

Cinnamon – An Ancient Spice That May Be Beneficial for Prediabetics

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STORY AT-A-GLANCE

- › Cinnamon, a popular spice with a rich history, has shown potential antidiabetic effects in studies, particularly beneficial for individuals with prediabetes and obesity
- › A 2024 study found that daily cinnamon supplementation lowered 24-hour blood sugar levels and reduced blood sugar peaks by 18.5% in participants with obesity and prediabetes
- › Cinnamon's health benefits extend beyond blood sugar control, including cardiovascular benefits, potential neuroprotective effects, and promising anticancer activities against various types of cancer cells
- › Ceylon cinnamon is recommended over Cassia cinnamon due to its lower coumarin content, which reduces the risk of potential liver toxicity when consumed in larger amounts
- › While cinnamon offers health benefits, optimal cellular energy production is more fundamental for overall health. Strategies include reducing linoleic acid intake, managing stress and improving gut health

Cinnamon is a popular spice worldwide, prized for its warm, sweet flavor and distinctive aroma. Commonly used in both sweet and savory dishes, it adds a unique touch to everything, from pastries and desserts to curries and stews. It's also used in consumer products, such as perfumes, air fresheners, essential oils and personal care items.

The spice is derived from the inner bark of several tree species from the genus *Cinnamomum*. The two main varieties are Ceylon cinnamon, also known as "true" cinnamon, which originates from Sri Lanka,¹ and Cassia cinnamon, which is more widely available and comes from China.² Both types are commonly used, though Ceylon cinnamon is often considered superior in quality and taste.

Cinnamon's rich history dates back to 2800 B.C., where it was mentioned in Chinese writings.³ Ancient Egyptians used it in their embalming processes, while in medieval Europe, it was a status symbol for the wealthy and powerful. Cinnamon was once so highly prized that it was considered more valuable than gold, and significantly played a crucial role in the spice trade.

Beyond its culinary and cultural significance, cinnamon has long been valued for its medicinal properties. One of its most compelling benefits is its antidiabetic effects, which can be particularly useful for individuals with prediabetes, as highlighted in a March 2024 study⁴ published in *The American Journal of Clinical Nutrition*.

Study Finds Cinnamon Has Beneficial Glycemic Effects on Prediabetes

Previous clinical studies⁵ have demonstrated the protective effects of cinnamon on regulating blood sugar levels. Building on this scientific evidence, the featured double-blind crossover study⁶ investigated the impact of daily cinnamon supplementation on the glucose concentrations of adults diagnosed with obesity and prediabetes.

The study involved 18 participants who initially followed a low-polyphenol and low-fiber diet for two weeks. Over the subsequent 10-week period, they were randomly assigned to consume either 4 grams of cinnamon daily – an amount commonly used for seasoning – or a placebo for four weeks. Throughout the study, researchers continuously monitored blood sugar levels while participants maintained daily logs of any digestive symptoms.

Their findings showed that participants who took cinnamon had significantly lower 24-hour blood sugar levels as well as overall blood sugar. They also experienced 18.5% lower peaks in blood sugar levels compared to the placebo group. The researchers noted that these effects were due to the bioactive compounds of cinnamon.

"This glucose-lowering effect of cinnamon may be explained by unique compounds and high polyphenol content in cinnamon. Cinnamon contains cinnamaldehyde, proanthocyanidins, coumarin, catechins, trans-cinnamic acid and flavones.

Polyphenols improve insulin sensitivity by activating the insulin receptor through several mechanisms, including increased auto-phosphorylation of the insulin receptor, increased glucose transporter-4 receptor synthesis and activation, possess an anti-inflammatory effect, which may act beneficially in diabetes, and increased hepatic glycogen synthesis."

Additional Antidiabetic Actions of Cinnamon

In addition to containing antidiabetic polyphenols, researchers observed that increased cinnamon intake can lead to the following beneficial effects, which resulted in lower blood sugar levels:⁷

- 1. Increased postprandial glucose-dependent insulintropic polypeptide (GIP)** – This hormone, which is produced in the gut, helps stimulate insulin secretion when blood sugar levels are high. It also promotes proliferation and survival of beta cells, which are the insulin-producing cells located in the pancreas.
- 2. Improved gut microbiota** – Cinnamon helped reduce the presence of Terrisporobacter and Dialister bacteria in the gut. Terrisporobacter has been linked to obesity, while Dialister have been associated with higher HbA1c levels in people with prediabetes, indicating poorer blood sugar control.

In another in-vitro study⁸ conducted by the authors, they also found that cinnamon helped boost the growth of beneficial bacteria like Bifidobacterium and

Lactobacillus, while reducing harmful bacteria such as some types of Ruminococcus, Fusobacterium and Clostridium.

Cinnamon Helps Reduce Cardiovascular Disease Risks

Aside from glucose control, the featured study⁹ also highlighted the ability of cinnamon to regulate triglyceride levels, specifically after eating. Elevated levels of triglycerides in the blood after a meal (postprandial hypertriglyceridemia) have conventionally been linked to a higher risk of cardiovascular events like heart attacks. Lowering these levels could potentially reduce the risk of developing coronary artery disease, a condition that affects the blood vessels supplying the heart.

"Our study found that adding cinnamon to the diet may reduce overall postprandial triglyceride concentrations ... Triglyceride reduction ... likely results from insulin-mediated inhibition of lipolysis, down-regulation of hepatic VLDL secretion and upregulation of triglyceride clearance from the circulation by lipoprotein lipase and remnant receptors," the authors explained.

Previous research has also highlighted cinnamon's potential cardiovascular benefits. An article¹⁰ published in the Journal of Functional Foods, which reviewed existing data on the cardioprotective effects of cinnamon, found that it can help reduce the risk of cardiovascular diseases, including cardiac ischemia, cardiac hypertrophy and myocardial infarction.

It has also shown beneficial effects on cardiovascular-related comorbidities, including diabetes and other metabolic disorders. According to the researchers, "Cinnamon contains several bioactive compounds such as phenolics and volatile compounds. Cinnamaldehyde and cinnamic acid are among the main cinnamon compounds with protective effects on cardiovascular diseases through different molecular mechanisms."¹¹

Other Ways Cinnamon Can Benefit Your Health

Beyond its effects on blood sugar and cardiovascular health, cinnamon offers several other potential health benefits. According to a study¹² published in the journal *Foods*:

"Among the most interesting compounds of bioactive Cinnamomum accessions, there are vanillic acid, caffeic acid, gallic acid, p-coumaric acid, ferulic acid, proanthocyanidins A and B, kaempferol, cinnamic acid and cinnamaldehyde, which exhibit several human beneficial effects, such as neuroprotective, hepatoprotective, cardioprotective and gastroprotective.

Most of these compounds are related to the antioxidant activity, enhancing the activities of catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx). Another important activity of cinnamon phytocomplexes is the anti-inflammatory one, which has been demonstrated in various cell and animal models and diseases, such as colitis, arthritis and diabetes."

Additionally, cinnamon has been shown to help reduce the risk of Parkinson's disease by preventing cell death caused by oxidative stress, as well as inhibiting reactive oxygen species generation and autophagy dysregulation.¹³ Research¹⁴ also found that cinnamon helped inhibit tau protein aggregation and the formation of amyloid beta-peptides, which are associated with the development of Alzheimer's disease.

Cinnamon has shown promising anticancer activities as well, including cytotoxic and antiproliferative effects against various cancer cells,¹⁵ including cervical, colon, breast and liver cancer.^{16,17} This spice is also known for its potent antifungal, antimicrobial and antibacterial effects, making it useful for protecting against Gram-positive and Gram-negative bacteria that can cause pathogenic disease, and for preserving food or cosmetics.¹⁸

How to Choose and Prepare Cinnamon

As I mentioned, there are two main types of cinnamon – cassia and Ceylon. Cassia is darker, stronger in flavor, and more common in grocery stores. In comparison, Ceylon is lighter in color, has a milder flavor and is more expensive and difficult to find.

More importantly, Ceylon contains lower levels of a chemical called coumarin, a powerful anticoagulant with potentially carcinogenic and hepatotoxic properties.

Cassia contains up to 1% coumarin, whereas Ceylon cinnamon typically contains only trace amounts, approximately 0.004%.¹⁹ This is why I recommend using Ceylon cinnamon, despite the expense.

You can reap the many benefits of this spice by adding 1/4 to 1 teaspoon of cinnamon to your food or beverages daily. You can also try drinking cinnamon tea. Simply boil a cinnamon stick (or two) in 1.5 cups of hot water for 15 to 25 minutes, and you'll have a warm, comforting drink that's not only enjoyable but also good for your health.

Optimize Your Cellular Energy to Reduce Your Risk of Chronic Diseases

While herbs and supplements like cinnamon can offer health benefits, remember that they're not a cure-all. Instead of relying solely on these supplemental therapies, I urge you to take control of your health by focusing on a more fundamental aspect of your well-being – cellular energy production.

I believe that insufficient cellular energy production due to impaired mitochondrial function is the root of all diseases. In order for your body to recover from illness, it needs to create enough cellular energy to fuel its repair and regeneration processes.

Unfortunately, many people live in a state of mitochondrial dysfunction, and three primary mitochondrial poisons are causing this – linoleic acid (LA) from vegetable and seed oils, estrogen and xenoestrogens in plastics, and wireless EMF radiation. To restore your mitochondrial health and stop chronic disease in its tracks, I recommend adopting the following strategies:

Lower your LA intake to 5 grams per day, or better yet 2 grams, by avoiding processed foods, seed oils, chicken, pork, seeds and nuts.

Make sure you're eating healthy carbs, such as ripe fruit, raw honey and maple syrup. Keep in mind, though, that you need good gut health to benefit from an optimal diet. If your gut health is impaired, eating fibrous fruits and starches will only feed the pathogenic bacteria in your gut. If your gut health is less than optimal, start by eliminating as much LA as possible and introduce healthy carbs slowly, starting with pulp-free fruit juices.

Decrease lactate production and increase carbon dioxide, as they have opposing effects.²⁰ You can learn more about this in "[The Biology of Carbon Dioxide](#)."

Reduce your stress, as chronic stress promotes cortisol release, which is a potent suppressor of mitochondrial function and biogenesis. Progesterone can be quite helpful here, as it's a potent cortisol blocker. My article, "[What You Need to Know About Estrogen and Serotonin](#)," discusses this topic in detail.

Take supplemental niacinamide, as your mitochondria cannot make energy without it. I recommend taking 50 milligrams of niacinamide three times a day.

Increase the levels of Akkermansia in your gut – Akkermansia muciniphila is a specific type of anaerobic bacteria that increases glucagon-like peptide (GLP), which can be useful in the treatment of diabetes and obesity. Ideal levels of Akkermansia are about 3% to 4% of your microbiome.^{21,22,23,24}

You can easily enhance the levels of this beneficial bacterium in your gut by eating polyphenol-rich fruits and avoiding LA. You can also take probiotic and prebiotic supplements that help promote Akkermansia growth, such as Lactobacillus rhamnosus, Bifidobacterium animalis, Lactococcus lactis (probiotics) and oral fructo-oligosaccharides (oligofructose or FOS, a common prebiotic).

Sources and References

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