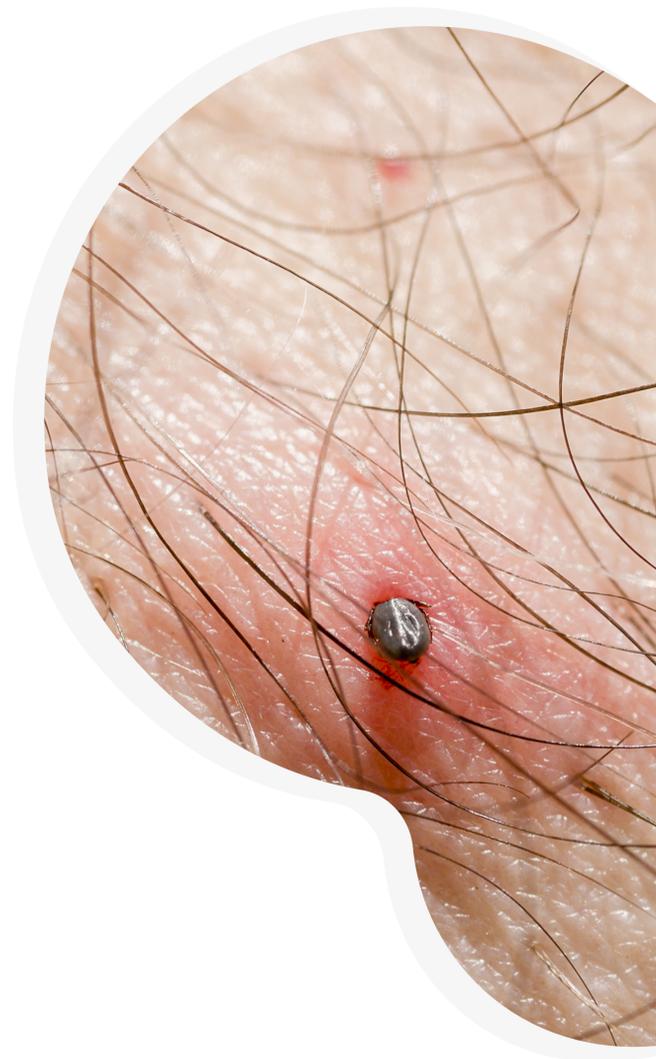


# The Essential Guide to Calming Lyme-Induced Inflammation

People with chronic illnesses, like Lyme disease, usually have a long list of health problems that have them digging through various internet sources (hopefully, reputable ones) for answers. Those seemingly separate issues could boil down to one central source — chronic Lyme disease.

Indeed, chronic Lyme disease has many vague, erratic, and concealed symptoms. What's more, chronic illnesses have so many symptoms in common and can look a lot like one another. Mapping out your personal scenario can be challenging, since testing for Lyme disease may be unreliable.



# Chronic Lyme Disease

During the early stages of Lyme disease, it may seem like you have a flu bug. You could have aches, pains, stiffness, and swollen glands. These symptoms may last a few weeks. If caught in the early stages, Lyme disease may be easier to diagnose and treat.

Chronic Lyme disease, or “late-stage Lyme,” is much different. Signs of this chronic illness may arise gradually, over time. Or, they may be ongoing, having never entirely resolved with earlier treatment. In some cases, physical or emotional stress may have an impact, and push the disease front and center.

Blood tests often fail to diagnose this type of Lyme disease, as the acute phase is past. The corkscrew-shaped Lyme bacteria are no longer floating in the bloodstream; they have drilled down into the tissues where they are harder to see. Plus, the infection can confuse your immune system. It may not create the antibodies required to get a positive test result.

Thus, the source of your pain and inflammation can be elusive. Yet, Lyme disease symptoms may be in plain sight. You may develop long-term issues like joint pain, severe and debilitating fatigue, headaches, and trouble concentrating. These may become more crippling and devastating over time.

## Lyme Disease Contributes to Immune System Dysfunction

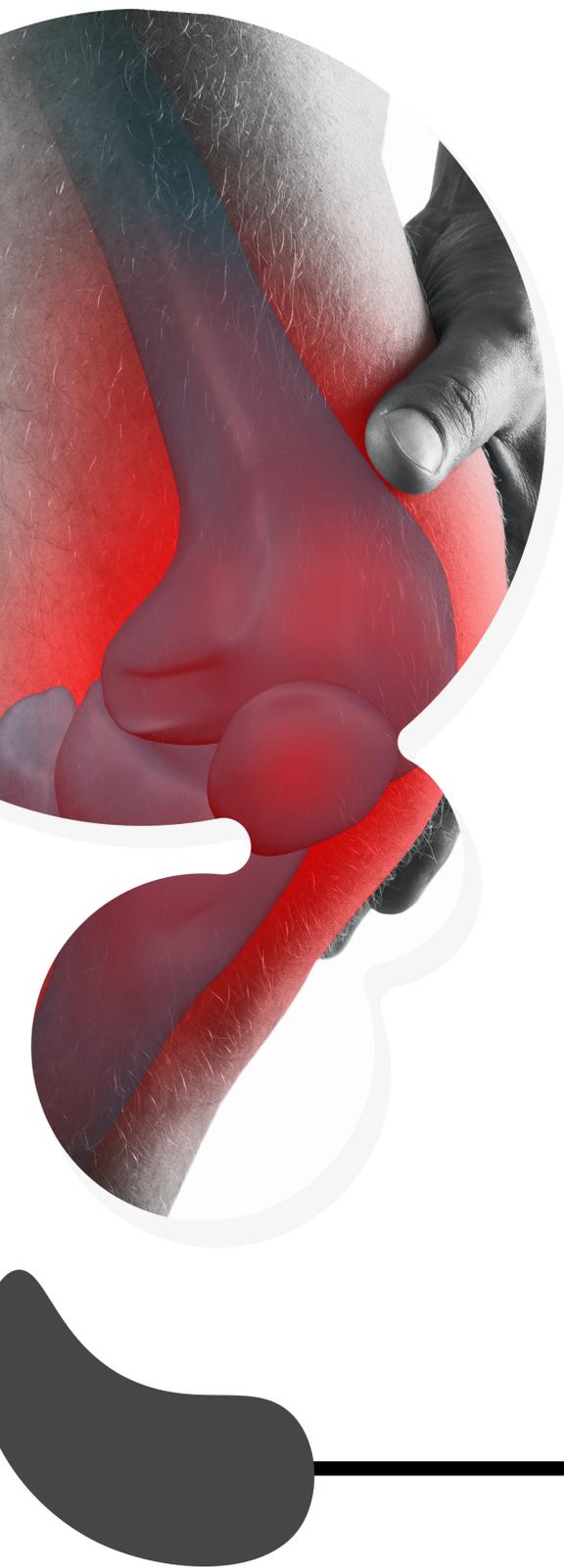
Chronic Lyme disease can cause a substantial amount of inflammation, due in part to taxing your immune system. The Lyme bacteria provoke your immune cells to produce small proteins called cytokines. These substances generate inflammation to fight the infection.<sup>[1]</sup>

But, another problem may manifest — your immune system’s activity may not return to normal — even after the infection is knocked back. It may go into a hyperactive state, continuing to fight just as hard as if it was battling a new threat.

This is partly the case because the bacteria are masters of disguise. They can mutate and change form. Over and over, the immune cells see them as new threats. The immune cells search for many invaders, rather than merely the original one. Then, the immune system is continually in hyperimmune emergency mode, which continues to cause painful inflammation.

So, the effect of Lyme disease on the immune system is both suppression (downregulation) and too much stimulation (upregulation). In this scenario, balancing immune function (immune modulation) is critical.

# Lyme Disease Causes Joint Inflammation



Chronic Lyme disease doesn't discriminate. You could be the fittest, healthiest person before you contract it. It will still try to take you down. This disease damages the joints and can cause excruciating pain. You might become unable to enjoy your former quality of life.

*Borrelia burgdorferi*, the bacteria that causes Lyme disease, love to hang out in the joints and connective tissues, including cartilage, tendons, and ligaments. The bacteria bind to collagen in these connective tissues. Then, they break it down and destroy it. If your body tries to regenerate these tissues, the microbes can disrupt its efforts.[\[2\]](#)

The Lyme disease bacteria are dependent on your body for nutrients. Since they can't make specific proteins, they'll steal them from your joints. They're especially fond of a gel-like substance called hyaluronic acid. Without it, connective tissues can be brittle, and joints can be stiff.

These stealthy bacteria also cause inflammation in your joints. Fragments of borrelia remain in joints, even after the microbes are killed off. This is triggered by a specific substance in their cell walls (peptidoglycan) that is dumped into the surrounding environment. The borrelia litterbugs cause you to appear to have arthritis, but the real culprit is chronic Lyme disease.[\[3\]](#)

The peptidoglycan stays in the synovial fluid, which is the thick liquid that lubricates the joint and allows it to move smoothly. It causes ongoing inflammation as the immune system continues to respond.[\[4\]](#)

# Lyme Disease Causes Brain Inflammation

Lyme is an inflammatory disease that affects the nervous system adversely, as well. This fact is both accurate and terrifying since damage to the brain is a dreaded consequence of illness.

Lyme spirochetes cross the blood-brain barrier, causing inflammation in the central nervous system. The brains of patients with chronic Lyme disease show chemical changes and widespread inflammation.[\[5\]](#) Some of those infected with Lyme disease will ONLY show nervous system symptoms and signs — they don't have the joint and body pains.

Lyme neuroborreliosis is the scientific name for the effects *B. burgdorferi* may produce in both the peripheral and central nervous systems.[\[6\]](#) The disease and its associated symptoms develop as a result of inflammatory changes in the central nervous system (brain and spinal cord), spinal nerves, and dorsal root ganglia.

Common neurocognitive problems include:[\[7\]](#)

- Brain fog
- Poor memory
- Slower thinking speed
- Difficulty retrieving words
- Attention and focus issues
- Irritability, sometimes extreme
- Sleep disorders
- Dyslexic-like errors when writing or speaking
- Spatial disorientation
- Confusion
- Emotional responses that are irregular or out of proportion to the situation at hand (mood lability)

Neurological system impairments may include:[\[8\]](#)

- Numbness
- Pain
- Fatigue
- Weakness
- Increased sensitivity to specific frequencies and volume ranges of sound (auditory hyperacusis)
- Bell's palsy (paralysis of the facial muscles)
- Meningitis symptoms such as severe headache, fever, and stiff neck
- Nerve damage in the arms and legs
- Visual disturbances
- Impaired fine motor control

Around 40% of individuals with chronic Lyme develop neurological issues. Lyme disease can also affect the neurotransmitters, manifesting as anxiety, depression, bipolar disorder, anorexia, obsessive-compulsive disorder, or schizophrenia. Major depression develops in many chronic Lyme patients, which contributes to thoughts of suicide. Panic attacks and aggression are a sign of the spirochete's attack on the central nervous system, as well.[\[9,10\]](#)

## Address Inflammation with Dietary Adjustments

It's plain to see that calming inflammation in the body could provide some much-needed relief for people with Lyme disease. Eating an anti-inflammatory diet is helpful. Some foods and beverages are associated with an increased risk of inflammation. Consider reducing or cutting out:

- Sugar and sugary beverages
- Refined carbs
- Gluten
- Wheat and corn (due to pesticide residues, mold, fungus)
- Pre-packaged and fast foods
- Processed meats
- Processed snack foods
- Processed seed and vegetable oils (like corn, canola, and soybean)
- Foods with partially hydrogenated (trans-fat) ingredients
- Genetically modified foods
- Alcohol

You can also ADD anti-inflammatory foods, including:

- Vegetables (particularly cruciferous veggies)
- Low-sugar fruits
- High-fat fruits, including avocados and olives
- Healthy fats, including olive oil, avocado oil, and coconut oil
- Nuts
- Wild-caught fatty fish, including salmon, sardines, herring, anchovies, and mackerel
- Dark chocolate (in moderation)
- Spices, including turmeric, ginger, garlic, cinnamon, clove, and cayenne
- Green tea
- Red wine (in moderation)

Remember to “eat the rainbow” of fruits and vegetables. Also, eat organic, wild-caught, and pasture-raised produce and meats whenever possible.

## Address Inflammation with Anti-Inflammatory Herbs and Supplements



Nature offers many plant-based solutions to help calm inflammation. These may be especially potent when taken as extracts and used in combination. Collectively, the following may be more powerful together, rather than individually:

- Broccoli sprouts
- Mulberry
- Artichoke leaf
- Blueberry
- Wheatgrass
- Acai
- Pineapple bromelain
- Olive leaf
- Citrulline (a non-essential amino acid)
- Pomegranate
- Astaxanthin (a naturally-occurring carotenoid)

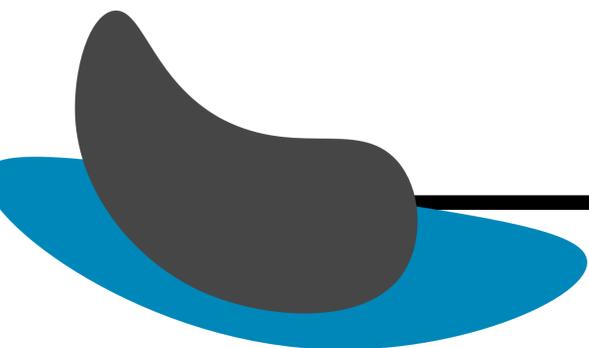
# General Recommendations for Lyme-Associated Inflammation

Chronic, low-grade systemic inflammation is a significant contributor to chronic diseases. Besides the above recommendations, here are a few more to take to heart:

- **Get exercise.** Physical activity can decrease inflammatory markers, reducing your risk of Lyme symptoms and chronic disease.[\[11\]](#)
- **Sleep well.** Both quality and quantity of sleep are extremely critical. Manage inflammation by focusing on healthy sleep habits.[\[12\]](#)
- **Manage your weight.** Obesity causes chronic, low-grade inflammation.[\[13\]](#)
- **Balance your blood sugar level.** Blood sugar imbalances play a role in inflammation, increasing the likelihood of insulin resistance, metabolic syndrome, and diabetes.[\[14\]](#)
- **Clear environmental toxins.** Daily exposure to toxins, such as chemicals, pesticides, heavy metals, mycotoxins (from mold), radioactive metals, toxins released by pathogens, and much more, contribute to inflammation. Reduce your exposure to these when possible, and detoxify your body to clear them.

As you can see, no matter what you are experiencing health-wise, inflammation is a likely factor. Since inflammation is involved in so many health conditions, and the world presents inflammatory environmental challenges daily, keeping inflammation in check is vital to staying healthy and aging well. Even individuals who have no health challenges may want to consider keeping tabs on inflammation.

Lyme disease patients may develop persistent, painful inflammatory issues. If you've been treated for Lyme disease and still feel unwell, your immune system's inflammatory response may be out of whack. See your functional medicine provider or natural health expert to discuss personalized options for managing your symptoms.





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## Source:

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