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Can Ginger Help With Diabetes?

Analysis by Dr. Joseph Mercola Fact Checked | July 11, 2023

STORY AT-A-GLANCE

- The epidemic number of people with diabetes has the pharmaceutical industry scrambling to identify interventions; the most recent FDA-approved drug is in short supply despite side effects that include pancreatitis, depression, confusion, kidney failure and thoughts of suicide
- Scientific evidence in animal models and human trials show ginger can help lower blood sugar, improve insulin sensitivity and reduce insulin resistance; combined with behavior modification to help you eat less and exercise more, it may be all that's needed to achieve your goals
- Ginger helps lower the inflammatory response in your body, a hallmark of virtually all diseases, including obesity, cancer and heart disease. Ginger helps reduce pain perception and promotes a healthy gut microbiome
- Your gut microbiome is linked to the development and management of diabetes. More strategies to promote gut health include eating fermented foods, taking a probiotic supplement, boosting your fiber intake, and washing your dishes instead of using the dishwasher

The number of people with diagnosed diabetes has grown to "epidemic" numbers.[1] Complications from diabetes include retinopathy, heart attack, stroke, diabetic nephropathy, nerve damage and sexual problems in men and women.[2] The number of people exposed to these risks rises dramatically each year.

In 2004,[3] experts estimated the global number of people with diabetes was projected to rise from 171 million in 2000 to 366 million in 2030. However, the International Diabetes Federation[4] estimated there were 151 million people with diabetes across the world in 2000 and cited 536 million in 2021. This is over 150 million more than experts estimated would be diagnosed 9 years later in 2030.

The growing number of people with diabetes and obesity has the pharmaceutical industry scrambling to identify drug interventions. FDA approval[5] for the most recent of those drugs — Wegovy (semaglutide) — was released with the hope it would increase weight loss.

Wegovy reportedly works by suppressing a person's natural appetite, which is supposed to lead to eating fewer calories and subsequently losing weight.[6] Novo Nordisk, manufacturer of Wegovy, has limited the number of doses patients are allowed to use since the demand for the drug is currently outpacing the company's ability to manufacture it.[7]

The medication comes with a boxed warning of the risk for thyroid C-cell tumors, including medullary thyroid carcinoma, in animal models. Serious side effects from the drug include anxiety, blurred vision, confusion, depression, difficulty swallowing, seizures, slurred speech and trouble breathing.[8] Wegovy cites more possible side effects including pancreatitis, low blood sugar, kidney failure, increased heart rate and thoughts of suicide.

As the pharmaceutical industry develops drugs that require more drugs to treat the side effects of the first drug, researchers have also discovered that antioxidants like ginger can help lower blood sugar, reduce insulin resistance and improve insulin sensitivity. Combining this with behavior modification strategies to help you eat less and exercise more, including ginger in your daily regimen, may be all that's needed to achieve your goals.

Ginger Lowers Blood Sugar and Improves Insulin Sensitivity

As Dr. Michael Greger, founder of NutritionFacts.org, describes in this short video, there is mounting scientific data to support using ginger to help lower blood sugar and improve insulin sensitivity.[9] He begins by describing a case report of a 45-year-old businessman in Austria who was determined to stop using diabetes medication by changing his diet and including specific nutritional ingredients.[10]

The businessman was able to stop taking his oral medication after four weeks and lowered his hemoglobin A1c to 6.4% after three months and 6.0% after six months. Normal hemoglobin A1c for people without diabetes is lower than 5.7%; 5.7% to 6.4% indicates prediabetes.[11] The writers noted that multiple drug therapy was normally needed to handle glucose levels. Using ginger not only is potentially effective in treatment, but also in prevention.

In a 2014 study,[12] researchers showed that exposing ginger compounds to muscle cells in a petri dish resulted in an uptake of blood sugar that was comparable to the diabetes drug metformin. While these studies appear to be effective in a rodent model, human trials are needed to demonstrate efficacy in human health.

A 2013 study[13] sought to answer the question of whether ginger could affect patients with Type 2 diabetes. In a randomized double-blind placebo-controlled trial, 64 patients received either ginger or a placebo. The data showed “... ginger supplementation improved insulin sensitivity and some fractions of lipid profile in DM2 patients.”

Researchers[14] have also tracked the effect of 1,600 mg of ginger over 12 weeks in participants with Type 2 diabetes and found ginger lowered several parameters including fasting plasma glucose, HbA1C, insulin, triglycerides, and C reactive protein. The researchers concluded that "... ginger can be considered an effective treatment for prevention of diabetes complications."[15]

Researchers then tested[16] ginger over eight weeks using a higher dose. Data from this study demonstrated that consuming a capsule with 3 grams of ginger powder for eight weeks helped lower fasting blood sugar and hemoglobin A1c while improving insulin resistance.

In a similar study,[17] researchers administered 2 grams of ginger powder per day to participants with Type 2 diabetes and found the supplementation "significantly reduced the levels of fasting blood sugar, hemoglobin A1c," and improved other biomarkers as compared to baseline and the control group.

Finally, Greger showed[18] the results of a study[19] in which participants received 3 grams of ginger powder and the results showed the participants in the intervention group improved in several biomarkers, including glucose and hemoglobin A1c while the biomarkers in the control group were worse.

Ginger Lowers Inflammatory Biomarkers and Pain

Chronic inflammation is a hallmark of virtually all diseases, including obesity, cancer and heart disease. Although the inflammatory response is normal and beneficial as it mobilizes the body's white blood cells and chemicals to protect you from foreign invaders like bacteria and viruses, chronic inflammation has the opposite effect.

Your diet plays a significant, if not primary role, in this chain of events and is the perfect place to begin to address it. Certain nutritional supplements are known for their anti-inflammatory power, including ginger. However, just including ginger cannot mitigate the effects of eating an ultraprocessed, high-carbohydrate diet or one filled with refined sugar and omega-6 linoleic acid.

A key part of lowering the inflammatory response in your body involves excluding refined vegetable oils as they are clearly one of the pernicious and pervasive poisons in the food supply. By simply **avoiding all processed food** and most restaurant foods, you can go a long way toward avoiding them. Another simple and impactful dietary change is to eliminate seed oils.

I believe omega-6 linoleic acid is a primary contributor to nearly all chronic diseases because when consumed in excessive amounts, it acts as a metabolic poison that radically limits mitochondrial function and your ability to produce cellular energy.

According to a 2012 paper,[20] "clove, 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 inflammatory biomarkers, suggesting superior anti-inflammatory action.

Inflammation also plays a significant role in the perception of pain. Scientific data demonstrates that ginger extract helps mitigate pain in several situations. A 2001 study[21] concluded the highly purified and standardized extract used in the intervention had a "statistically significant effect on reducing symptoms of OA [osteoarthritis] of the knee. The effect was moderate. There was a good safety profile, with mostly mild GI adverse events in the ginger extract group."

A 2018 study[22] published in the Taiwanese Journal of Obstetrics and Gynecology demonstrated that ginger was as effective as Novafen, a nonsteroidal anti-inflammatory drug (NSAID), in relieving menstrual pain in women with primary dysmenorrhea. The researchers concluded "treatment with natural herbal medicine, a nonsynthetic drug, to reduce primary dysmenorrhea is recommended."

Ginger has also demonstrated properties[23] that improve pain relief suggesting it reduced inflammation, pain in osteoarthritis, beneficial activity in participants with migraines and exhibited a reduction in pain using Swedish massage with aromatic ginger oil. After an analysis[24] of the main subcomponents of ginger, namely 6-gingerol and 6-shogaol, and researchers documented an analgesic effect.

Ginger Promotes Gut Health

Gingerols and shogaols have known medicinal properties and when included in nutraceutical formulations may help protect against heart, diabetes and liver disorders.[25] Spices like ginger are also known to have a favorable effect on your gut microbiome, which in turn affects the development and management of diabetes.[26] One study concluded:[27]

> *"In this cross-sectional study, higher microbiome α diversity, along with more butyrate-producing gut bacteria, was associated with less type 2 diabetes and with lower insulin resistance among individuals without diabetes."*

In 2022[28] researchers demonstrated cinnamon, ginger, oregano, black pepper and cayenne pepper positively shifted gut bacterial composition after four weeks in adults at risk for cardiovascular disease. The researchers from Penn State[29] noted a diverse gut microbiome promoted better health than persons without bacterial diversity. Specifically, an increase in the Ruminococcaceae bacterial group, which is beneficial for immune function and liver metabolism, was noted.

Past research suggests enrichment of the Ruminococcaceae family may also suppress long-term weight gain and diet-induced obesity.[30] Enrichment of Faecalibacterium and Agathobacter genus was also noted. These groups are known to produce anti-inflammatory short-chain fatty acids (SCFAs), including butyrate and propionic acid.

SCFAs play a role in building the gut barrier, making it less permeable to disease-causing microorganisms.[31] The researchers explained[32] that butyrate is the primary energy source for colonocytes (epithelial colon cells), which help shape the makeup of gut microbiota.

The bioactive compounds in ginger[33] — gingerols and shogaols — are also associated with neuropathic pain management and anti-inflammatory activity. When two ginger root extracts were evaluated for an effect on pain sensitivity and anxiety-like behaviors in an animal model, the data showed the extract modulated the gut microbiome and significantly reduced pain and anxiety-like behavior.

More Ways to Lower Inflammation and Protect Gut Microbiome

Including a daily hot cup of "Haldi ka Doodh" or golden milk has been a part of Indian culture for centuries. It is an ayurvedic drink commonly made with turmeric, cinnamon, honey, ginger and your choice of milk. Some recipes call for adding nutmeg, black pepper or other spices.

The mixture is heated and served warm or over ice for a refreshing drink in the summer months. **Golden milk** has several health benefits that stem from the anti-inflammatory actions of the spices, including cancer prevention and treatment, pain control, neuroprotection, and antiaging and weight loss.

There's no doubt that including a variety of whole foods, including plentiful herbs and spices, is **great for your gut**. But what else works to keep your gut microbiota in top shape? Consider the following dos and don'ts:

Do

Eat plenty of fermented foods — Healthy choices include lassi, fermented grass fed kefir, natto (fermented soy) and fermented vegetables.

Take a probiotic supplement — If you don't regularly eat fermented foods, a probiotic supplement can be useful.

Boost your soluble and insoluble fiber intake, focusing on vegetables, nuts and seeds, including sprouted seeds.

Get your hands dirty in the garden — Exposure to bacteria and viruses in the soil can help strengthen your immune system and provide long-lasting immunity against disease.

Open your windows — Evidence suggests[34] opening a window and increasing natural airflow can improve the diversity and health of the microbes in your home, which in turn benefits you.

Wash your dishes by hand instead of in the dishwasher — Data show washing your dishes by hand leaves more bacteria on the dishes than dishwashers do. Eating off these less-than-sterile dishes may decrease your risk of allergies by stimulating your immune system.[35]

Avoid

Antibiotics, unless absolutely necessary — If you do use them, make sure to reseed your gut with fermented foods and/or a high-quality probiotic supplement.

Conventionally raised meats and other animal products, as CAFO animals are routinely fed low-dose antibiotics.

Chlorinated and/or fluoridated water — This includes during bathing or showering.

Processed foods — Excessive sugars and otherwise "dead" nutrients feed pathogenic bacteria. Food emulsifiers such as polysorbate 80, lecithin, carrageenan, polyglycerols, and xanthan gum may have an adverse effect on your gut flora. Artificial sweeteners have also been found to alter gut bacteria in adverse ways.[36]

Agricultural chemicals, glyphosate (Roundup) is a known antibiotic and could potentially kill many of your beneficial gut microbes if you eat foods contaminated with it.

Antibacterial soap, as it kills off both good and bad bacteria and contributes to the development of antibiotic resistance.

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