Some aging factors are beyond our control, but one of the biggest — inflammation — needn’t be. Here’s how you can extinguish the flames of chronic inflammation before they ignite.
Inflammation

By CATHERINE GUTHRIE

DO YOU REGULARLY IRRITATE AN OLD SPORTS INJURY by playing too hard? Are you lactose intolerant, but not enough to swear off Ben & Jerry’s? Do you ignore your acid reflux to indulge junk-food cravings? It might motivate you to avoid those impulses if you knew that these common and seemingly harmless transgressions can up your odds of developing dozens of diseases associated with aging and disability, including heart disease, diabetes, stroke, cancer and Alzheimer’s.

The enemy is chronic inflammation: a process at the core of the body’s most basic survival instincts that is now believed to be at the heart of a handful of deadly diseases. What’s even worse — your body may already be under fire from inflammation caused by stress, poor diet and a couch-potato lifestyle. Inflammation can operate in stealth mode for years. When symptoms do finally become apparent, it’s usually in the form of diabetes, osteoarthritis or other inflammation-related diseases.

But don’t despair. Chronic inflammation is a problem you can take action to both prevent and fix.

What Is Inflammation?

Under ordinary circumstances, inflammation is a healthy process that comes to the body’s aid when it’s injured. For instance, if you cut your finger while making dinner, the body’s inflammatory response sends in an army of white blood cells to the scene. These cellular mercenaries destroy lurking bacteria while mending any ragged tissue. By the time you can see and feel physical signs of inflammation — heat, soreness and swelling — the cut is probably well on its way to healing. Sounds like a foolproof process, right?

Unfortunately, inflammation isn’t always so exact. Like a houseguest who overstays his welcome, inflammation sometimes hangs around too long and refuses to leave. Aging is one of the biggest risk factors for inflammation, since, as we age, our bodies are less able to disarm the inflammatory process. A genetic predisposition, high blood pressure or even smoking can also fuel the flames. When the inflammation switch refuses to turn off, the body operates as if it is always under attack. White blood cells flood the system for weeks, months and even years.

The problem is that the immune system can’t handle the constant demand. When the immune system becomes drained, the body then has difficulty warding off other illnesses. For instance, viruses, bacterial infections, even cancer cells that are normally destroyed by a healthy immune system can now slip under the body’s radar. Ultimately, the immune system may even turn against the body itself — the consequences of which are quite serious: Lupus, Graves’ disease, Crohn’s disease and fibromyalgia are all autoimmune disorders that come about when the body is assaulted by its own defenses. Scientists have known about autoimmune diseases for years, but now a new theory paints an even broader picture of how chronic inflammation helps other killers gain footholds.

Inflammation and Disease

Heart researchers were among the first to stumble upon inflammation’s potential for destruction. Until the early 1990s, experts believed that heart disease, specifically atherosclerosis (hardening of the arteries), resulted from sticky plaque glomming onto smooth artery walls. As plaque buildup made the artery narrower, a blood clot could plug the last remaining opening and cause a heart attack. But as it turns out, the process is more complex and actually stems from chronic inflammation.

Today, medical experts know that arteries aren’t smooth pipes lined with white globs of gluey fat. Instead they are dynamic, multilayered structures of tissue (think pastry shell). While it’s true that arteries do absorb LDL (bad) cholesterol from the bloodstream, the difference is that, instead of sticking to the artery wall, the LDL seeps between the tissue layers and festers. The result is an angry, blisterlike formation.

To contain the damage, the body triggers an inflammatory response. As inflammation sets in, the artery swells under the strain, which constricts blood flow to the heart. The blister delves deep into the artery’s tissue and is covered by a scab-like plaque. Disaster strikes in the form of a heart attack when the plaque bursts and debris barricades the artery.

Chronic inflammation is not only bad news for the heart, it also plays a significant role in jump-starting other diseases as well, particularly Alzheimer’s disease, diabetes and certain cancers. With Alzheimer’s, researchers connected the dots by looking into patients’ pasts. Numerous studies have shown that people who use ibuprofen, a popular anti-inflammatory medication, lower their risk of acquiring Alzheimer’s disease. (Ibuprofen is believed to slow the decline of Alzheimer’s by reducing inflammation in the brain.) Although the mechanism isn’t fully understood, neurologists believe that the brain’s immune cells rally to attack the disease’s telltale sign, beta-amyloid plaque. The ensuing skirmish creates inflammation that may spur progression of the disease. ➾
Diabetes and chronic inflammation are likewise linked in a dysfunctional dance, although the reasons why are less easily understood. Experts know that type-2 diabetes rates skyrocket in unison with rising obesity statistics. The connection between obesity, diabetes and inflammation may be that fat cells secrete inflammation-boosting proteins called cytokines. In other words, more fat equals more inflammation. Over time, too many circulating cytokines hamper the body's ability to regulate insulin production. The insulin imbalance sets the stage for type 2 diabetes.

Cancer Connection

Some forms of cancer can also be attributed to inflammation gone awry. Recent research indicates that inflammation plays either a leading or supporting role in many of the most common types of cancer — colon, stomach, lung and breast. Chronic inflammation wreaks havoc in the body by creating an ideal environment for free radicals, rogue molecules that travel through the body leaving a path of destruction in their wake. If a healthy cell’s DNA is damaged by free radicals, it may mutate. As it continues to grow and divide, it may set the stage for a cancerous tumor. Free radicals stimulate inflammation and thereby perpetuate the inflammatory cycle.

Chronic inflammation alone won’t always spark cancer, but left untreated it may create a more hospitable place for cancer cells to thrive, according to Dave Grotto, director of nutrition education at the Block Center for Integrative Cancer Care in Chicago.

Colon cancer is one of the most common examples of a cancer that feeds on inflammation. Chronic inflammation is thought to heighten the risk of colon cancer by allowing free radicals to flourish in the intestines. Although scientists have long known that people with long-term inflammatory bowel disorders, such as ulcerative colitis and Crohn’s disease, have an increased risk of colon cancer, they are only now beginning to point the finger at inflammation.

In a study published last February in the Journal of the American Medical Association, researchers followed 22,887 adults for more than 10 years to determine if a link existed between colon cancer and inflammation. They found those participants who developed colon cancer had significantly higher plasma levels of C-reactive protein (CRP), an inflammatory marker used to measure one’s level of inflammation, than their disease-free counterparts. (See sidebar “Take the CRP Test,” page 49, on measuring CRP levels.)

The bottom line? If you have an inflammation-related illness, such as arteriosclerosis or arthritis, altering your eating habits may help you tame your symptoms, or even alter the course of the disease.

The good news: Unlike many uncontrollable risk factors for serious illness, such as family history of heart disease or living in a polluted city, chronic inflammation is something you can control and even prevent through diet and exercise. Here’s a closer look at how both can influence inflammation.

Anti-Inflammatory Eating

Most foods either rev up inflammation or tamp it down. A diet high in trans-fatty acids, carbohydrates and sugar drives the body to create inflammatory chemicals. On the flip side, a diet heavy on vegetables, lean meats, whole grains and omega-3 fatty acids puts the brakes on the inflammatory process.

Early humans consumed an excellent balance of pro-inflammatory fats (mainly omega-6s) and anti-inflammatory fats (such as omega-3s and -9s). People today, however, often chow down on 30 times more bad fats than good. “The typical American diet is priming people for inflammation,” says Jack Challem, author of The Inflammation Syndrome (John Wiley & Sons, 2003). “It’s like sitting in a parked car with your foot on the gas. Eventually you’ll overheat.”

But your diet doesn’t have to be a recipe for disaster. In fact, dozens of foods, herbs and spices can help the body douse inflammatory hot spots. For evidence, witness recent studies of rheumatoid arthritis. In one, published in the journal Rheumatology International (Jan., 2003), German scientists studied 68 patients with the crippling disease. Some were asked to eat a typical Western diet for the duration of the eight-month trial, while the rest followed an anti-inflammatory diet, which included cutting back on meat and high-fat dairy foods. A subset of each group also took fish-oil supplements. By the study’s end, those in the anti-inflammatory-diet-only group reported a 14 percent decrease in joint tenderness and swelling compared to those in the Western diet group. Fish-oil supplements boosted the results even further, bringing the final tally of those feeling a marked improvement up to 31 percent in the anti-inflammatory-diet group.

The bottom line? If you have an inflammation-related illness, such as atherosclerosis or arthritis, altering your eating habits may help you tame your symptoms, or even change the course of the disease. And if your genes or a sedentary lifestyle put you at risk for chronic inflammation, eating right may make the difference between staying healthy or drifting downhill.
HERE IS A SIMPLE FIVE-STEP DIET PLAN TO HELP YOU FIGHT INFLAMMATION.

1) GET FRIENDLY WITH FISH: Fish overflows with two key omega-3 fatty acids: eicosapentaenoic acid and docosahexaenoic acid (EPA and DHA for short). Both are potent anti-inflammatories. Studies show that people who eat fish regularly are less likely to die from a heart attack or stroke, or develop Alzheimer’s disease. In fact, studies have shown that eating omega-3-rich fish just once a week may lower a person’s risk of developing Alzheimer’s by up to 60 percent.

To reap fish’s health perks, nutritional experts recommend indulging in a fish dish at least twice a week (baked or broiled, not fried). To get the most omega-3 fatty acids, stick to either fresh or frozen coldwater fish, including mackerel, salmon and tuna. Avoid oil-packed tuna, since the omega-3s tend to leach into surrounding oil.

You also need to watch out for fish that may contain toxins, especially if you’re in a high-risk category. Women who are either pregnant or hoping to be should avoid shark, swordfish, king mackerel and tilefish, all of which may hold potentially dangerous levels of mercury, which can damage a developing fetus. (Nursing mothers and young children also should avoid these fish.) Studies have shown that some albacore tuna (often packaged as canned white tuna) has unsafe mercury levels. This past March, the FDA and Environmental Protection Agency published a joint statement recommending that pregnant women, nursing mothers and children eat no more than 6 ounces of albacore tuna each week, or approximately one serving.

There are options for vegetarians, too, though they’re not ideal. The body can make its own EPA and DHA from omega-3 fats (called alpha-linolenic acid, or ALA), which are found in flaxseed, wheat germ and walnuts (as well as some oils). But you’d better be hungry. The body’s mechanism for converting plant-based omega-3s isn’t particularly effective. You’ll need to eat four times as much ALA to equal the amount of bioavailable omega-3s found in a 3-ounce serving of fish.

Although flaxseed is often touted as an equal substitute to fish oil, it just can’t compete, says Jim LaValle, a naturopathic physician at the Longer Living Institute in Cincinnati, Ohio, and author of The Cox-2 Connection (Healing Arts Press, 2001). Vegetarians concerned about inflammation should consider fish-oil supplements. If fish oil is out of the question, focus instead on lowering intake of bad fats and ingesting more good fats, including extra virgin olive oil, wheat germ oil, hemp oil and flaxseed oil.

2) CHOOSE FATS WISELY: The body uses fatty acids to make prostaglandins, the main hormones that control inflammation. Because the body must make do with what’s at hand, a diet heavy in pro-inflammatory fats will fan inflammation. Conversely, meals that balance pro- and anti-inflammatory fats cool things off. Fats to avoid include safflower oil, sunflower oil, corn oil and all partially hydrogenated oil. Fats that get a green light are fatty coldwater fish, extra virgin olive oil, canola oil, walnuts and flax (plus those listed above).
Begin tackling fat by cutting out the worst offender: trans-fatty acids. “If your diet is rich in trans-fatty acids, you’re going to drive your body to make more inflammatory chemicals,” says LaValle. The top sources for trans-fatty acids are vegetable shortenings and hard margarines, but most processed foods also contain them in various levels. Soon, trans-fatty acids will be easier to spot, thanks to new legislation requiring food makers to add trans-fatty acids to ingredient labels by 2006.

EMBRACE YOUR INNER HERBIVORE:
Fruits and vegetables are storehouses of antioxidants and other anti-inflammatory compounds. The best sources are brightly colored fruit and vegetables, such as blueberries, strawberries, bell peppers and spinach. “Anytime you go with a large variety of colors, you get a powerhouse of phytochemicals, some of which have anti-inflammatory effects,” says Melanie Polk, director of nutrition education at the American Institute for Cancer Research in Washington, D.C.

An easy way to up your phytochemicals is to select foods that are deeper shades of colors than you already eat, Polk says. For salad greens, choose the darker spinach over iceberg; grab a ruby strawberry instead of a banana.

For a simple way to eat more plant-based foods, Polk suggests using your dinner plate as a measuring tool. Ideally, two-thirds of the plate should be covered with plant-based foods, including fruit, vegetables, whole grains and beans, she explains. The remaining one-third can be filled with lean animal protein, like a chicken breast or fish fillet. Consider eating more anti-inflammatory herbs, like ginger and turmeric, and augmenting your diet with antioxidant supplements.

CUT BACK ON WHEAT AND DAIRY:
Not heeding food intolerances and sensitivities is a one-way ticket to chronic inflammation, and no two foods are bigger triggers than dairy and wheat. For people who suffer from lactose intolerance or celiac disease (gluten sensitivity), the stomach treats dairy and wheat products as hostile invaders. Often it only takes a bite of bread or a spoonful of ice cream to kick the immune system into high gear.
In the end, researchers saw a clear trend toward lower CRP levels among those men who aced the treadmill test and higher CRP levels among those who struggled. Among the men in the lowest fitness group, 49 percent had dangerously high CRP scores. Conversely, only 16 percent of those in the highest fitness group had elevated CRP levels.

The rub is that scientists aren’t sure exactly how exercise diffuses inflammation. One theory is that exercise goads the body into making more antioxidants, which then seek and destroy free radicals associated with prolonged inflammation. William Joel Meggs, MD, PhD, author of The Inflammation Cure (McGraw-Hill, 2004), believes exercise may fool the body into thinking it’s younger than it is. “If the body senses it has a biological need to stay healthy, it will produce more antioxidants to control inflammation and slow the aging process,” he says.

For more on how and why to exercise as you age, see “Power Aging,” page 38.

TO MAXIMIZE THE ANTI-INFLAMMATORY PROPERTIES OF EXERCISE:

MAKE IT A HABIT: Aim for 30 minutes daily of moderate physical activity, such as walking, running, swimming or even yard work. Remember, a little each day is more beneficial than squeezing in a week’s worth of exercise on the weekend.

MIX AND MATCH: For your best shot at lowering CRP levels, get a mixture of both aerobic exercise, such as walking, running or riding a bike, and moderate weightlifting, either at a gym or with small hand weights at home.

DON’T OVERDO IT: If you find yourself hobbled for days after each trip to the gym, dial down your workout. An overzealous workout can leave muscles and joints sore, which may ultimately fuel the inflammatory fire instead of quelling it.

RECRUIT YOUR MIND: “Mental states are important,” says Meggs. “We know that angry, hostile people have higher CRP levels than people who keep their cool.” The thinking goes that cortisol, a stress hormone, triggers the body to release a host of chemicals that contribute to the inflammatory cascade. Activities that calm the mind, such as meditation and guided imagery, lower CRP levels, he says. Better yet, try combining a meditative focus with physical movement in practices like yoga, tai chi or qigong. (For more on this topic, see “Emotional Biochemistry” in the Nov./Dec. 2003 Experience Life.)

Squelching chronic inflammation with diet and exercise is in many ways a no-brainer. Certainly health experts have touted much of this same advice (less junk food, more vegetables and regular exercise) for years.

But who knows, maybe understanding the inflammation connection will be enough to convince more folks to straighten up and fly right — particularly if keeping a lid on inflammation turns out to be the secret of healthy aging, or wellness in general, as Meggs suggests. “Inflammation may well turn out to be the elusive Holy Grail of medicine,” he notes, “the single phenomenon that holds the key to sickness and health.”

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