

How Probiotics Help Lower Your Risk of Heart Disease

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STORY AT-A-GLANCE

- › Probiotics influence heart health by improving gut microbiota, which reduces inflammation, regulates blood sugar, and lowers cholesterol – key drivers behind coronary artery disease
- › A review published in *Cureus* evaluated 10 human-based studies and found consistent cardiovascular benefits across people with diabetes, obesity, high cholesterol, and hypertension
- › Certain strains like *Lactobacillus acidophilus* and *Bifidobacterium lactis* outperformed others, reducing blood pressure, cholesterol, and systemic inflammation by sealing the gut barrier and restoring microbial balance
- › Probiotics reduce harmful metabolites like lipopolysaccharide (LPS) and trimethylamine N-oxide (TMAO), both of which trigger vascular damage and plaque buildup linked to heart attack and stroke risk
- › The review confirms that reseeded your gut with the right strains is a practical way to help protect your heart – especially when paired with a whole-food diet and targeted lifestyle changes

Nearly 18 million people lose their lives to cardiovascular disease every year, according to the World Health Organization (WHO),¹ making it the most common cause of death worldwide. Coronary artery disease (CAD) is the most prevalent form, marked by plaque buildup that narrows or blocks blood flow to the heart.

Coronary artery disease often begins with subtle symptoms – fatigue, chest tightness, or shortness of breath – but if left unchecked, it could lead to heart attacks or even sudden death. The good news is that CAD doesn't develop overnight, and that gives you time to change the outcome.

One key driver that could help you turn the tide is your gut health. A recent review found that reseeded your gut microbiota with beneficial bacteria strains could support your heart health.

Recent Review Provides Strong Evidence Linking Probiotics to Lower CAD Risk

A recent literature review published in Cureus examined how probiotics influence cardiovascular risk, particularly coronary artery disease. The review analyzed a range of clinical trials, meta-analyses, and randomized controlled studies to determine how various probiotic strains affect major heart disease risk factors.²

- **The review encompassed a wide range of participants** – They ranged from individuals diagnosed with CAD to adults managing Type 2 diabetes, high cholesterol, obesity, or hypertension – groups most at risk for future cardiac events.
- **The researchers focused on 10 key human studies** – These consisted of seven randomized controlled trials (RCTs) and three meta-analyses. Each of these studies involved human participants with CAD or its major risk factors.
- **One of the standout strengths of the methodology is the diversity of the data used** – Trials came from countries including the U.S., Iran, China, Thailand, Greece, and Japan. That means the findings are not tied to one ethnicity or geographic population – they represent a much wider pool of data, which makes the conclusions more likely to apply across different lifestyles and genetic backgrounds.

- **The research consistently showed that probiotics had measurable benefits on heart disease triggers** – These include blood pressure, cholesterol, blood sugar, weight management, and inflammation. According to the researchers:

“There are several risk factors for the development of CAD, which are hyperlipidemia, hyperglycemia, hypertension, inflammation, and oxidative stress, which increase patients' risk of atherosclerosis and, in turn, lead to CAD.

In recent years, growing evidence has established the beneficial effect of the gut microbiota in influencing these cardiovascular risk factors. This microbial ecosystem plays a significant role in metabolic regulation, immune function, and systemic inflammation, all of which are significant to the development and progression of CAD.”³

- **The study highlighted bacteria strains that provide significant benefits** – For example, they noted that *Lactobacillus acidophilus* has a more significant effect on cholesterol levels compared to other strains, while *Bifidobacteria* has protective effects against atherosclerosis, especially if partnered with a lipid-lowering treatment. *Bacteroides vulgatus* and *Bacteroides dorei* helped prevent formation of atherosclerotic plaque.

Probiotics Improve Heart Health by Fixing Gut Imbalance at the Source

So how exactly do probiotics work at the cellular level to protect your heart? The researchers highlighted several key biological pathways, demonstrated by the studies they reviewed.

- **Reducing inflammation by sealing the gut barrier** – The paper emphasized that dysbiosis harms your gut lining, allowing endotoxins like lipopolysaccharides (LPS) to escape into the bloodstream. This triggers inflammation that contributes to endothelial dysfunction and atherosclerosis.

The trials found that probiotic strains like *Lactobacillus rhamnosus* and *Bifidobacterium lactis* reduced LPS levels and inflammatory cytokines like IL-1 β , directly lowering cardiovascular strain.

- **Shifting short-chain fatty acid (SCFA) balance toward heart-protective molecules** – SCFAs are byproducts of bacterial fermentation, and they have a significant impact on your metabolic health. The study found that probiotics promote the production of propionate – a SCFA that reduces vascular inflammation and fat creation in the liver. At the same time, it limits acetate, which drives fat storage and cholesterol synthesis in excessive amounts.

Acetate is generally beneficial, as it supports mucus production. But if there's too much of it, it could cause adverse effects, which is why balance is key. This shift supports healthy blood lipid levels and lowers the burden on your cardiovascular system.

- **Reducing trimethylamine N-oxide (TMAO) production from gut microbes** – TMAO is a compound created when certain gut bacteria break down foods like red meat and eggs, and having high levels is associated with arterial plaque buildup and heart attacks.

The study found that certain probiotics like *Lactobacillus plantarum* modulate bile acid metabolism and suppress TMAO-producing bacteria, lowering this risk. A separate analysis⁴ found that having high blood levels of TMAO increased the risk of dying from any cause fourfold in the next five years.

- **Balancing blood pressure via nitric oxide and ACE pathways** – Specific strains like *Lactobacillus helveticus* regulate blood pressure by influencing nitric oxide (NO), a molecule that relaxes blood vessels, and inhibiting angiotensin-converting enzyme (ACE) activity, which raises blood pressure.

A meta-analysis included in the review found that probiotic doses of 10¹⁰ colony-forming units (CFU) or more reduced both systolic (the top number in a reading) and diastolic (the bottom number) blood pressure, especially in older adults with

hypertension.

- **Improving cholesterol metabolism** – Certain probiotics influence how your body processes cholesterol. For example, Ruminococcus helps convert cholesterol into bile acids that are excreted, while other strains incorporate cholesterol into their own membranes or convert it into non-absorbable forms like coprostanol. These actions reduce circulating low-density lipoprotein (LDL) levels and slow plaque formation.
- **Regulating blood sugar and insulin sensitivity** – Probiotics like Bifidobacterium lactis increase GLP-1, a hormone that boosts insulin secretion and slows gastric emptying – both important for stable blood sugar. They also reduce oxidative stress and improve how cells respond to insulin, reducing the risk of Type 2 diabetes.

Each of these pathways reflects how a healthier gut microbiome – powered by the right probiotics – creates a ripple effect through your entire metabolic system. These findings not only demonstrate how probiotics influence gut health, but how those changes ripple out to lower the biological triggers of coronary artery disease.

“Probiotics have shown effective mechanisms to control risk factors and lower CAD. Their effect is produced through many mechanisms, such as their anti-inflammatory and antioxidative role,” the researchers concluded.

“Other mechanisms were addressed mainly through the reduction or prevention of CAD risk factors, which are achieved by the anti-glycemic and antihypertensive effects of the probiotics and by reducing metabolic disorders. These further prevent obesity and hypercholesterolemia, which in turn signify the effective role of probiotics in preventing CAD.”

Consuming Probiotics Helps Normalize Blood Pressure

Previous studies have also provided evidence on how probiotics help reduce cardiovascular incidents by modulating risk factors like hypertension. For example, an analysis of nine studies looked at the link between blood pressure levels and consuming

probiotic-rich foods or probiotic supplements, and found favorable results.⁵

- **Those who regularly took probiotics have lower blood pressure levels compared to those who did not** — On average, their systolic blood pressure was 3.6 millimeters of mercury (mm Hg) lower, while their diastolic blood pressure was 2.4 mm Hg lower. The most significant benefit appeared to be among those whose blood pressure was higher than 130/85, and probiotics that contained a variety of bacteria lowered blood pressure to a greater degree than those containing just one type of bacteria.
- **Kefir demonstrated antihypertensive effects and more** — In a 2018 study published in the FASEB journal⁶ researchers conducted an experiment on three groups of mice — one group had hypertension and was given kefir, the other had hypertension, but was not treated, and the third had normal blood pressure and was not treated. They found that rats fed kefir not only appeared to have normal blood pressure levels, but also had:
 - Improved balance of beneficial bacteria in the gut
 - Improved intestinal structure with decreased intestinal permeability
 - Lower levels of endotoxins
 - Lower levels of inflammation in the central nervous system

“Our data suggests that kefir antihypertensive-associated mechanisms involves gut microbiota-brain axis communication during hypertension,” the researchers concluded.

- **An earlier animal study found that probiotics help prevent hypertension from a high-salt diet** — Published in the Nature journal, the researchers reported that the Lactobacillus Murinus bacteria effectively prevents salt-sensitive hypertension by

modulating T helper 17 (TH17) cells. When the mice subjects were given this probiotic strain, it helped protect them from the adverse effects of excessive salt intake.

“Our results connect high salt intake to the gut-immune axis and highlight the gut microbiome as a potential therapeutic target to counteract salt-sensitive conditions,” the researchers concluded.⁷

Combining Probiotics with Plant Nutrients Make Them More Efficient

While probiotics alone are beneficial, there are ways to supercharge their effects. One way is to combine them with bioactive plant compounds. A review published in *Food Chemistry Advances* analyzed how probiotics and plant compounds impact your gut microbiota and reduce inflammation. The researchers reviewed evidence on the synergistic role of these compounds in managing metabolic diseases, particularly cardiovascular disease and Type 2 diabetes.⁸

- **Those who have metabolic disorders and chronic inflammation reaped the most benefits** — In individuals with obesity, Type 2 diabetes, cardiovascular issues or inflammatory bowel conditions, gut dysbiosis is a common denominator. Combining targeted probiotics and plant-derived bioactives helped reduce systemic inflammation, strengthen gut barrier function and rebalance microbial diversity.
- **Specific strains showed unique effects** — For example, *Lactobacillus rhamnosus* and *Lactobacillus plantarum* boosted production of mucin, a slippery protein that forms protective mucus, helping make the gut lining stronger. Meanwhile, *Bifidobacterium longum* and *Bifidobacterium breve* work efficiently in breaking down fiber into SCFAs.
- **Certain plant compounds improved probiotic performance** — Polyphenols found in tea, berries, and cocoa supported the growth of beneficial bacteria while slowing the spread of harmful ones.

Plant compounds and probiotics also work together to keep inflammation in check — they do this by activating immune cells that release calming signals, which tell your immune system to relax. At the same time, they help lower levels of chemicals that cause inflammation, which is often high in people with metabolic issues. For more information on this topic, read [“The Science of Probiotics — How Beneficial Bacteria Support Health.”](#)

How to Boost Your Gut Health to Avoid Heart Disease

Your gut is home to trillions of microbes that influence everything from how well you digest food to how effectively your immune system and metabolism function. But when these microbial populations get out of balance, your health starts to unravel at every level.

But getting your gut health back on track is not just about taking probiotics. There are a few important considerations to help your gut microbiome thrive. I recommend following these strategies:

- 1. Fix your gut microbiome before feeding it** — Although fiber is essential for gut health, consuming too much if your gut health is imbalanced will only end up feeding the unhealthy microbes, triggering gas, bloating and toxic byproducts like endotoxins. This is called the fiber paradox — The very substance that promotes a healthy microbiome in the long term worsens symptoms in the short term if introduced too early.

If you're dealing with inflammation or bacterial overgrowth, start by healing your gut. Remove ultraprocessed foods and focus on easy-to-digest carbohydrates like fruit and white rice until your symptoms stabilize. Afterward, you can add in small amounts of more fibrous carbs like root veggies.

Once your gut health is healed, expand your diet by adding non-starchy vegetables, starchy options (sweet potato or squash), beans, legumes, and eventually whole grains with minimal processing.

- 2. Prioritize bacteria that produce butyrate** – **Butyrate** is an SCFA and is one of the most powerful healing compounds your body makes. It fuels the cells lining your gut, calms immune overactivation, and reduces whole-body inflammation.

Specific gut microbes are needed to produce butyrate, particularly *Faecalibacterium prausnitzii*, *Roseburia*, and *Eubacterium*. They thrive on fermentable fibers found in foods like cooked-and-cooled potatoes, green bananas, lentils, Jerusalem artichokes, and oats. Once your gut lining begins to heal, feeding these bacteria becomes a top priority.

- 3. Feed *Akkermansia* correctly** – While not a butyrate producer itself, *Akkermansia* plays a supportive role by maintaining and thickening your gut's mucus layer, creating an ideal environment for butyrate-producing microbes to thrive.

Having higher levels of *Akkermansia* is strongly associated with improved blood sugar control, lower inflammation, stronger gut barrier function, and even reduced body fat. Think of it as a gatekeeper that improves the terrain, while *Faecalibacterium* and others generate the fuel. Together, they create a microbiome that's stable, anti-inflammatory and metabolically protective.

Polyphenol-rich foods like pomegranate, red grapes, cranberries, and green tea directly promote *Akkermansia* growth. So do inulin-containing plants like garlic, leeks, chicory root, and asparagus. Start with small amounts and build as tolerated.

- 4. Support gut health at the cellular level** – Beyond just adding fiber, you need to remove factors that actively damage your gut environment. One major culprit is excessive **linoleic acid (LA)** from vegetable oils, which disrupt your mitochondrial function, decreasing your cellular energy production and wrecking your gut environment. Switch to healthier fats like butter, ghee, or tallow instead.

Also, minimize exposure to endocrine-disrupting chemicals and electromagnetic fields (EMFs), as these further impair cellular energy and negatively impact the oxygen-free gut environment that beneficial bacteria like *Akkermansia* need to thrive.

Once you've eliminated vegetable oils for at least half a year, considering taking a timed-release Akkermansia supplement, which will allow more of the bacteria to survive and reach your colon.

5. Rebuild daily habits that reinforce microbial balance – Eating at regular times, getting early morning sunlight, sleeping deeply, getting enough daily exercise, and managing stress all shape your gut flora and contribute to your overall health.

Frequently Asked Questions (FAQs) About Probiotics and Heart Health

Q: How do probiotics influence heart health?

A: Probiotics help balance the gut microbiome, which lowers inflammation and improves metabolic function. This includes reduced cholesterol levels, better blood sugar control, and less vascular damage – factors directly tied to coronary artery disease.

Q: Which probiotic strains are most effective for cardiovascular health?

A: Strains like *Lactobacillus acidophilus*, *Bifidobacterium lactis*, *Lactobacillus plantarum*, and *Lactobacillus helveticus* have been shown to reduce LDL (bad) cholesterol, improve insulin sensitivity, lower inflammatory markers, and regulate blood pressure. Each strain works in different ways.

Q: What does gut health have to do with heart health?

A: Your gut and heart are deeply connected through what researchers call the “gut-heart axis.” When your gut microbiota is out of balance, it can produce inflammatory toxins that enter your bloodstream, damage blood vessels, and trigger

atherosclerosis. A healthy gut lining and diverse microbiome protect against these effects, reducing your cardiovascular risk.

Q: Which gut-derived compounds were linked to heart disease in the review?

A: The review highlighted acetate (in excessive amounts) and trimethylamine N-oxide (TMAO) as compounds that increase heart disease risk, while short-chain fatty acids (SCFAs) like propionate and butyrate were linked to reduced inflammation and improved cardiovascular outcomes.

Q: What types of people were included in the reviewed studies?

A: The research involved adults with coronary artery disease and those managing related conditions such as Type 2 diabetes, obesity, high cholesterol, and high blood pressure — groups at higher risk for cardiovascular complications.

Sources and References

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