

PREVENTING AND MANAGING INFLAMMATION THROUGH NUTRITION



Chances are that, at one time in your life, you've experienced the effects that inflammation can have on the body.

Inflammation has a bad reputation but it can actually be a healthy response to challenges your body faces, such as infection, illness or injury. Acute inflammation, for example, is a normal, protective response to injury.

However, inflammation can become your enemy if it's causing your body to overreact to stressors, creating a chronic, continuing natural inflammation response. Your lifestyle habits, including diet, nutrition, and exercise, can all affect the way your body addresses these challenges.

The idea of using an "anti-inflammatory" medication, such as a non-steroidal anti-inflammatory medication (NSAID) to address inflammation, has begun to lose favor, because if inflammation is artificially interrupted or blocked, healing is also blocked.

By contrast, nutrients like essential fatty acids are not necessarily anti- or pro-inflammatory; instead, they modulate inflammation on a case-by-case basis, up- or down-regulating the production of pro-inflammatory mediators. This balances inflammatory processes so that healing can occur without undue damage to surrounding tissues.

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Essential Fatty Acids and the Inflammation Balancing Act

Omega-3 and omega-6 fatty acids have been front and center in nutrition news for many years now because of their relationship with cardiovascular health. But their role in modulating all types of inflammation in the body makes these fats even more important for healthy diets and lifestyles.

Omega-3s and omega-6s work together to modulate inflammation with a system of checks-and-balances built into place. When the diet provides a good balance of high-quality omega-3 and omega-6 fatty acids, this system works well to perpetuate inflammation when necessary and to quell and resolve the inflammatory cascade when the threat is over.

Most Western diets have an overabundance of omega-6 fatty acids and include insufficient amounts of omega-3s. High omega-6 and low omega-3 intake can throw off the balance, resulting in continuously low levels of chronic inflammation.

Enriching Your Diet with Omega-3s and Omega-6s

The most bioavailable source of omega-3 fatty acids are oils from fatty fish, especially sardines, anchovies, tuna, mackerel, and salmon. A nutrient is “bioavailable” or “bioactive” when it is in a form where it can provide health benefits in the human body. Nut and seed oils are also rich in omega-3 fatty acids, though their conversion to DHA and EPA may not be as efficient as those from fish. Omega-6 fatty acids tend to be more plentiful in many people’s diet, which can also affect how well omega-3 fatty acids convert to EPA and DHA.

Omega-3 fatty acid foods

- Fish and seafood
- Flaxseed oil and flax seeds
- Walnuts
- Chia seeds
- Hemp seed oil and seeds

Omega-6 fatty acids foods

- Liver and organ meats
- Poultry and red meat
- Fish and seafood
- Egg yolk
- Butter
- Avocado
- Flax seed oil and flax seeds
- Hemp seed oil and hemp seeds
- Pumpkin and sunflower seeds
- Nuts
- Borage oil
- Black currant seed oil
- Evening primrose oils
- Other oils, such as corn, safflower, and soybean oils

Supporting the Endocannabinoid System

The term “hemp” describes the fiber and seeds taken from the *Cannabis sativa* L. plant species. Hemp has long been used in food, fiber, and medicine production ever since it originated from Central Asia. Hemp is rich with essential nutrients and bioactive phytochemical metabolites that nurture the endocannabinoid system, a rather unknown system of the body with a heavy influence on human health and well-being.

Hemp contains beneficial amounts of bioactive phytochemical metabolites and essential polyunsaturated fatty acids (PUFAs), which promote brain and overarching systemic health, aligning physiological balance in the human body. There are two major types of PUFAs:

- Omega-3s (ALA, EPA, DHA)
- Omega-6s (LA, AA)

Along with natural antioxidants and fiber obtained via phytonutrients and other parts of a healthy, whole-food diet, hemp can support healthy inflammation.

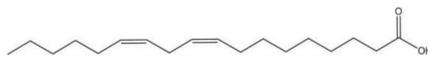
ESSENTIAL FATTY ACIDS: What are they?

Both omega-3 and omega-6 fatty acids are long-chain polyunsaturated fatty acids, both 18 carbons long with two double bonds.

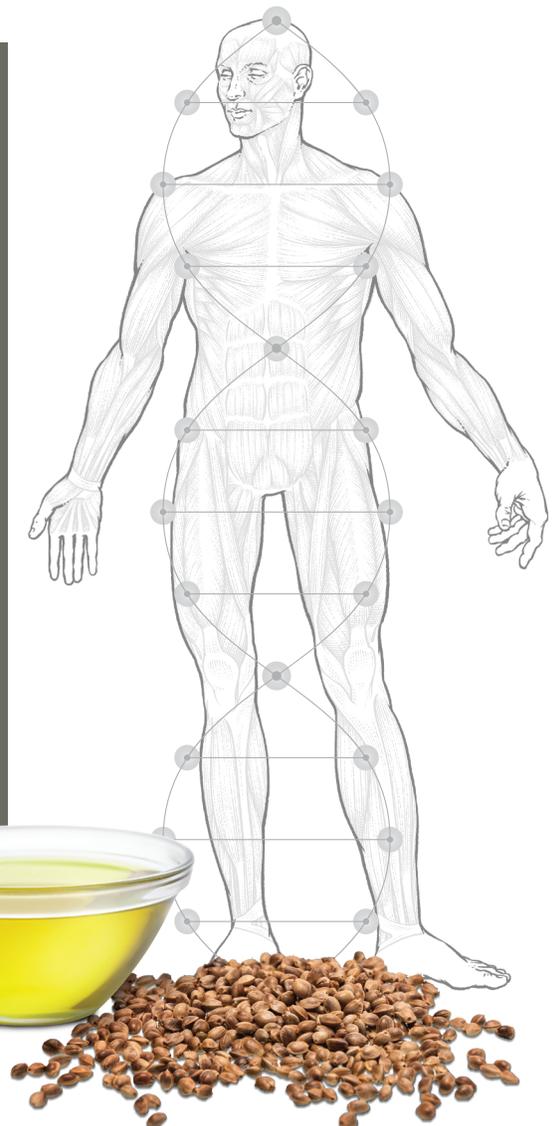
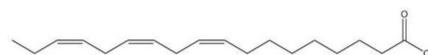
They are considered “essential” because they are necessary for health and cannot be synthesized by humans (or in any mammals, for that matter) from other fatty acids. Therefore, they must be consumed in the diet.¹

Omega-3 fatty acids include alpha-linolenic acid (ALA) and its metabolites, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Omega-6 fatty acids include linoleic acid (LA) and its most notable metabolites, gamma-linolenic acid (GLA) and arachidonic acid (AA).

Linoleic Acid (LA):
Omega-6 Fatty Acid



Alpha-Linolenic Acid (ALA):
Omega-3 Fatty Acid



¹ Bazinet, RP and Chu, MWA. Omega-6 polyunsaturated fatty acids: Is a broad cholesterol-lowering health claim appropriate? CMAJ. 2014; 186(6): 434–439.

Botanicals for Inflammation

Herbs can also have a useful role in the management of inflammation and inflammation-generated pain. However, the selection of anti-inflammatory herbs needs to be appropriate to the condition under treatment. Ask your physician which herbs may be right for you.

Adaptogens

“Adaptogens” are a diverse group of herbs that restore overall balance and functioning of the body as a whole through normalizing unbalanced physiological processes: stimulation, relaxation, and improving focus and immune function^{2,3}. These herbs have been shown to clinically reduce self-reported stress, improve mood and energy, and strengthen the immune system. Adaptogens are often particularly helpful in stress-related conditions due to their shielding effects on the brain, immune system, and cardiopulmonary systems. Some, such as ginseng, ashwagandha, and rhodiola, are specifically neuroprotective by blunting the impact of cortisol within the central nervous system by reducing neuroinflammation and even encouraging repair.

Astragalus (Astragalus membranaceus)	Enhances mental and physical performance, learning ability, stress, fatigue, resistance to cancer and diabetes, immune function, chemoprotective, increase oxygen to tissues
Ashwagandha (Indian ginseng, Poison gooseberry, Winter cherry)	Strengthen immunity to colds and infections, improve physical and athletic ability, increase vitality, male fertility and libido, regulate blood sugar, antioxidant, antibiotic, anti-inflammatory, rejuvenating, astringent, anti-anxiety, anti-tumor, diuretic, insomnia, reduce cholesterol, arthritis, tuberculosis, asthma, leukoderma, bronchitis, backache, fibromyalgia, menstrual problems, hiccups, chronic liver disease, balances cortisol, supports HPA axis, boosts thyroid hormones
Bacopa (Bacopa monniera)	Cognitive function, concentration, fatigue, antioxidant, anxiety, epilepsy
Chaga mushroom	Strongest anti-cancer mushroom with an epochal effect in breast, liver, uterine and gastric cancer, hypertension, diabetes, tuberculosis (TB) of the bones, strengthen immune system, anti-inflammatory, anti-ulcer, anti-tumor, DNA Repair, anti-mutagenic
Cordyceps (Cordyceps sinensis)	Immunosuppressive, anti-aging, antioxidant, decreases pro-inflammatory monoamine oxidase and lipid peroxidation activity, liver and lung protection (increase oxygenation), asthma, bronchitis, chemoprotective, anti-cancer, chronic renal failure, atherosclerosis, antiarrhythmic effects
Eleuthero root or Siberian ginseng (Eleutherococcus senticosus)	Invigorate qi (chi or energy) or endurance, strengthen immune system, memory, chemoprotective, DNA repair, anti-inflammatory, normalize body function, particularly kidney, spleen and heart meridians, radiological protection, anti-cholesterolemic, antioxidant, angina, headache, insomnia, poor appetite, stress, fatigue, HPA-axis dysfunction
Glycyrrhiza Glabra (Licorice)	Adrenal stress, expectorant, phytoestrogen effects, food sweetener, reduces cholesterol manufacturing, antiviral
Holy basil (Tulsi, Ocimum tenuiflorum or Ocimum sanctum)	Enhance body's natural response to physical and emotional stress, reduce bloating and gas, antioxidant, support healthy adrenal function, cortisol release and immunity, radiation protection, lipid balance, blood sugar regulation, anti-inflammatory (COX-2 inhibitor), cancer prevention, slow age-related memory impairment, lower cholesterol
L-theanine	Found in green tea, induces relaxation through increased dopamine and serotonin, and improves sleep quality
Mastic (Pistacia lentiscus)	Adrenal stress, expectorant, food sweetener, H.pylori infections, oral health/cancer, phytoestrogen effects
Mucuna pruriens (Cowhage, Velvet bean)	Lower stress as a source of L-DOPA the precursor for dopamine, neuroprotective, Parkinson's disease, antioxidant, blood sugar, weight loss, metabolic syndrome, male infertility
Muira puama (Ptychopetalum olacoides)	Neuroprotective, stress, libido, depression, mood
Panax ginseng	Mood, cognition, immunity, antifatigue, protection against mental, physical and environmental stress
Phosphatidylserine (PS)	Decrease symptoms of mild depression in mood disorders
Relora Plus	Proprietary blend of plant extracts from Magnolia officianalis, Phellodendron amurense, and B-vitamins that normalizes cortisol levels, stress-related eating, decreases weight gain, and anxiety
Rosa Majalis	Anti-cancer, anti-oxidant, source for Vitamins A,C,E
Reishi or Lingzhi (Ganoderma lucidum)	Mental, physical performance, learning, decrease stress and fatigue), blood pressure stabilizer, antioxidant, analgesic, kidney and nerve tonic, strengthen immune system, anti-inflammatory, anti-viral, anti-tumor, anti-parasitic, liver protectant, blood glucose regulation, chemoprotective
Rhaponticum	Strength or endurance or reduce fatigue, impotence or aphrodisiac
Rhodiola rosea (Golden root, Roseroot, Western roseroot, Aaron's rod, Arctic root, King's crown, Lignum Rhodium, Orpin Rose)	Adaptogen, strength or endurance, reduce fatigue, mental and physical performance, decrease recovery time, antioxidant, learning, adrenal stress, depression, improve immunity, sleep patterns, mood stability, and motivation, resistance to cancer, type 2 diabetes, cardio-protective
Schisandra or Magnolia vine	Antioxidant, infection-resistant, increase skin health, liver protectant, stress/fatigue, enhance mental and physical performance, learning, adaptogen, improve resistance to cancer and diabetes, improve immune function, chemoprotective
Shiitake (Lentinus edodes)	Enhances mental and physical performance, increases learning ability, and decreases stress and fatigue, may improve resistance to cancer and diabetes, immune function, antiviral, chemoprotective
Tongkat Ali (Eurycoma longifolia)	Stress and cortisol balance, energy/fatigue, weight loss, erectile dysfunction, testosterone balance, infertility, athletic performance, antioxidant, anti-inflammatory
Valerian (Valeriana officianalis)	Insomnia, anxiety, sedation, stress/sleep disorders

² Guilliams and Edwards (2010). Chronic Stress and the HPA Axis: Clinical Assessment and Therapeutic Considerations. Point Institute.

³ Guilliams T. The Role of Chronic Stress and the HPA Axis in Chronic Disease Management. 2015. Point Institute.



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Nervines Tonics

Nervines are a class of botanicals that reduce sympathetic overdrive, anxiety, and irritability by sedating the autonomic nervous system and inducing a sense of calm or relaxation^{2,3}. They can be used during the day to blunt a hyperaroused state, or in the evening for sleep induction.

Avena sativa (Oats)	Antidepressant, anxiolytic, nervous system tonic & trophorestorative, nutritional, hypolipidemic (as food), cardiogenic, demulcent, emollient, vulnerary, antispasmodic
Bacopa monniera (Brahmi)	Cognition & memory enhancer, nerve and brain tonic, mild anti-convulsant, antioxidant, anti-inflammatory, cardiogenic, vasoconstrictor, bitter, emetic, laxative & diuretic (leaf), aphrodisiac
Borago officinalis (Borage) Leaf	Diuretic, demulcent, emollient, refrigerant, adrenal restorative, galactagogue, expectorant. Oil: inflammatory modulating, anti-atherosclerotic, anti-platelet, hypolipidemic, atopic dermatitis, dysmenorrhea, PMS, cyclic mastalgia, hypertension and diabetic neuropathy.
Centella asiatica (Gotu kola)	Strengthens nervous system, function, memory, relaxant, detoxifier, diuretic, topical antibiotic, peripheral vasodilator, anti-rheumatic, vulnerary, venotonic, keratolytic, anti-mycobacterial, bitter, digestive, anti-inflammatory, laxative, dermatological builder, connective tissue builder, cellulite, cirrhosis of the liver, keloids and hypertrophic scars, leprosy, scleroderma, varicose veins and venous insufficiency, and wound repair.
Hypericum perforatum (St. John's wort)	Anti-depressant, anti-inflammatory, antimicrobial, astringent, nervine tonic, topical wound healing (burns)
Verbena officinalis (Blue vervain)	Digestive tonic that increases intestinal motility, parasympathomimetic, anti-spasmodic, mild analgesic, nervous system tonic, hepatic stimulant, depression, melancholy
Vinca major/minor (Periwinkle)	Astringent, cerebral circulatory stimulant, cytotoxic
Lavendula off. (Lavender)	Carminative, nervous system relaxant, sedative, antispasmodic, anti-depressant, anti-septic, aromatic, uterine stimulant, emmenagogue, diuretic, hypotensive, anti-rheumatic
Humulus lupulus (Hops)	Sedative, hypnotic, diuretic, analgesic, topical antibacterial, astringent, antispasmodic, premature ejaculation, restlessness, nervous tension, headache, indigestion, restless leg syndrome, anxiety, phytoestrogen (PMS or menopause-related hormonal imbalances)
Melissa off. (Lemon Balm)	Nervous system tonic and relaxant, carminative, sedative, diaphoretic, antidepressant, anti-viral, anti-microbial, hyperthyroidism choleric, antispasmodic, anti-histamine, mild analgesic, cardiogenic, hepatic, gout, herpes, rheumatism, neuralgias
Matricaria recutita (Chamomile)	Nervous system sedative, antispasmodic, analgesic, anti-inflammatory, antiseptic, carminative, anti-microbial, anti-allergic, anti-uler, wound healing, neuralgia, rheumatic and muscular pains
Stachys officinalis (Betony)	Sedative, mild diuretic, carminative, aromatic, skeletal muscle relaxant, astringent, alterative, circulatory tonic
Scutellaria laterifolia (Skullcap)	Sedative, nervous system relaxant, antispasmodic, anticonvulsant, hypotensive
Passiflora incarnata (Passionflower)	Antispasmodic, sedative, hypnotic, vasodilator, cardiogenic, analgesic, anxiolytic, relaxant, diuretic, anti-depressant, insomnia
Tilia europa (Lime flower, Linden tree)	Anxiolytic, hypotensive, sedative, diaphoretic, anti-spasmodic, diuretic, emollient, immunomodulator, anti-inflammatory, expectorant, anti-coagulant, mild astringent, peripheral vasodilator
Lactuca virosa (Wild Lettuce)	Nervous system relaxant, sedative, analgesic, hypnotic, narcotic, antispasmodic, whooping cough, rheumatism, aphrodisiac
Piper methysticum (Kava-kava)	Sedative, nervous system, anticonvulsant, local anesthetic, analgesic, anti-fungal, anti-spasmodic, stimulant, anti-depressant, muscle relaxant, euphoric, anti-inflammatory, diaphoretic, carminative, diuretic, interstitial cystitis, restless leg syndrome, anxiety, cognition

² Guillems and Edwards (2010). Chronic Stress and the HPA Axis: Clinical Assessment and Therapeutic Considerations. Point Institute.

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