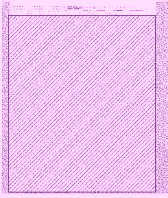


Research  
inflammation has  
past decade  
we finally  
stand all  
As a result,  
s believe that  
lyst for most

inflammation  
en able to

l. We may  
particles  
Multiple  
ollution can  
ungs and  
erbatating  
ns such as  
rtension.



system that's out of control. Normally, when your body has an injury or infection, the inflammatory process rapidly acts to defend against foreign invaders and repair any damage that's been done.

This is known as acute inflammation. You can recognize acute inflammation by looking for these classic signs: pain, heat, redness, swelling, and loss of function. It's what causes your ankle to swell after a sprain or your throat to hurt when you have a cold. Behind the scenes, your body's defense system is quickly activating. Chemicals are released signaling that an injury or invasion has occurred. Blood flow increases to the



your physical  
mental—health  
on chronic infla  
exploded in the  
or so, and we ar  
starting to unde  
the implications  
many researche

low-level, systemic inflammation may be the catalyst for chronic diseases.

### A Body Ablaze

Scientists don't fully understand how chronic inflammation starts or how it leads to disease, but they have been able to identify some risk factors:



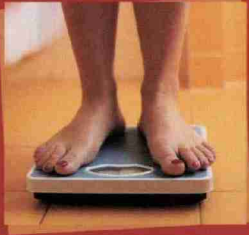
**Growing old.** As we age, our bodies start deteriorating, causing our immune system to release more inflammatory chemicals.



**Our toxic environment.** We may be inhaling inflammatory chemicals with every breath we take. Recent studies have found that air pollution can cause inflammation in the cardiovascular system, exacerbating conditions such as asthma or pulmonary hypertension.

14

## Good Health LIFESTYLES



**Being overweight.** Distressed fat tissues call for help by leaking inflammatory chemicals into the body. The more fat, the more leakage. Consequently, one of the best ways to fight chronic inflammation is to lose weight.



**The standard American diet.** A diet full of processed foods, refined grains, sugars, and unhealthy fats puts major stress on our digestive systems and provides empty calories that are easily stored as fat. These foods also play a direct role in increasing systemic inflammation.



**Leading a sedentary life.** In a study published in *PLOS ONE* researchers found that sedentary behavior was associated with inflammatory markers even when other causes, such as smoking, were factored in. What's more, people who didn't engage in regular periods of moderate or vigorous activity in between sedentary times had even higher levels of inflammatory markers.

### Smothering the Fire

For a long time, researchers have been trying to develop pharmaceutical drugs to combat inflammatory enzymes like 5-lipoxygenase, or 5-LOX. This pro-inflammatory substance has been implicated in various inflammatory diseases, including cardiovascular disease, asthma, Alzheimer's disease, and inflammatory bowel disease. Yet, scientists have only developed one drug that inhibits 5-LOX, and it has some nasty side effects, including liver toxicity, increased aggression, and thoughts of suicide. Cyclooxygenases COX-1 and COX-2 are also important enzymes that are involved in the inflammatory process. Currently, nonsteroidal anti-inflammatory drugs (NSAIDs) are the most common drugs that work on COX enzymes. However, they may damage the intestinal tract or increase the risk of cardiovascular events such as a heart attack or stroke, especially when used long-term. This makes them particularly poor options when dealing with chronic inflammation. However, natural medicine may inhibit chronic inflammation without these nasty side effects.

The best botanical to inhibit 5-LOX is boswellia, which is derived from a resin of the boswellia tree. You might be familiar with boswellia by another name—frankincense, one of the gifts of the Magi. Boswellia has been used in India for centuries as a traditional medicine for a variety of complaints. The implications for treating inflammatory diseases with boswellia may be vast, and scientific studies are very promising. In a 2015 study of an experimental cellular model of intestinal inflammation, Italian researchers found that boswellia—and even more so, it's most active boswellic acid, Acetyl-11-keto- $\beta$ -boswellic acid (AKBA)—was able to preserve intestinal barrier integrity and function against chronic inflammatory stimuli without damaging cells.

Clinical studies evaluating boswellia are just beginning but show very promising results. One study in the journal *Cancer* investigated its effects in treating brain tumors. Inflammation is often a contributing factor in brain cancer mortality, where swelling puts extra pressure on the brain because of limited room in the skull. In the double-blind clinical study, 44 patients with brain tumors received boswellia or a placebo while undergoing radiation therapy.

At the end of therapy, those in the boswellia group showed a significant reduction in edema (brain swelling) as measured by MRI compared to those in the placebo group. In fact, 60 percent of patients in the boswellia group had a 25 percent decrease in edema from baseline (or no edema at all) while only 26 percent of patients in the placebo group decreased to this level. In addition, the tumor volume in the boswellia group decreased by an impressive 88 percent compared to only 19 percent in the placebo group.

One botanical you might not be as familiar with is devil's claw. The ability of devil's claw to decrease inflammation and pain make it a solid alternative to typical over-the-counter drugs. This plant, which is native to southern Africa and named for its spiny fruit, has become a popular treatment for arthritis and back pain. Scientific studies evaluating its inflammatory action have found that it inhibits inflammatory compounds in the body, including COX-1 and COX-2. Inhibiting COX-2 is central to relieving joint pain. A German study evaluated patients with knee and hip osteoarthritis who used devil's claw extract for 12 weeks. The results were significant, with doctors noting an overall general improvement of 45 percent. Specifically, painful areas when touched improved by 46 percent, mobility improved by 35 percent, and swelling was reduced by 58 percent.

### Reining in Inflammation

Inflammation has its role to play in keeping our bodies healthy. The trouble comes when it gets out of hand. But you can keep it in check by following some common sense guidelines: If you're overweight, lose weight. Eat food that's closer to nature—fruits and vegetables (organic is best), grass-fed beef—and avoid excessive amounts of sugar, white flour, and processed foods. Exercise regularly. Choose natural options when you can, like for cleaning and lawn care. Finally, learn about and use natural alternatives to fight chronic inflammation. By making sensible choices, you can avoid chronic inflammation and the devastating health conditions that develop from it. ■



**Jacob Teitelbaum, MD**, is a board certified internist and an expert in chronic pain. He is the author of numerous books and booklets, the most recent being the *Better Nutrition Healthy Living Guide, Conquer Chronic Pain*.