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Take Control of Your Health

Top Anti-Inflammatory Foods and Supplements

Analysis by Dr. Joseph Mercola ✔ Fact Checked | August 13, 2022

STORY AT-A-GLANCE

- Chronic inflammation is a hallmark of virtually all disease, including cancer, obesity and heart disease. Your diet plays a significant if not primary role as it can either trigger or prevent inflammation
- Leafy greens, berries and mushrooms are potent anti-inflammatory foods. People with autoimmune diseases may want to limit vegetables high in lectins, though, as they may cause more problems than they solve
- Traditionally fermented and cultured foods are anti-inflammatory staples that work their "magic" by optimizing your gut flora. Examples include kefir, yogurt, natto, kimchee, miso, tempeh, pickles, sauerkraut, olives and other fermented vegetables
- Marine-based omega-3 fats found in fatty cold-water fish that are low in environmental toxins are important anti-inflammatories that are particularly crucial for brain and heart health
- Other anti-inflammatory foods and supplements include green tea, spices such as cloves, ginger, rosemary and turmeric, herbal remedies such as white willow bark, maritime pine bark and Cat's claw, and supplements such as resveratrol, curcumin, capsaicin, vitamin D, zinc and SAM-e

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Chronic inflammation is a hallmark of virtually all disease, including cancer, obesity and heart disease. While inflammation is a perfectly normal and beneficial process that occurs when your body's white blood cells and chemicals protect you from foreign invaders like bacteria and viruses, it leads to trouble when the inflammatory response gets out of hand and continues indefinitely.

Your diet plays a significant if not primary role in this chain of events and is the perfect place to start to address it. Certain nutritional supplements can also be helpful as add-ons.

Below, I'll review some of the foods, spices and supplements known for their anti-inflammatory power (and the foods known for their inflammatory effects). If you struggle with any chronic health condition, chances are you have inflammation in your body, and would be wise to take a cold hard look at what you're putting into it.

Anti-Inflammatory Food Basics

A key part of an anti-inflammatory diet involves excluding refined vegetable oils, as they are clearly one of the most pernicious and pervasive poisons in the food supply. Simply avoiding all processed foods and most restaurant foods will go a long way toward helping you avoid them.

One of the simplest yet perhaps most impactful dietary changes you can make is to eliminate seed oils from your diet. Omega-6 linoleic acid (LA) is, I believe, a primary contributor to nearly all chronic diseases, because when consumed in excessive amounts, LA acts as a metabolic poison that radically limits mitochondrial function and your ability to produce cellular energy.

Industrial seed oils or vegetable oils are a primary source of LA, but even food sources hailed for their health benefits contain it, such as olive oil and conventionally raised chicken and pork, both of which are fed LA-rich grains.

As for anti-inflammatory foods to eat more of, vegetables are a key staple. Dark leafy greens such as kale, collard greens and Swiss chard contain powerful antioxidants,

flavonoids, carotenoids and vitamin C that can help protect against cellular damage. Ideally, opt for organic locally grown veggies that are in season, and consider eating a fair amount of them raw.

Juicing is an excellent way to get more greens into your diet. There's a caveat, though. If you struggle with autoimmune disease or have significant inflammation in your body, consider limiting vegetables with high lectin content, as the lectins may pose a problem.

Among the most problematic lectin-containing foods are beans, grains, legumes and members of the nightshade family like eggplants, potatoes and peppers. High-lectin foods can be made safer to eat through proper soaking and cooking, as well as fermenting and sprouting. Using a pressure cooker is particularly beneficial for beans.

Oxalates are another plant component that can cause problems, as they not only will increase inflammation but will worsen your mitochondrial function. Those prone to oxalate kidney stones typically need to be on an oxalate-free diet as well. Foods high in oxalates include potatoes (white and sweet), almonds, seeds, dark chocolate, beets, beans and many others.

On the other hand, raw berries — especially blueberries — are an anti-inflammatory basic, as most tend to be low in fructose while rating high in antioxidant capacity compared to other fruits and vegetables.

The same goes for mushrooms, which are commonly overlooked. **Shiitake mushrooms**, for example, contain ergothioneine, which inhibits oxidative stress. Mushrooms also contain a number of unique nutrients that you may not get enough of in your diet.

One of those nutrients is copper, which is one of the few metallic elements accompanied by amino and fatty acids that are essential to human health. Since your body can't synthesize copper, your diet must supply it regularly. Copper deficiency can be a factor in the development of coronary heart disease.

Another excellent anti-inflammatory mushroom is the Reishi, which contains ganoderic acid, a terpene that induces apoptosis (programmed cell death of damaged cells) and

enhances the immune system.

Fermented and Cultured Foods

Traditionally fermented and cultured foods are other anti-inflammatory staples that work their "magic" by optimizing your gut flora. A majority of inflammatory diseases start in your gut as the result of an imbalanced microbiome.

Fermented foods such as kefir, natto, kimchee, miso, tempeh, pickles, sauerkraut, olives and other fermented vegetables will help reseed your gut with beneficial bacteria. Ideally, you'll want to eat a wide variety of them as each contains a different set of beneficial bacteria (probiotics).

Fermented foods can also help your body rid itself of harmful toxins. Kimchi, for example, has been shown to break down pesticides that promote inflammation. As reported in a study[1] in the Journal of Agricultural Food Chemistry, the organophosphate insecticide chlorpyrifos degraded rapidly during kimchi fermentation and was 83.3% degraded by Day 3. By Day 9, it was degraded completely.

If you don't like fermented vegetables, consider yogurt made from raw organic milk from grass fed cows. Yogurt has been shown to reduce inflammation by improving the integrity of your intestinal lining, thereby preventing toxins in your gut from crossing into your bloodstream.

Other Potent Anti-Inflammatory Foods

Marine-based omega-3 fats found in fatty cold-water fish that are low in environmental toxins — such as wild Alaskan salmon, sardines and anchovies — are also important anti-inflammatories[2] and are particularly important for brain and heart health. In fact, your omega-3 level is a powerful predictor of mortality.

If you don't enjoy these types of fish, you could consider using krill oil instead. Research published in the Scandinavian Journal of Gastroenterology[3] in 2012 confirmed that

dietary supplementation with krill oil effectively reduced inflammation and oxidative stress.

As with vitamin D, it's advisable to check your omega-3 index on a regular basis to ensure optimization. Ideally, you'll want to maintain an omega-3 index of 8%. (GrassrootsHealth offers a convenient, cost-effective test[4] to measure both your vitamin D and omega-3 levels.)

Many teas also offer anti-inflammatory benefits that can be enjoyed by most. Matcha tea is the most nutrient-rich green tea[5] and comes in the form of a stone-ground unfermented powder. The best Matcha comes from Japan.

It's an excellent source of antioxidants, especially epigallocatechin gallate[6] (EGCG), a catechin with anti-inflammatory activity.[7] Tulsi is another tea loaded with anti-inflammatory antioxidants and other micronutrients that help protect against damage caused by chemical pollutants, heavy metals and physical stress.[8]

Anti-Inflammatory Herbs and Spices

Ounce for ounce, herbs and spices are among the most potent anti-inflammatory ingredients available and making sure you're eating a wide variety of them on a regular basis can go a long way toward preventing chronic illness.

According to a novel study[9] in the Journal of the American College of Nutrition, published in 2012, "cloves, ginger, rosemary and turmeric were able to significantly reduce oxidized LDL-induced expression of TNF-α" or tumor necrosis factor, a cytokine involved in systemic inflammation.

Ginger lowered three different inflammatory biomarkers, suggesting its superior anti-inflammatory action, but rosemary and turmeric also "showed protective capacity by both oxidative protection and inflammation measures."

The interesting thing about this study is that they used "real world" dosages, meaning amounts you would normally use in your daily cooking, not megadoses you might find in

a concentrated supplement. For example, those in the oregano group ate just half a teaspoon of oregano daily for seven days.

Garlic is another kitchen staple that has been treasured for its medicinal properties for centuries. Garlic exerts its benefits on multiple levels, offering antibacterial, antiviral, antifungal and antioxidant properties. Most recently, a 2019 review and meta-analysis[10] concluded garlic effectively lowered several inflammatory biomarkers, including C-reactive protein, TNF-α and interleukin-6.

It's thought that much of garlic's therapeutic effect comes from its sulfur-containing compounds, such as allicin. Research[11] has revealed that as allicin digests in your body it produces sulfenic acid, a compound that reacts faster with dangerous free radicals than any other known compound.

An earlier study published in the Journal of Medicinal Foods[12] found a direct correlation between the antioxidant phenol content of spice and herb extracts and their ability to inhibit glycation and block the formation of AGE compounds (advanced glycation end products), making them potent preventers of heart disease and premature aging.

Here, cloves were ranked as the most potent of 24 common herbs and spices found in your spice rack. The following were found to be the top 10 most potent anti-inflammatory herbs and spices:

Cloves	Cinnamon
Jamaican allspice	Apple pie spice mixture
Oregano	Pumpkin pie spice mixture
Marjoram	Sage
Thyme	Gourmet Italian spice

Curcumin — A Powerful Anti-Inflammatory With Poor Absorption

Curcumin, the active ingredient in turmeric, also has a solid foundation in science with numerous studies vouching for its anti-inflammatory effects.[13] As noted in a 2017 review in the journal Foods:[14]

> *"[Curcumin] aids in the management of oxidative and inflammatory conditions, metabolic syndrome, arthritis, anxiety, and hyperlipidemia. It may also help in the management of exercise-induced inflammation and muscle soreness, thus enhancing recovery and performance in active people.*
>
> *In addition, a relatively low dose of the complex can provide health benefits for people that do not have diagnosed health conditions. Most of these benefits can be attributed to its antioxidant and anti-inflammatory effects."*

A drawback of turmeric is its poor absorbability and rapid elimination. As noted in this Foods review, taken by itself turmeric typically does not impart the health benefits with which this spice is associated.

Certain components or additives can significantly boost its bioavailability though. One is piperine, the active ingredient in black pepper, which has been shown to increase the bioavailability of curcumin by 2,000%.[15] This is why you'll typically find piperine as an ingredient in most curcumin supplements. A typical dosage of a standardized curcumin supplement is 400 to 600 milligrams three times a day.[16]

Anti-Inflammatory Ingredients Can Provide Natural Pain Relief

Another interesting paper in the journal Surgical Neurology International, "Natural Anti-Inflammatory Agents for Pain Relief," highlights several foods and spices already mentioned, specifically omega-3, green tea and turmeric. In addition to those, it also discusses the anti-inflammatory potential of:[17]

- White willow bark

- Maritime pine bark (pycnogenol)
- Resveratrol
- Cat's claw (Uncaria tomentosa)
- Chili pepper (capsaicin)

Interestingly, a 2013 animal study[18] found capsaicin "produced anti-inflammatory effects that were comparable to diclofenac," a nonsteroidal anti-inflammatory drug commonly prescribed to patients with mild to moderate arthritis.[19]

Frankincense

The Surgical Neurology International paper[20] also addresses the use of Frankincense extract (Boswellia serrata resin), noting it "possesses anti-inflammatory, anti-arthritic, and analgesic properties" and is an inhibitor of leukotriene biosynthesis.

As such, it's valuable in the treatment of inflammatory diseases driven by leukotrienes,[21] such as degenerative and inflammatory joint disorders. According to this paper, Frankincense:

> *"… reduces the total white blood cell count in joint fluid, and it also inhibits leukocyte elastase, which is released in rheumatoid arthritis. In one recent study, a statistically significant improvement in arthritis of the knee was shown after 8 weeks of treatment with 333 mg B. serrata extract taken three times a day …*
>
> *A combination of Boswellia and curcumin showed superior efficacy and tolerability compared with nonsteroidal diclofenac for treating active osteoarthritis. Boswellia typically is given as an extract standardized to contain 30-40% boswellic acids (300-500 mg two or three times/day)."*

An earlier study[22] published in Scientific Reports in 2015 confirmed Frankincense and myrrh are both capable of suppressing inflammation by inhibiting the expression of inflammatory cytokines.

The Importance of Vitamin D

Some anti-inflammatory supplements have already been mentioned, such as curcumin, Cat's claw, Frankincense and capsaicin. Other supplements with well-documented anti-inflammatory effects include vitamin D, S-adenosylmethionine (SAM-e) and zinc. As reported by Science Daily, vitamin D inhibits inflammation by reducing inflammatory proteins:[23]

> *"... [R]esearchers examined the specific mechanisms by which vitamin D might act on immune and inflammatory pathways.[24] They incubated human white blood cells with varying levels of vitamin D, then exposed them to lipopolysaccharide (LPS), a molecule associated with bacterial cell walls that is known to promote intense inflammatory responses.*
>
> *Cells incubated with no vitamin D and in solution containing 15 ng/ml of vitamin D produced high levels of cytokines IL-6 and TNF-alpha, major actors in the inflammatory response. Cells incubated in 30 ng/ml vitamin D and above showed significantly reduced response to the LPS. The highest levels of inflammatory inhibition occurred at 50 ng/ml.*
>
> *Through a complex series of experiments, the researchers identified a new location where the vitamin-D receptor appears to bind directly to DNA and activate a gene known as MKP-1. MKP-1 interferes with the inflammatory cascade triggered by LPS, which includes a molecule known as p38, and results in higher levels of IL-6 and TNF-alpha.*
>
> *'This newly identified DNA-binding site for the vitamin-D receptor, and the specific pathways inhibited by higher levels of vitamin D provide a plausible mechanism for many of the benefits that have been associated with vitamin D,' said Dr. Goleva.*
>
> *'The fact that we showed a dose-dependent and varying response to levels commonly found in humans also adds weight to the argument for vitamin D's role in immune and inflammatory conditions.'"*

While I strongly recommend getting your vitamin D from sensible sun exposure, if you cannot maintain a protective level of 60 to 80 ng/ml year-round, a vitamin D3 supplement would be prudent, considering its importance for your overall health.

Zinc and SAM-e

Zinc is a commonly overlooked antioxidant, but research shows it's a potent anti-inflammatory. According to a 2014 review article[25] in the journal Frontiers in Nutrition:

> *"Zinc supplementation trials in the elderly showed that the incidence of infections was decreased by approximately 66% in the zinc group. Zinc supplementation also decreased oxidative stress biomarkers and decreased inflammatory cytokines in the elderly.*
>
> *In our studies in the experimental model of zinc deficiency in humans, we showed that zinc deficiency per se increased the generation of IL-1β and its mRNA in human mononuclear cells following LPS stimulation.*
>
> *Zinc supplementation upregulated A20, a zinc transcription factor, which inhibited the activation of NF-κB, resulting in decreased generation of inflammatory cytokines."*

Similarly, SAM-e is commonly recommended for patients with osteoarthritis,[26] as it has both anti-inflammatory and analgesic (pain relieving) properties. According to Arthritis.org,[27] "Results may be felt in just one week but could take more than a month."

Inflammatory Foods to Avoid

Last but not least, it's important to realize that dietary components can either trigger or prevent inflammation from taking root in your body, so avoiding inflammatory foods is just as important, if not more so, as eating anti-inflammatory ones.

As a group, processed foods of all kinds tend to be pro-inflammatory, thanks to ingredients like high fructose corn syrup, soy, processed vegetable oils (trans fats) and chemical additives. So, in addition to adding anti-inflammatory foods, herbs, spices and supplements (if needed) to your diet, you'll also want to avoid the following as much as possible:

- Refined sugar, processed fructose and grains — If your fasting insulin level is 3 or above, consider dramatically reducing or eliminating grains and sugars until you optimize your insulin level, as insulin resistance is a primary driver of chronic inflammation.

  As a general guideline, I recommend restricting your total fructose intake to 25 grams per day. If you're insulin or leptin resistant (have high blood pressure, high cholesterol, heart disease or are overweight), consider cutting that down to 15 grams per day until your insulin/leptin resistance has normalized

- Oxidized cholesterol — Cholesterol that has gone rancid, such as that from overcooked, scrambled eggs

- Processed meats

- Industrial vegetable and seed oils (a source of oxidized omega-6 fats) such as peanut, corn and soy oil

- Foods cooked at high temperatures, especially if cooked with vegetable oil

Replacing processed foods with whole, ideally organic foods will automatically address most of these factors, especially if you eat a large portion of your food raw. Equally important is making sure you're regularly reseeding your gut with beneficial bacteria, as mentioned above.

To help you get started on a healthier diet, I suggest following my free **Optimized Nutrition Plan**, which starts at the beginner phase and systematically guides you step-by-step to the advanced level.

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