sugar of the diabetics within normal limits. The dosage was of the order of 500 mg three to five times daily to begin with, the dose being subsequently reduced as the blood sugar came down. *The Vitamins in Medicine*, 3rd edition, p 378, 1953, references cited in the text.)

Persons with vitamin B-3 (niacin) deficiency may show hypersensitivity to insulin, becoming hypoglycemic more readily than normal subjects after an injection of insulin. (p 342)

Dr. R., a chiropractor in Pennsylvania, writes:
"I recently had a pharmacist take one of my female diabetic patients off niacin (after an extremely successful course of therapy with niacin that eliminated years of insomnia) because he told her that it would mess up her blood sugar. I had another female diabetic patient who got some decent results with niacin for depression but was told by her pharmacist not to use it with diabetes. Yet I cannot seem to find anything to support NOT using niacin in diabetics."

Niacin helps most diabetics. However, niacin can sometimes raise blood sugar. The rise is not usually great, but common sense says always work with your physician, and monitor blood sugar. It is not difficult to monitor your glucose at home. How to simply and safely self-test your blood sugar is nicely described on p 154-155 of Balch, J. F and Balch, P.A. (1990) *Prescription for Nutritional Healing* (Avery Publishing).

For more information about vitamin B-3:
Hoffer A, Saul AW and Foster H. (2012) *Niacin: The Real Story*. Basic Health Pub, Cal;f.
Hoffer A. (1990) *Vitamin B-3 (Niacin) Update*. New Roles For a Key Nutrient in Diabetes, Cancer, Heart Disease and Other Major Health Problems. Keats Pubs., Inc., New Canaan, CT.

Type I (Juvenile Onset, Insulin Dependent) Diabetes

Vitamin C
Professor of Oral Medicine Emanuel Cheraksin, M.D., D.M.D., in his book *Vitamin C: Who Needs It?* says (on page 98):

"So, what do the experts tell us about a vitamin C connection in the control of sugar metabolism? We turned to five of the leading textbooks dealing with diabetes mellitus published during the last five years. Would you believe? There was not one word indicating any connection or a lack of correlation between ascorbic acid and carbohydrate metabolism! This is even more incomprehensible when one realizes that ***reviews of the literature as far back as 1940 showed that blood sugar can be predictably reduced with intravenous ascorbate."***

One case study suggests that for each gram of vitamin C taken by mouth, the amount of insulin required could be reduced by two units. (Dice, J. F. and Daniel, C. W. (1973) The hypoglycemic effect of ascorbic acid in a juvenile-onset diabetic. *International Research Communications System*, 1:41.

Vitamin C has been shown to reduce levels of complication-causing sorbitol in diabetics. In a 58 day study carried out in 1994, researchers investigated the effect of two different, and rather low, doses of vitamin C supplements (100 or 600 mg) on young adults with Type I diabetes. Vitamin C supplementation at either dose normalized sorbitol levels in 30 days.

(Cunningham JJ; Mearkle PL; Brown RG Vitamin C: an aldose reductase inhibitor that normalizes erythrocyte sorbitol in insulin-dependent diabetes mellitus. *J Am Coll Nutr*, 1994 Aug, 13:4, 344-5)

Vitamin C may also help to keep tiny blood vessels (capillaries) from bursting, a major cause of diabetic complications. Vitamin C supplements increase the elasticity of these smallest of blood vessels.

(Timimi FK; Ting HH; Haley EA; Roddy MA; Ganz P; Creager MA Vitamin C improves endothelium-dependent vasodilation in patients with insulin-dependent diabetes mellitus. *J Am Coll Cardiol,* 1998 Mar, 31:3, 552-7)

Also of interest::

Pfleger R, Scholl F. (**1937**, note the date) Diabetes und vitamin C. *Wiener Archiv für Innere Medizin* 31: 219-230.

Setyaadmadja, A.T.S.H., Cheraskin, E. and Ringsdorf, W.M., Jr.
Ascorbic acid and carbohydrate metabolism: II. Effect of supervised sucrose drinks upon two-hour postprandial blood glucose in terms of vitamin C state. *Lancet* 87: #1, 18-21, January 1967.

Som S, Basu S, Mukherjee D, Deb S, Choudhury PR, Mukherjee S, Chatterjee SN, Chatterjee IB. (1981) Ascorbic acid metabolism in diabetes mellitus. *Metabolism* 30: 572-577.

If there are Musts to Avoid for a diabetic, they may well include the following:

ONE: Eliminate Sugar
No one would tell a child with a broken leg to jump off the garage roof. But perhaps we should not even let children *without* broken legs jump off the garage roofs. Dieticians would never recommend that diabetics regularly eat lots of sweets. Yet the vast majority of us overconsume sugar to the Nth degree. Can this not only aggravate diabetes, but actually CAUSE it? In the case of Type II, it is almost certainly so. And with Type I, the risk is there. There is no downside to avoiding sugar except, perhaps, for putting your local dentist on unemployment.

Medical Evidence that Sugar Causes Diabetes, among other things
Cleave, T. L. *The Saccharine Disease* (Keats, 1975)

To begin with, this book has nothing to do with the artificial sweetener known as saccharin. *The Saccharine Disease* refers to excess sugar consumption as a key cause of chronic disease in our time. Dr. Cleave, formerly a Surgeon-Captain of the British Royal Navy, wishes us to pronounce it "saccar-RHINE," like the German river. That we can do. What we will have a harder time doing is admitting that he is correct in ascribing colitis, peptic ulcer, varicose veins, coronary heart disease, and diabetes to excess intake of simple carbohydrates. A theory like that one needs a book to explain it and a lifetime of experience as a doctor behind it. Here are both.

It is party line medicine (and dietetics) that sugar consumption is pretty much connected only with tooth decay and obesity. Since the 1950's, Dr. Cleave has been a voice in the wilderness, informing doctors of what they do not want to believe and patients of what they do not want to do. Only the sturdiest readers want to tangle with a book that relentlessly takes them to task one sweet tooth at a time. References are provided with each chapter, and suggestions for improved diet are compactly set forth in an Appendix. *The Saccharine Disease* is somewhat dry reading, although this is compensated for by its overwhelming scientific importance. If there is indeed a root cause of illness, and that cause is our everyday use of sugar, it will take plenty of straight science to convince us to change our ways. Even then, really innovative science has a way of being kept from the public, not by being disproved, but by being ignored. If Dr. Cleave has been largely unsuccessful in influencing health policy so far, perhaps you will want to take up the banner after reading this book.

There was a time when the director of the FDA (known then as the Bureau of Chemistry) was willing to state that sugar consumption could indeed cause diabetes. (Wiley, H. *A History of a Crime Against the Food Law*, 1929).

TWO: Avoid Milk
It has been shown that milk consumption in childhood contributes to the development of Type-I diabetes. Certain proteins in milk resemble molecules on the beta cells of the pancreas that secrete insulin. In some cases, the immune system makes antibodies to the milk protein that mistakenly attack and destroy the beta cells. Even so august an authority on children as the late Dr. Benjamin Spock changed his recommendations in his later years and discouraged giving children milk. (Dr. Julian Whitaker's *Health & Healing Newsletter*, October 1998, Vol. 8, No. 10.)

THREE: Avoid Fluoride
(Citations that follow are courtesy of Darlene Sherrell)

The concentration of fluoride recommended for fluoridation programs (the sacrosanct "1.0 part-per-million") is deemed to be entirely safe. An examination of the scientific literature reveals that this is not the case. Dr M A Roshal, in a 1965 issue of the journal issued by the

Leningrad Medical Institute, reported that intake of fluoride - even at the apparently "safe" concentration of 1.0 part per million - caused derangements in blood sugar balance. *The Question of Fluoridation*, by J. R. Marier, Ottawa, Canada.

Inorganic fluoride is a persistent bioaccumulator, and the ever-increasing use (and release) of fluoride compounds in the environment should be of long-term concern in population sub-groups who are most susceptible, and therefore, most at risk. One of these sub-groups consists of people with impaired kidney function, including subjects with nephorphatic diabetes. The diabetes factor is of particular relevance, not only because the incidence of diabetes has increased by 6%/yr during the period 1965-1975, but also because subjects with nephropathic diabetes can exhibit a polydipsia-polyurea syndrome that results in increased intake of fluoride, along with greater-than-normal retention of a given fluoride dosage. People with inadequate dietary intakes (particularly of Ca and/or Vitamin C) are also likely to be more at risk as a consequence of low-dose long-term fluoride ingestion. Evidence is presented, showing that there has been an escalation in daily fluoride intake via the total human food-and-beverage chain, with the likelihood that this escalation will continue in the future. Recent observations, relating to an increasing incidence of chronic fluoride intoxication among humans, is also emphasized.

Dental Fluorosis Associated With Hereditary Diabetes Insipidus. *Oral Surgery* 40(6):736741, (1975)

Existing data (1993) indicate that subsets of the population may be unusually susceptible to the toxic effects of fluoride and its compounds. These populations include the elderly, people with deficiencies of calcium, magnesium, and/or vitamin C, and people with cardiovascular and kidney problems. ... Because fluoride is excreted through the kidney, people with renal insufficiency would have impaired renal clearance of fluoride ... Impaired renal clearance of fluoride has also been found in people with diabetes mellitus. (Emphasis added) *Toxicological Profile for Fluorides, Hydrogen Fluoride, and Fluorine (F)*, (April 1993), U.S. Dept. Health and Human Services, Agency for Toxic Substances and Disease Registry, p.112

(from Darlene Sherrell and Andreas Schuld, Vancouver, B.C. Canada)

Fluoride is an acute toxin with a rating slightly higher than that of lead. According to "Clinical Toxicology of Commercial products," 5th Edition, 1984, lead is given a toxicity rating of 3 to 4, and Fluoride is rated at 4 (3 = moderately toxic, 4 = very toxic). On December 7, 1992, the new EPA Maximum Contaminant Level (MCL) for lead was set at 0.015 ppm, with a goal of 0.0ppm. The MCL for fluoride is currently set for 4.0ppm - that's over 250 times the permissible level of lead.

At the level of 0.4 ppm renal (kidney) impairment has been shown. (Junco, L.I. et al, "Renal Failure and Fluorosis", Fluorine & Dental Health, *JAMA* 222:783 - 785, 1972)

Professor William R. Stine of Wilkes College, Wilkes Barre, PA, in chapter 19 of *Applied Chemistry* (second edition, p 413 and 416) states that world scientific opinion on this (fluoridation) issue is far from unanimous. He then quotes Dr. Albert W. Burgstahler, Professor of Chemistry at the University of Kansas, who says:

Children with nephrogenic diabetes insipidus or untreated pituitary diabetes have been found to develop severe dental fluorosis from drinking water containing only 1 or even 0.5 ppm fluoride Persons in poor health and those who have allergy, asthma, kidney disease, diabetes, gastric ulcer, low thyroid function, and deficient nutrition are especially susceptible to the toxic effects of fluoride in drinking water. In addition, fluoride in beverages

(especially tea), food, air, drugs, tobacco, toothpaste, and mouth rinses can also precipitate or contribute to such intoxication.

Add em up: do you know your total daily fluoride consumption ?

FOUR: Avoid Caffeine
Caffeine is a drug, and can interfere with normal blood sugar levels.

Cheraskin, E., Ringsdorf, W.M., Jr., Setyaadmadji, A.T.S.H. and Barrett, R.A. Effect of caffeine versus placebo supplementation on blood glucose concentration. *Lancet* 1: 7503, 1299-1300, 17 June 1967.

Cheraskin, E. and Ringsdorf, W.M., Jr. Blood glucose levels after caffeine. *Lancet* 2: 7569, 689, 21 September 1968.

FIVE: Question Immunization
Be very cautious of vaccination. Harris Coulter, PhD in *Vaccination and Violent Crime*, writes: The number of cases of diabetes has risen from 600,000 in the mid-1940s to 13 million today; since the population of the country has about doubled, the (true) increase in diabetes is about 10 times. In *Vaccination and Social Violence*, Dr. Coulter mentions that "The pertussis vaccine, in particular, has an impact on the insulin-producing centers in the pancreas (the Islets of Langerhans). Over-stimulation of these islets, with their subsequent exhaustion, can lead to diabetes or its opposite -- hypoglycemia (low blood sugar)."

The risk of Type I diabetes may be increased if the Hepatitis B vaccine is given to babies at about the age six weeks from birth. USA TODAYs Anita Manning (Aug 3, 1999) discussed a possible connection between diabetes and the Hib vaccine. More on this subject will be found in Childhood immunization and diabetes mellitus, *New Zealand Medical Journal*, May 1996

Recommended reading:
Brighthope I. (2012) *The Vitamin Cure for Diabetes.* Basic Health Pub., Calif.

Type II, or Non-Insulin Dependent Diabetes Mellitus (NIDDM)
Magnesium (as well as calcium) is unusually important to the diabetic. Taking a supplement providing at LEAST the US RDA of magnesium (about 350 mg) is vital. Thanks to Paul Mason, editor of the very large number of scientific papers posted at the Magnesium Site http://www.mgwater.com for providing so many magnesium references.

Corica, F., A. Allegra, A. Di Benedetto, et al. 1994. Effects of oral magnesium supplementation on plasma lipid concentrations in patients with non-insulin-dependent diabetes mellitus. *Magnes. Res*. 7:43-46.

Mather HM et al. (1979) Hypomagnesemia in diabetes. *Clinical and Chemical Acta* 95: 235-242.

McNair P et al. (1978) Hypomagnesemia, a risk factor in diabetic retinopathy. *Diabetes* 27: 1075-1077.

Snowdon, D.A., and R.L. Phillips. 1985. Does a vegetarian diet reduce the occurrence of diabetes? *Am. J. Public Health* 75:507-512.

Exercise
Just do it! It helps tremendously. Suggestions on how are posted at this website, and a search for "exercise" from the search box at the top of the main page will get them all for you.

Barnard, R.J., L. Lattimore, R.G. Holly, S. Cherny, and N. Pritikin. 1982. Response of non-insulin-dependent diabetic patients to an intensive programof diet and exercise. *Diabetes Care* 5:370-374.

Weight Control
Type II Diabetes is clearly associated with overweight persons. Many weight loss ideas will be found with a site search from the http://doctoryourself.com main page.

Bennett, P.H., W.C. Knowles, N.B. Rushforth, R.F. Hammon, and P.J. Savage. 1979. The role of obesity in the development of diabetes of the Pima Indians. In J. Vague and P.H. Vague, eds. Diabetes and Obesity. *Excerpta Medica*, Amsterdam.

Williams, S. R. *Nutrition and Diet Therapy*, 6th ed., Ch 19. St. Louis: Mosby

Stress Reduction/Meditation
Kirtane, L. Transcendental Meditation: A multipurpose tool in clinical practice. General medical practice, Poona, Maharashtra, India, 1980. (Cites improvements in a wide variety of physical and mental disorders including diabetes mellitus.)

Chromium
The trace mineral chromium is found in skin, fat, muscle, brain and adrenal glands. There is only about 6 mg in you, but is it ever important! Absorption by way of your intestine is poor; it is excreted in urine. Chromium is an essential component of Glucose Tolerance Factor (GTF). GTF helps insulin to work better by "bridging" it to cell membranes.

Chromium as GTF improves glucose tolerance in diabetics whether they are children, adults or elderly (Williams, S. R. Nutrition and Diet Therapy, Ch. 9, p. 301) "Deficiency signs include resistance to insulin AND OTHER SIGNS OF DIABETES." (p 313, emphasis added)

Food Sources of Chromium
By far and away the best food source of chromium is BREWER'S YEAST. You can also use "Nutritional Yeast," which is nutritionally similar and better tasting. Brewer's yeast is a by-product of beer-making and tends to be a bit bitter. Nutritional yeast is primarily grown to be a food. Try nutritional yeast flakes on popcorn. It tastes so much like "cheese corn" that you may well like it. Even some really finicky friends of mine happily munched popcorn generously laced with nutritional yeast while they trounced me at euchre.

Aside from teaching them when to lead the left bower, one of the best things you can do is give your family a teaspoon or two of this stuff every day. It is a good source of B-12 and other B-vitamins, as well as protein. Way too much, by the way, may cause temporary and harmless skin irritation in some especially sensitive people. If you start low and increase slow, this will probably not occur.

Other food sources of chromium include nuts, prunes, mushrooms, most whole grains and many fermented foods including beer and wine. (Now those *last two* are certainly popular supplements!) Please remember the negative social, and negative nutritional, aspects of alcohol, and instead go for the yeast. Or if you simply must tip a few, at least try to select additive-free, organically grown beverages and use them in moderation.

If you are a teetotaler, and if your interest in yeast is rapidly waning, the best supplements usually complex Cr with niacin, which seems to greatly enhance uptake. An example is chromium polynicotinate, which has been demonstrated to be especially well absorbed and retained. Chromium picolinate is a good second choice.

I would ALWAYS supplement with 200 to 400 micrograms (mcg) Cr daily if there is any breath of a hint of hypoglycemia (that's most of us). In fact, I take (and recommend) that much every day for those in good health. The US RDA is between 50 and 200 mcg of Cr daily. Even traditional dieticians textbooks admit that the conventional US diet does not reliably supply even this amount. For the diabetic, chromium supplementation is essential... unless you are a big fan of yeast.

Fiber
There is a well-established reduction of hyperglycemia with consumption of extra dietary fiber. This means a probable decrease in insulin requirement for Type I diabetics, and even better news for Type IIs. Generally, the more fiber eaten, the less medication needed. Try it and see how much better you feel.

Want to know more about fiber? At the end of this article is a listing of publications by Dr. Anderson, an excellent researcher, whose work is also well-written and easy to understand. Many of his papers are reviews, which neatly summarize this large topic, and are especially helpful reading.

In The Cancer Chronicles (No 30, Dec, 1995), Ralph W. Moss, Ph.D. mentioned that soluble fiber, such as pectin (a thickener used to make jelly) may help diabetics. It appears that even the delightful over-the-counter Kaopectate has been used medically in the treatment of diabetes. Fibers like pectin are found in the cell walls of all fruits and vegetables. Diabetics can and should certainly eat a lot more vegetables, along with the beneficial extra fiber they provide.

Vitamin E
"Thus, vitamin E may potentially provide additional risk reduction for the development of retinopathy or nephropathy in addition to those achievable through intensive insulin therapy alone. Vitamin E is a low-cost, readily available compound associated with few known side effects; thus, its use could have a DRAMATIC socioeconomic impact if found to be efficacious in delaying the onset of diabetic retinopathy and/or nephropathy." (emphasis added) From *Diabetes Care* 22:1245-1251 1999

This was a crossover study on 36 patients who have Type I diabetes for less than 10 years. The dose evaluated was 1800 I.U. per day. Before taking vitamin E, retinal blood flows in these subjects was significantly lower than in the non-diabetic population. Both retinal blood flow and creatinine clearance were significantly normalized when subjects received vitamin E. ***The patients with the worst reading improved the most.*** The vitamin had no effect on blood glucose levels, and therefore would not interfere with insulin therapy.

(The following is from Stichting Orthomoleculaire Educatie (Orthomolecular Education Foundation) Antwerpsestraat 1a, 2587 AE Den Haag, The Netherlands. Their English language website is http://www.soe.nl/home.htm)

A poor vitamin-E status (lipid standardized plasma-vitamin E below the median) was associated with an almost quadruple risk of NIDDM (relative risk 3.9). The strong protective influence of vitamin E, as shown in these findings, supports the hypothesis that free-radical damage is a causal factor in the development of NIDDM.

(Increased risk of non-insulin dependent diabetes mellitus at low plasma vitamin E concentrations: a four year follow up study in men. (Salonen JT et al (1995); *BMJ*, 311:1124-1127, Oct. 28)

Further references to vitamin E and diabetes will be found in the books of Drs. Evan and Wilfrid Shute (listed at http://doctoryourself.com/bibliography.html), especially Shute, Wilfrid E. *Vitamin E for Ailing and Healthy Hearts* (1969) New York: Pyramid Books.

Vanadium
In 1993 and 1994, I had the pleasure of coteaching clinical nutrition with Cornell University researcher Wes Canfield, M.D. Trace minerals are Dr Canfields special interest, and he believes that vanadate is very important in the prevention and treatment of diabetes. A (free) Medline search at the National Library of Medicine website (http://www.ncbi.nlm.nih.gov/PubMed) using the keywords vanadium + diabetes will bring up over 160 papers on the subject. Vanadate + diabetes will get you nearly 200.

Eat Complex Carbohydrates, not Sugary or Fatty Junk Food
Common sense advice, to be sure. Frequent, smaller, calcium-rich high-fiber meals can really help decrease the incidence of diabetic symptoms. There is good dietetic advice to be found in

Hoffer, A. and Walker, M. (1978) Orthomolecular Nutrition (New Canaan, CT: Keats), p 14; p 21-26 and 100-101.

See also:
Garrison, Jr., R. H. and Somer, E. (1990)The Nutrition Desk Reference (New Canaan, CT: Keats), p 216-222.

Vitamin C for Type II Diabetes
Physicians investigated the effect of 600 mg/day of magnesium and 2 grams/day of vitamin C on a group of 56 non-insulin-dependent diabetics. The vitamin C improved control of blood sugar and fasting blood-sugar levels. It also lowered cholesterol and triglyceride levels, and reduced capillary fragility. The magnesium lowered blood pressure in the subjects. (Eriksson J and Kohvakka A, Magnesium and ascorbic acid supplementation in diabetes mellitus. *Annals of Nutrition and Metabolism*, July/Aug 1995; 39(4) 217-223.)

Also of interest:
Bruckert, E. et al., "Increased serum levels of Lipoprotein(a) in diabetes mellitus and their reduction with glycemic control," *JAMA* 263(1):35-36 (1990). (Note: Vitamin C controls Lp(a) synthesis.)

Kapeghian, J. C. et al., "The effects of glucose on ascorbic acid uptake in heart, endothelial cells: Possible pathogenesis of diabetic angiopathies," *Life Sci*. 34:577 (1984).

Sinclair AJ; Taylor PB; Lunec J; Girling AJ; Barnett AH Low plasma ascorbate levels in patients with type 2 diabetes mellitus consuming adequate dietary vitamin C. *Diabet Med*, 1994 Nov, 11:9, 893-8

Stone, Irwin. *The Healing Factor: Vitamin C Against Disease* (1972) New York: Grosset & Dunlap. p 146-151. Excellent review of vitamin C megadoses for diabetics.

And if you want to go back in time a bit:
Vitamin C deficient guinea pigs show diminished glucose tolerance, low liver glycogen, high blood sugar and a low insulin content of the pancreas. A diabetic type of glucose tolerance curve has been described in human subjects on low ascorbic acid (vitamin C) intakes; this curve is said to return to normal on giving adequate ascorbic acid. (Bicknell and Prescott, The Vitamins in Medicine, 3rd edition, p 433, 1953, references cited in the text.)

Iatrogenic (Doctor-Caused) Diabetes
Most of today's pharmaceutical preparations, because of their harmful effects, may be labeled poisonous," says chemist Dr Lisa Landymore-Lim, who has worked for the National Institute for Medical Research, London, and the Dunn Nutrition Unit, Cambridge. Her 1994 book, Poisonous Prescriptions, describes Landymore-Lim's investigations which have found that diabetes may in fact be a major side effect of antibiotics and other common pharmaceuticals. The book provides evidence from studies and hospital records. Diabetes, usually thought to be largely a genetic disorder, may actually have increased so much in the last 50 years because of the proliferation in the use, and over-use, of medicines.

Remember that with diabetes, SUPPLEMENTS REDUCE THE DANGER.

A Very Important Reference:
Werbach, Melvyn R. Nutritional Influences on Illness, Keats, 1988, p 166 182, contains a valuable review of research indicating the therapeutic value of supplements, and their specific dosages, for diabetics. This is a must-read.

Some Type I AND Type II Recommendations
(from Scott Roberts http://heelspurs.com/cure.html)

In addition to the diet your doctor has recommended, spread the following out over each day (in order of importance): 800 mcg chromium, 5,000 mg C, 1,600 IU E, 300 mg lipoic acid, 700 mg magnesium, and 1 tbsp flaxseed oil (Barlean's brand only). For references on the 1st 3 supplements and diabetes see http://heelspurs.com/diabetes.html. Be careful: your need for insulin and glucotrol pills will decrease dramatically - be sure to monitor your blood sugar. Exercise.

Additional References:
(This may seem like overkill, but it is actually only a partial listing. There is MUCH evidence that nutrition can make a real difference for the diabetic.)

Papers by Dr. J. W. Anderson
(compiled from the National Library of Medicines MEDLINE)

Anderson JW, Allgood LD, Turner J, Oeltgen PR, Daggy BP. Effects of psyllium on glucose and serum lipid responses in men with type 2 diabetes and hypercholesterolemia. Am J Clin Nutr. 1999 Oct;70(4):466-73.

Anderson JW, O'Neal DS, Riddell-Mason S, Floore TL, Dillon DW, Oeltgen PR. Postprandial serum glucose, insulin, and lipoprotein responses to high- and low-fiber diets. Metabolism. 1995 Jul;44(7):848-54.

Geil PB, Anderson JW. Nutrition and health implications of dry beans: a review. J Am Coll Nutr. 1994 Dec;13(6):549-58. Review.

Anderson JW, Smith BM, Gustafson NJ. Health benefits and practical aspects of high-fiber diets. Am J Clin Nutr. 1994 May;59(5 Suppl):1242S-1247S. Review.

Hamilton CC, Geil PB, Anderson JW. Management of obesity in diabetes mellitus. Diabetes Educ. 1992 Sep-Oct;18(5):407-10.

Anderson JW. Dietary fiber and diabetes: what else do we need to know? Diabetes Res Clin Pract. 1992 Aug;17(2):71-3.

Hamilton CC, Anderson JW. Fiber and weight management. J Fla Med Assoc. 1992 Jun;79(6):379-81. Review.

Anderson JW, Akanji AO. Dietary fiber--an overview. Diabetes Care. 1991 Dec;14(12):1126-31. Review.

Anderson JW, Zeigler JA, Deakins DA, Floore TL, Dillon DW, Wood CL, Oeltgen PR, Whitley RJ. Metabolic effects of high-carbohydrate, high-fiber diets for insulin-dependent diabetic individuals. Am J Clin Nutr. 1991 Nov;54(5):936-43.

Fukagawa NK, Anderson JW, Hageman G, Young VR, Minaker KL. High-carbohydrate, high-fiber diets increase peripheral insulin sensitivity in healthy young and old adults. Am J Clin Nutr. 1990 Sep;52(3):524-8.

Anderson JW, Smith BM, Geil PB. High-fiber diet for diabetes. Safe and effective treatment. Postgrad Med. 1990 Aug;88(2):157-61, 164, 167-8. Review.

Anderson JW, Gustafson NJ. Adherence to high-carbohydrate, high-fiber diets. Diabetes Educ. 1989 Sep-Oct;15(5):429-34.

Anderson JW, Bridges SR, Tietyen J, Gustafson NJ. Dietary fiber content of a simulated American diet and selected research diets. Am J Clin Nutr. 1989 Feb;49(2):352-7.

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Adapted from an article at www.DoctorYourself.com