



THERAPY DESCRIPTIONS

ANTI-INFLAMMATORY SUPPLEMENTS

Berberine

Berberine appears to activate AMP-activated protein kinase, which can help regulate how the body uses blood sugar. Researchers believe this activation can help treat diabetes and related health issues, such as obesity and high cholesterol. Many studies show that berberine can significantly lower blood sugar levels in people with type 2 diabetes.

It seems to work via multiple mechanisms and may help:

- decrease insulin resistance, making the blood sugar-lowering hormone insulin more effective
- increase glycolysis, helping your body break down sugars inside cells
- decrease sugar production in your liver
- slow the breakdown of carbohydrates in your gut
- increase the number of beneficial bacteria in your gut

In a 2008 study of 116 people with diabetes, taking 1 gram of berberine per day lowered fasting blood sugar by 20%.

It also lowered hemoglobin A1c (HbA1c), a marker of long-term blood sugar regulation, by 12% and improved levels of blood lipids such as cholesterol and triglycerides.

It works very well in combination with lifestyle changes and has additive effects when used with other blood sugar-lowering drugs.

Berberine may also be effective as a weight loss supplement.

- decrease total cholesterol
- decrease LDL (bad) cholesterol
- decrease blood triglycerides
- increase HDL (good) cholesterol

It has also been shown to lower apolipoprotein B by 13–15% in some older studies, which is an important risk factor for heart disease.

According to some research, berberine works by inhibiting an enzyme called PCSK9. This leads to more LDL cholesterol being removed from your bloodstream.

Diabetes, high blood sugar levels, and obesity are also major risk factors for heart disease, and this supplement seems to help improve all these conditions.

Given the beneficial effects on all these risk factors, it seems likely that berberine could reduce the risk of heart disease, though more research is needed.



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Bromelain

Bromelain Bromelain is a group of enzymes found in the fruit and stem of the pineapple plant. Pineapple is native to the Americas but is now grown throughout the world in tropical and subtropical regions. Historically, natives of Central and South America used pineapple for a variety of ailments, such as digestive disorders. Bromelain is promoted as a dietary supplement for reducing pain and swelling, especially of the nose and sinuses, gums, and other body parts after surgery or injury. It is also promoted for osteoarthritis, cancer, digestive problems, and muscle soreness. Topical bromelain is promoted for burns. Few side effects of bromelain have been reported in studies.

The most commonly reported side effects have been stomach upset and diarrhea. Allergic reactions may occur in individuals who are sensitive or allergic to pineapples or who have other allergies. Little is known about whether it's safe to use bromelain during pregnancy or while breastfeeding. Bromelain may interact with some medicines, such as the antibiotic amoxicillin. If you take medicine, talk to your health care provider before taking bromelain.

C:15 Fatty Acid

C15:0 has been shown to repair mitochondrial function, improve the stability of red blood cells, regulate glucose metabolism, and decrease proliferation of cancer cells [26–29]. These pleiotropic cell-based activities likely explain C15:0's clinically relevant benefits that have been observed in vivo. Mounting evidence shows that Pentadecanoic acid, or C15:0, an essential fatty acid, is as beneficial as anti-aging drug rapamycin, including sharing anti-inflammatory, anticancer, antifibrotic and antimicrobial activities.

COQ10

Several clinical studies suggest that CoQ10 supplements help reduce swelling in the legs; reduce fluid in the lungs, making breathing easier; and increase exercise capacity in people with heart failure.

Coenzyme Q10 (CoQ10) has been linked to improved aging, exercise performance, heart health, diabetes, fertility and migraines. It may also counteract adverse effects of statin medications. Typically, 90–200 mg of CoQ10 per day are recommended, though some conditions may require higher dosages of 300–600mg.

Curcumin

Curcumin has received worldwide attention for its multiple health benefits, which appear to act primarily through its antioxidant and anti-inflammatory mechanisms. These benefits are best achieved when curcumin is combined with agents such as piperine, which increase its bioavailability significantly. Research suggests that curcumin can help 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 subsequent performance in active people. Curcumin has a long-established safety record.

Some have experienced diarrhea, headache, rash, and yellow stool, and an increase in serum alkaline phosphatase and lactate dehydrogenase contents.

Ellagic Acid

Ellagic Acid is a powerful polyphenol that has been associated with a long list of impressive health benefits. Some studies have shown that ellagic acid may decrease cancer cell growth, alleviate inflammation, and protect brain function. Some animal and human studies suggest that it may also be useful for the treatment and prevention of conditions like type 2 diabetes, cancer, and brain diseases like Alzheimer's.

Ellagic acid may inhibit cytochrome P450s, a group of enzymes involved in the metabolism of many types of medications. As such, if you're taking any medications that are metabolized by these enzymes, which includes many types of statins, antipsychotics, and blood thinners, you should talk with your doctor before using ellagic acid supplements.



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Glycine

Improved Mood and Memory. Glycine stimulates the production of serotonin, the "feel-good" hormone that helps elevate mood, improve sleep, and enhance memory and thinking. Studies on rodents have demonstrated that glycine supplementation increases serotonin levels.

Glycine is a precursor for a variety of important metabolites such as glutathione, porphyrins, purines, haem, and creatine. Glycine acts as a neurotransmitter in the central nervous system and it has many roles such as antioxidant, anti-inflammatory, cryoprotective, and immunomodulatory in peripheral and nervous tissues.

Melatonin

Melatonin has anti-inflammatory and antioxidant properties and is a powerful regulator of mitochondrial function.

Patients who are slow metabolizers may have very unpleasant and vivid dreams with higher doses.

Methylene Blue

Low Dose Methylene Blue (LDMB) is a therapeutic option in patients with brain fog and other neurological symptoms; this can be combined with transcranial photobiomodulation. Methylene blue (MB) has several biological properties that may be potentially beneficial in patients. MB induces mitophagy (mitochondrial autophagy) and has anti-inflammatory, antioxidant, neuroprotective, and antiviral properties.

LDMB will cause your urine to be blue or blue green. Some patients may experience a Herx reaction. A Herx reaction may cause fatigue, nausea, headache, or muscle pain. If you experience a Herx reaction, stop the protocol for 48 hours and then resume slowly. DO NOT take MB if you are pregnant or breastfeeding.

N-Acetyl Cysteine

NAC is the precursor of reduced Glutathione, a potent anti-inflammatory. Based on a broad range of antioxidant, anti-inflammatory, and immunomodulating mechanisms, the oral administration of NAC likely plays an adjuvant role in the treatment of the patient with inflammation.

Nattokinase

Nattokinase has potent fibrinolytic, antithrombotic, and antiplatelet activity. Nattokinase has antihypertensive, anti-atherosclerotic, lipid-lowering, and neuroprotective actions. Of particular relevance to patients with spike-related clotting, nattokinase causes the proteolytic cleavage of both spike protein and amyloid proteins. In a randomized study, NK proved to be more effective than statins (simvastatin) in reducing carotid artery atherosclerosis.

Proceed with caution if you are on other blood thinners, please discuss with your provider to determine if this is right for you.

NMN

NMN has been able to suppress age-associated weight gain, enhance energy metabolism and physical activity, improve insulin sensitivity, improve eye function, improve mitochondrial metabolism, and prevent age-linked changes in gene expression.

Some evidence suggests supplementing with various doses of NMN may help increase NAD⁺ levels, boost physical performance, and improve certain aspects of metabolic health, such as insulin sensitivity.

Human research on the potential benefits, side effects, and safety of NMN supplements is limited.

NMN is generally considered safe, and no major side effects have been reported in humans.



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Nigella Sativa

Nigella sativa is a small shrub native to Southern Europe, North Africa, and Southeast Asia. The seeds and oil of Nigella sativa have been used as a medical agent for thousands of years. The most important active component is thymohydroquinone. Nigella sativa has antibacterial, antifungal, antiviral (SARS-CoV-2), anti-inflammatory, antioxidant, and immunomodulatory properties.

It should be noted that thymohydroquinone decreases the absorption of cyclosporine and phenytoin. Patients taking these drugs should, therefore, avoid taking Nigella sativa. Furthermore, two cases of serotonin syndrome have been reported in patients taking Nigella sativa who underwent general anesthesia (probable interaction with opiates).

Quercetin

Quercetin, a plant flavonoid with many of the biological properties of resveratrol, acts synergistically with resveratrol and increases the bioavailability of resveratrol.

Due to the possible drug interaction between quercetin and ivermectin these drugs should not be taken simultaneously (i.e., should be staggered morning and night). The use of quercetin has rarely been associated with hypothyroidism. The clinical impact of this association may be limited to those individuals with pre-existent thyroid disease or those with subclinical thyroidism. Quercetin should be used with caution in patients with hypothyroidism and TSH levels should be monitored.

Rapamycin

Rapamycin has been found in studies to improve these signs of aging, as well as improve certain skin conditions, such as vascular irregularities, psoriasis, and angiofibroma. When applied topically, rapamycin could potentially enhance the skin's health and volume, reducing sagging skin and other signs of aging.

Resveratrol

Resveratrol is a plant phytochemical (flavonoid) that has remarkable biological properties. Resveratrol has anti-inflammatory, antiviral (SARS-CoV-2), antioxidant, and anticoagulant properties and has beneficial effects on the microbiome. Resveratrol should therefore be taken during fasting and not with a meal.

The safety of these phytochemicals has not been determined in pregnancy and they should therefore be avoided.

Spermidine

Spermidine is a naturally occurring polyamine that, like resveratrol, has anti-inflammatory and antioxidant properties. It preserves mitochondrial function and has been shown to reduce cardiovascular disease and all-cause mortality and prolong lifespan.

Like resveratrol, spermidine promotes autophagy. Cancer cells are reported to have dysregulated polyamine metabolism and spermidine is therefore best avoided in patients with a known malignancy. In addition, spermidine should be avoided in men over the age of 60 who are at high risk of an ischemic stroke.

Taurine

Taurine has important functions in the heart and brain. It helps support nerve growth. It might also benefit people with heart failure by lowering blood pressure and calming the nervous system.

It helps support nerve growth. It might also benefit people with heart failure by lowering blood pressure and calming the nervous system. This might help prevent heart failure from becoming worse. People take taurine for congestive heart failure (CHF) and swelling of the liver (hepatitis).



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Hydroxychloroquine

Hydroxychloroquine treats autoimmune conditions, such as rheumatoid arthritis and lupus. It works by slowing down an overactive immune system. It may also be used to prevent and treat malaria.

Let your provider know if you have diabetes, eye disease, vision problems, G6PD deficiency, heart disease, history of irregular heartbeat, if you often drink alcohol, kidney disease, liver disease, Porphyria, Psoriasis, an unusual or allergic reaction to chloroquine, hydroxychloroquine, other medications, foods, dyes, or preservatives, pregnant or trying to get pregnant or breast-feeding. Side effects may include allergic reactions—skin rash, itching, hives, swelling of the face, lips, tongue, or throat, Aplastic anemia—unusual weakness or fatigue, dizziness, headache, trouble breathing, increased bleeding or bruising, change in vision, heart rhythm changes—fast or irregular heartbeat, dizziness, feeling faint or lightheaded, chest pain, trouble breathing, Infection—fever, chills, cough, or sore throat, Low blood sugar (hypoglycemia)—tremors or shaking, anxiety, sweating, cold or clammy skin, confusion, dizziness, rapid heartbeat, muscle injury—unusual weakness or fatigue, muscle pain, dark yellow or brown urine, decrease in amount of urine, pain, tingling, or numbness in the hands or feet, rash, fever, and swollen lymph nodes, redness, blistering, peeling, or loosening of the skin, including inside the mouth, thoughts of suicide or self-harm, worsening mood, or feelings of depression, unusual bruising or bleeding, diarrhea, headache, nausea, stomach pain, vomiting.

Ivermectin

Ivermectin, a semisynthetic derivative of avermectin B1 is a broad-spectrum anti-microbial drug with anti-helminthic, anti-bacterial, anti-viral, anti-inflammatory and anti-cancer properties. In addition, Ivermectin displays anti-diabetic activities by reducing blood glucose and cholesterol levels, and also by improving insulin sensitivity.

Proceed with caution if taking barbiturates (such as phenobarbital, butalbital), benzodiazepines (such as clonazepam, lorazepam), sodium oxybate (GHB), valproic acid.



THERAPY DESCRIPTIONS

VITAMINS

B Vitamins

B vitamins, especially B6 and 12 decrease expression of pro-inflammatory cytokines and lead to a decrease of neuro-inflammation.

Vitamin C

Vitamin C has important anti-inflammatory, antioxidant, and immune-enhancing properties, including increased synthesis of type I interferons, avoid in patients with a history of kidney stones. Oral Vitamin C helps promote the growth of protective bacterial populations in the microbiome.

Vitamin D

Vitamin D has potent anti-inflammatory properties. It contributes to a reduction in pro-inflammatory mediators and an increase in anti-inflammatory cytokines. There is also evidence it decreases C-reactive protein (CRP) and improves selected hematologic indices.

Vitamin K2

Vitamin K2 contributes to skin health and bone metabolism, promotes proper brain function and prevents heart-related diseases. Furthermore, vitamin K2 is important in the body's use of calcium to help build bones and inhibit blood vessel calcification. It has also been shown to have anti-inflammatory properties by exerting a protective effect against oxidative stress and generation of reactive oxygen species.

People with G6PD deficiency should avoid vitamin K. People who take Warfarin (Coumadin) and people receiving dialysis for kidney disease should avoid large doses.

Magnesium L-Threonate

Magnesium L-threonate has good bioavailability and will readily increase RBC magnesium levels. Magnesium taurate and magnesium L-threonate significantly increase magnesium levels in brain cells; hence they are used in the treatment of depression and Alzheimer's disease.

High intakes of magnesium from dietary supplements and medications can cause diarrhea, nausea, and abdominal cramping.

Omega 3 EPA/DHA

Omega-3 fatty acids have anti-inflammatory and cardioprotective effects and play an important role in the resolution of inflammation by inducing resolvins production. Furthermore, omega-3 fatty acids are believed to afford potent vasculoprotective effects, by improving endothelial function, limiting vascular inflammation, reducing thrombosis, and limiting reactive oxygen species production.

Zinc

Zinc, a nutrient found throughout your body, helps your immune system and metabolism function. Zinc is also important to wound healing and your sense of taste and smell. With a varied diet, your body usually gets enough zinc. Food sources of zinc include chicken, red meat and fortified breakfast cereals.

While zinc is regarded as safe in some people side effects can include indigestion, diarrhea, headache, nausea, vomiting.

***This is an informational summary document only it is not meant to be an exhaustive list of side effects or drug-drug interactions.**

Please review with your provider prior to taking any new medication/supplement.