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## Fight the Fire

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# Fight the fire

You have effective tools  
for battling chronic  
inflammation.

BY KAREN APPOLD

TIME TO READ: 11-13 MIN.



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Inflammation is the body's built-in mechanism to defend itself from adverse stimuli such as trauma, pathogens, damaged cells, toxins and other environmental irritants. It's even a response to emotional stress. Individuals with acute inflammation may experience redness, swelling, heat, loss of function and pain, says **David Seaman**, DC, whose organization is devoted to nutritional and other lifestyle approaches for reducing inflammation. Under normal circumstances, inflammation is protective.

"But rather than being an acute response that fosters healing, inflammation can become a systemic condition, which contributes to the breakdown of normal physiological responses," says **Daryl Deluca**, of Biotics Research Corp. "A persistent onslaught of chemical, hormonal, emotional, or physical triggers, such as those found in foods and the environment, produces a steady inflammatory state from which the body has a difficult time rebounding."

### A whole-body menace

When inflammation is sustained over an extended period, the immune system starts attacking healthy tissue that it mistakes for foreign invaders. This leads to chronic inflammation, resulting in illness and disease.

Any type of symptom ranging from gut discomfort, headaches, generalized pain, fatigue and weight gain can all be the result of a hyper-inflamed state, Deluca says.

For joint tissue, inflammation causes arthritis. For inner blood-vessel tissue (endothelium), it triggers heart disease and stroke. For thyroid tissue, it triggers Hashimoto's thyroiditis. "Inflammation can occur in any bodily tissue," says **Jacob Teitelbaum**, MD, a board-certified internist. "As the immune system gets exhausted from fighting chronic wars, cancer cells can escape normal detection and grow."

In general, any condition that ends in "-itis" is inflammatory. Inflammation is also a key culprit in the rising epidemic of autoimmune disease. It has been shown to contribute to depression, which is

becoming increasingly problematic in both adults and children, Teitelbaum says. It is also a major contributor to the rising epidemic of asthma in children.

### Testing for inflammation

C-reactive protein (CRP) is a blood marker for inflammation often used to detect chronic conditions associated with inflammation. The liver makes CRP in response to infections and inflammatory conditions. Almost any tissue injury or inflammatory process that involves the immune system's increased production of interleukin-6 (IL-6) will increase CRP production. Autoimmune conditions can also increase CRP levels.

"Even though it's used to identify chronic inflammation, a single pro-inflammatory meal has been demonstrated to raise CRP," Deluca says. A CRP test and high-sensitivity CRP (hs-CRP) test, which detects lower levels of CRP in the bloodstream (0.5–10 mg/L), can detect this marker for cardiovascular disease.<sup>1</sup>

Other types of testing can also detect inflammation. Erythrocyte sedimentation rate (ESR) and plasma viscosity (PV) are common blood tests used to detect inflammation markers in the body. An organic acids test can detect nutrient deficiencies, which may contribute to dysregulated inflammatory pathways resulting in a chronic inflammatory state, Deluca says.

Toxic metal tests, comprehensive stool tests, and a hormone test can be extremely useful for detecting systemic inflammation triggers. Genetic testing can be effective in

determining potential genetic links to systemic inflammation as well.

### Food choices and inflammation

The standard medical approach of prescribing non-steroidal anti-inflammatory drugs (NSAIDs) to treat inflammation is not ideal, Teitelbaum says. A recent meta-analysis of 440,000 people found that the major NSAIDs, such as ibuprofen and aspirin, increase heart attack and stroke deaths by 35 percent.<sup>2</sup>

Regarding what to eat, DeLuca says, "It's almost as important to list what *not* to eat in addition to what to eat when it comes to inflammation."

Forget the white starchy stuff, keep whole organic grains to a minimum, and beware of gluten. Gluten has been linked to numerous chronic conditions, including intestinal problems and neurodegenerative diseases. Limit sugar and refined carbohydrate consumption.

When it comes to vegetables, Deluca says to look for a wide variety of colors—green, red, and purple leafy vegetables are a must. Variety is important, too, as is the quality (non-genetically modified and organic). A moderate intake of fresh fruits such as berries, high-quality fats, and fatty fruits including avocados and olives, nuts and seeds, and high-quality proteins like fish (not catfish or tilapia) and lean meats is ideal.

Adequate fiber helps with elimination and detoxification, which help to remove triggers such as chemicals and toxins that contribute to a chronic inflammatory state, Deluca says. Fiber also provides prebiotics, which are important for maintaining a healthy



## Meet the experts



**David Seaman, DC,** founder, DeFlame in Ormond Beach, Fla. [deflame.com](http://deflame.com)



**Daryl Deluca,** vice president and founding member, Biotics Research Corp. in Rosenberg, Texas. [bioticsresearch.com](http://bioticsresearch.com)



**Jacob Teitelbaum, MD,** founder of the Practitioners Alliance Network in Kailua Kona, Hawaii. [ffpnforum.org](http://ffpnforum.org)



**Sara Le Brun-Blashka, BSc,** director of Education and Practitioner Engagement, Standard Process Inc. in Palmyra, Wis. [standardprocess.com](http://standardprocess.com)



**Mark Callanen, PT, DPT,** OCS, director of clinical development, LightForce Therapy Lasers in New Castle, Del. [litecure.com/medical](http://litecure.com/medical)

microbiome.

Teitelbaum advises increasing fatty fish to increase omega-3s. "This increases prostaglandin E3 levels, which are anti-inflammatory," he says. His list of foods to avoid includes sugar, hard animal fats, white flour and grain-fed beef, all of which increase inflammation.

The bottom line, according to Deluca, is that any type of dietary imbalance, whether a nutrient deficiency or a high amount of chemicals in food, can trigger the body to respond with inflammation. Also, too many omega-6 fatty acids relative to omega-3s—mostly found in oily fish—can trigger a compensatory inflammatory response in the body.

"I would advise eating a diet rich in organic whole foods, replete with phytonutrients, lean protein, and omega-3s," he says. "Eating a bit of dark chocolate makes a nice treat."

And Seaman says that a water fast is more anti-inflammatory than anything else you can do.

## Supplements and herbs to the rescue

As far as supplements, Deluca recom-

mends essential fatty acids (EFAs) such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) supplied by fish oil. Other beneficial EFAs include alpha-lipoic acid (ALA), gamma linolenic acid (GLA), and oleic acid, all of which are plant-based. Proteolytic enzymes are also extremely effective for acute inflammation that occurs from trauma and can help heal wounds.

**Sara Le Brun-Blashka**, director of education and practitioner engagement for Standard Process, says the understanding of genetic, molecular, and cellular mechanisms has led to a new branch of science called "resolution pharmacology." Research has identified a superfamily of unique lipid-mediators of inflammation. These include specialized pro-resolving mediators such as resolvins, maresins, protectins and lipoxins (LXs).

The resolvins derived from EPA, DHA and LX have been shown in numerous pre-clinical settings to not only orchestrate the self-limiting inflammatory process but also support repair of tissue affected by inflammation.

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Curcumin, especially emulsified turmeric supplying highly bioavailable curcuminoids and other bioactive compounds, has demonstrated numerous benefits and is especially effective against inflammatory bowel disease.

Le Brun-Blashka notes that curcumin works through a number of different mechanisms. One of its effects is to dampen the inflammatory response when inflammation is chronic by reducing the actions of key pro-inflammatory messengers, including nuclear factor kappa beta (NF- $\kappa$ B) and tumor necrosis factor (TNF). Another way it reduces inflammation is by revving-up nuclear factor erythroid 2-related factor 2 (Nrf2), a signaling pathway that boosts the body's own production of anti-inflammatory molecules, to protect against oxidative damage and promote detoxification.

Teitelbaum only recommends curcumin products that contain turmerones (e.g., BCM-95). This allows one pill to have the effectiveness of up to seven pure curcumin pills. He calls it "the single most effective anti-inflammatory compound available."

Studies on supplement combinations such as ginger, curcumin, rosemary, resveratrol, *Lens esculenta*, alpha-lipoic acid, and green tea catechins have been demonstrated to down-regulate NF- $\kappa$ B activation. When NF- $\kappa$ B is activated, it can cause inflammation. Emulsified vitamin D3 is also vitally important, as are probiotics, Deluca says.

### The benefits of antioxidants

Elevated oxidant levels are a byproduct of inflammation that exacerbate its effects. Therefore, getting enough vitamin C (e.g., 250 mg daily) and other antioxidants such as vitamins E and A can be helpful. Teitelbaum says to not prescribe more than 100 units of vitamin E (unless

using a mixed natural tocopherol), as this will actually cause a paradoxical deficiency of vitamin E's other components. Do not prescribe more than 5,000 units of beta-carotene because it also causes deficiency of other carotenoids and increases cancer risk.

Other antioxidants such as glutathione, lipoic acid, *Lens esculenta*, carotenoids, superoxide dismutase (a critical antioxidant enzyme) and

catalase, as well as selenium, zinc, and copper are all important as key nutrients for maintaining antioxidant systems necessary for scavenging free radicals, Deluca says. He advises a balanced whole-food diet replete with omega-3s and antioxidants that's free of toxins, artificial flavors and colors. A good, clean detoxification program is also beneficial for anyone battling chronic inflammation.

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Le Brun-Blashka says gallic acid (3,4,5-trihydroxybenzoic acid) is a powerful phenolic antioxidant naturally found in foods and herbs such as walnuts, blueberries, flax seed, apples and tea. Gallic acid inhibits mast-cell-derived inflammatory allergic reactions by blocking histamine release and pro-inflammatory cytokine expression. Gallic acid exhibits bioactivity as an antioxidant,

antimicrobial, and anti-inflammatory neuroprotective agent.

### Laser treatments

Laser can help with both acute and chronic inflammatory conditions in the joints, nerves, tendons and muscles through a process referred to as photobiomodulation (PBM). "This process helps accelerate the body's ability to work through the different

healing stages, which includes the inflammatory phase," says **Mark Callanen**, PT, DPT, OCS.

Laser therapy metabolically influences injured tissue, often at the injury's source. By accelerating the healing process at the mitochondrial level, pain and inflammation can be quickly influenced, Callanen says.

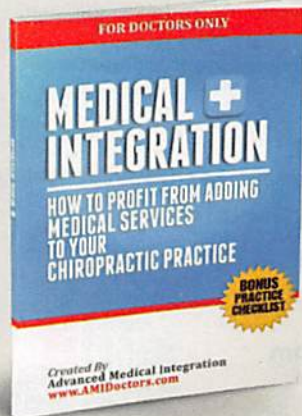
Laser works by stimulating a specific area of the mitochondria that improves cell metabolism. This happens in a number of ways, but the primary mechanisms involve a direct photochemical influence on the mitochondria and resultant modulation of the inflammatory cascade by way of enzymatic changes. Both of these effects decrease the length of time needed for tissue repair.

Laser is unique in that it has the ability to influence damaged tissue directly. Most modalities are designed to address pain and inflammation from a macro approach, such as providing a stimulus like heat, cold, or compression to a general area in order to impact circulation. This will in turn influence the injured area by manipulating blood flow.

Given that PBM is a threshold phenomenon, high-powered lasers have the ability to provide the requisite energy needed to achieve PBM to larger volumes of tissue in less time. They also have the ability to create short-term analgesic effects that significantly challenge lower power lasers. By enhancing mitochondrial function in and around peripheral nerves at depth, pain levels can be reduced quickly. "For damaged tissues that require new collagen to be laid down, laser's influence on the cells involved in tissue repair can improve that process as well," Callanen says.

There are very few contraindications and almost no side effects to laser therapy. The non-invasive treatment is comfortable for the patient and can be applied to almost any body area. While laser can help turn around

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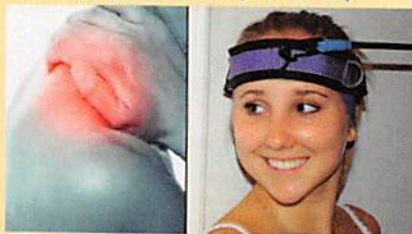
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most soft tissue injuries, for chronic joint conditions laser may serve to manage symptoms. In some cases, PBM can help offset the need for surgery by conservatively managing pain and inflammation. "In either case, laser has the potential to play an integral role in the plan of care for musculoskeletal injuries by mitigating pain and inflammation," Callanen says.

### Positive thinking

Having a positive outlook might also help to reduce inflammation. Deluca explains that the thought process is directly tied to the emotional response. "When someone has happier thoughts, their emotional response tends to be more positive," he says. "Negative thoughts may trigger fear, anxiety, or anger, which then influence one's physiological response. Fear can cause a rise in cortisol and can trigger an insulin reaction, kicking in a fight-or-flight response."

Everyone must deal with emotional stress. "However, when it becomes excessive, it can be detrimental not only to one's emotional well-being, but also to physical well-being, due to its impact on systemic inflammation as a significant trigger," Deluca says. "Therefore, it's important to remember that persistent negative thinking can propagate a persistent inflammatory response in the body."

Teitelbaum advises using reassuring words as part of the art of medicine to help calm the person you're treating. This also calms the immune system.

Many people practice meditation for their overall health and well-being. "Physical exercise can be used to downregulate the inflammatory component associated with the disease state due to its role in changing insulin, insulin-related pathways, inflammation and, possibly, immunity," Deluca says.

Seaman adds, "Nothing trumps the power of lifestyle modifications, meaning that if the inflammation


is chronic and caused by lifestyle behaviors, then your focus should be on reducing those factors if at all possible."

"Thinking that calms and organizes the mind and promotes better sleep is anti-inflammatory, as both stress and lack of sleep are perceived by the body as physiologically injurious events, resulting in inflammatory activity," Seaman says.

If you have normal CRP and then only sleep four hours a night for a week or more, your CRP levels will elevate.<sup>3</sup> CRP levels will also rise if you have chronic stress, overeat or live a sedentary life.

"You cannot really do things to substantially reduce inflammation while the drivers of inflammation are present," Seaman says. "You have to assess the markers and replace the drivers of inflammation."

### Final thoughts

A patient struggling with inflammatory issues usually feels pain or discomfort, as if the body is on fire or in flames. Once a patient detoxes, eats an anti-inflammatory diet, exercises, meditates, and adopts needed lifestyle adjustments, he or she will feel better, which is the best way to tell that the flames have been put out, Deluca says. If you use CRP as a measurement, anything below 3.0 mg/L is considered normal. 



**KAREN APPOLD** is a medical writer in Pennsylvania. She can be contacted at 610-812-3040, [kappold@msn.com](mailto:kappold@msn.com), or through [writenowservices.com](http://writenowservices.com).

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