

# Aspartame Triggers Insulin Spikes and Inflammation in Blood Vessels

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## STORY AT-A-GLANCE

- › Aspartame triggers unnatural insulin spikes by stimulating the vagus nerve, leading to metabolic dysfunction and increased fat storage
- › Research shows that aspartame-driven insulin surges fuel chronic inflammation in blood vessels, accelerating the progression of atherosclerosis and heart disease
- › Artificial sweeteners alter gut bacteria homeostasis, increasing glucose intolerance that makes blood sugar regulation more difficult over time
- › Cutting out aspartame and other artificial sweeteners is the first step to restore insulin sensitivity and protect your cardiovascular health
- › Natural solutions like targeted carbohydrate intake and adding fermented foods to your diet help reverse the metabolic damage caused by artificial sweeteners

Aspartame, a common artificial sweetener found in sugar-free sodas, protein bars and even chewing gum, is touted to be a “healthy” alternative to regular sugar, thus helping people satisfy their cravings for sweets without risking their health. While this is a popularly held belief among consumers, research shows that aspartame does the opposite – it actually endangers your health to a greater degree than sugar.

## Aspartame Alters Insulin Response

A study published in *Nutrients*<sup>1</sup> examined how artificial sweeteners, including aspartame, affect metabolic processes and gut microbiota composition. Researchers aimed to determine whether these sugar substitutes actually help regulate blood sugar or if they disrupt natural metabolic function.

- **Glucose intolerance occurs** – Contrary to industry claims that artificial sweeteners are healthy, the study revealed the opposite – aspartame interferes with insulin signaling and contributes to glucose intolerance, making them hidden risk factors for metabolic disorders.<sup>2</sup>
- **Aspartame triggers unnatural insulin responses** – Artificial sweeteners have long been marketed as a way to reduce sugar intake without affecting blood sugar levels. However, the study found that aspartame and similar sweeteners still stimulate an insulin response. This happens because the body detects sweetness and assumes sugar is coming, prompting the pancreas to release insulin even when no actual glucose is present.<sup>3</sup>
- **Increased risk of insulin resistance** – The insulin spikes seem harmless at first, but over time, it leads to insulin resistance. When your body constantly releases insulin in response to non-caloric sweeteners, cells become less responsive to the hormone. This sets the stage for metabolic dysfunction, increasing your risk of obesity, Type 2 diabetes and cardiovascular disease.<sup>4</sup>

## **Gut Microbiota Composition Is Altered by Artificial Sweeteners**

Beyond insulin, the study also found that aspartame disrupts the delicate balance of your gut bacteria, which consists of trillions of bacteria that **regulate digestion, immune function and metabolism**.

- **Increases glucose intolerance** – Researchers discovered that aspartame consumption shifts this balance. In one published study that the researchers reviewed, “Mouse recipients of the saccharine-associated microbiome became glucose intolerant ... In humans, saccharin (upper limit of the accepted daily intake) also promoted glucose intolerance and gut microbiome alterations.”<sup>5</sup>

- **Alterations increase weight gain** – Gut bacteria play a direct role in regulating how the body processes the food you eat. A disrupted microbiome leads to improper digestion, increased fat storage and reduced energy efficiency. As noted in one of the reviewed studies by the researchers, “In Sprague-Dawley rats (7-week-old males), the ingestion of 0.05% aspartame significantly increased body weight and fat mass.”<sup>6</sup>

## **Aspartame’s Effects on Gut Function**

Beyond insulin, aspartame also interferes with other hormonal systems that regulate metabolism.

- **Reduced GLP-1 function** – The study noted aspartame causes changes in GLP-1 (glucagon-like peptide-1) secretion, a hormone that controls satiety and blood sugar balance. Reduced GLP-1 means that people who consume artificial sweeteners feel hungrier sooner, leading to increased food intake and weight gain over time.<sup>7</sup>
- **Compromised lipid metabolism** – According to the researchers, an increased intake of aspartame or other artificial sweeteners “induced the loss of antioxidant capacity as well as increased atherogenic effects” of high-density lipoprotein (HDL), which is often referred as the “good” cholesterol.<sup>8</sup>

The study highlights an important point people need to know about artificial sweeteners – they do not function as proper sugar substitutes. They actively disrupt normal metabolic and hormonal processes, making it harder for your body to regulate blood sugar and maintain a healthy weight. While they look like an easy way to cut calories, their long-term effects create more significant health risks than the sugar they replace.<sup>9</sup>

## **Aspartame Fuels Inflammation and Artery Damage, Raising Heart Disease Risk**

In a different study, published in *Cell Metabolism*,<sup>10</sup> researchers investigated how aspartame consumption influences insulin levels and vascular inflammation.

- **Aspartame fuels artery damage** — Researchers found that aspartame stimulates insulin release through your vagus nerve, leading to chronic inflammation in blood vessels. This inflammatory response directly worsens atherosclerosis, a condition in which arteries become narrowed and hardened due to plaque buildup.<sup>11</sup>
- **Inflammatory proteins are activated** — Aspartame-induced insulin spikes are not just a metabolic issue — they drive damage inside your arteries. When insulin levels surge unnaturally, your body increases production of a specific inflammatory protein called CX3CL1. This protein acts as a signal that attracts immune cells to the blood vessel walls, leading to chronic inflammation and an increased risk of heart disease.<sup>12</sup>
- **Plaque buildup** — In the reviewed animal models, aspartame consumption led to larger, more unstable plaques in the arteries compared to control groups. These plaques were more likely to rupture, which is a major cause of heart attacks and strokes. Even small doses of aspartame were enough to accelerate this process, making it clear that this artificial sweetener isn't just an innocent sugar substitute — it's actively harming your cardiovascular health.<sup>13</sup>

## **Aspartame Alters the Vagus Nerve's Role in Insulin Regulation**

Another shocking revelation from the study is that aspartame influences insulin levels in a completely different way than sugar. In addition, it changes the function of the vagus nerve, which acts as the information highway connecting your gut and brain.

- **Vagus nerve dysfunction** — Instead of raising insulin through a natural glucose response, aspartame stimulates the vagus nerve, which then signals the pancreas to release insulin unnecessarily.<sup>14</sup>
- **Insulin sensitivity issues arise** — By tricking your body into thinking sugar is present, aspartame creates a hormonal response that your body isn't designed to

handle. Over time, this disrupts insulin sensitivity and leads to metabolic dysfunction, contributing to insulin resistance and increased fat storage.<sup>15</sup>

## **Aspartame's Breakdown Products Exacerbate Health Issues**

Beyond its immediate effects on insulin and inflammation, aspartame also breaks down into smaller compounds that contribute to metabolic stress.

- **Aspartame produces methanol** – Methanol, which is an industrial type of alcohol that is used to adulterate liquor,<sup>16</sup> has been discovered to be a metabolic byproduct of aspartame digestion. According to a 2021 study, 11% of aspartame turns into pure methanol.<sup>17</sup>
- **The impact of methanol** – When methanol is metabolized by your body, it turns into formaldehyde, which is known to impact DNA and RNA health. Specifically, formaldehyde interacts with basic proteins in the cytosols of your cells, inactivating them. According to the researchers, “such changes have been found in the brains of people suffering from autism.”<sup>18</sup>

The breakdown of aspartame contributes to long-term health issues by creating additional cellular stress. When combined with aspartame's inflammatory effects on blood vessels, its overall impact on your body becomes even more apparent, necessitating strategies that repair your cellular health.

## **Eliminate Aspartame from Your Life to Protect Your Health**

As I've mentioned in previous articles, [aspartame, as well as other artificial sweeteners, will do no good for anyone's health](#). It disrupts insulin function, fuels inflammation and even accelerates artery damage. To bring your health back on the right track, the first step is eliminating aspartame while also supporting your metabolism and vascular health. Here are my recommendations:

**1. Remove artificial sweeteners from your diet immediately** – Aspartame isn't just in diet sodas. It hides in protein powders, flavored yogurts, sugar-free candies and even some medications. Read labels carefully – if you see products with the words “aspartame,” “acesulfame potassium” or “sucralose,” it's time to throw them away. Familiarize yourself with other artificial sweeteners as well, such as neotame and sucralose.

Instead of artificial sweeteners, choose natural alternatives like raw Manuka honey, maple syrup or coconut sugar in moderation. If you're trying to transition off sweeteners entirely, fresh fruit is an excellent way to satisfy your cravings while keeping your blood sugar balanced.

**2. Heal your insulin sensitivity with targeted carbohydrate intake** – If aspartame has already affected your insulin function, the best way to restore balance is to fuel your body with healthy carbohydrates in the right amounts. Aiming for 250 to 300 grams of quality carbs per day – more if you're physically active – helps prevent the insulin spikes caused by aspartame.

Prioritize whole food sources like potatoes, white rice, ripe bananas, and well-cooked vegetables. If your gut health is compromised, start with simple, easily digestible carbs like white rice and whole fruit before introducing more complex starches.

**3. Support your gut microbiome for better blood sugar control** – Aspartame damages beneficial gut bacteria, which play a direct role in regulating insulin and metabolism. Restoring balance starts with removing harmful foods (vegetable oils, processed meats and artificial additives) and introducing gut-healing food.

Fermented foods like sauerkraut, kefir and kimchi provide natural probiotics that help rebalance your microbiome. Collagen-rich bone broth supports the gut lining, and dietary fiber from well-tolerated fruits helps feed beneficial bacteria. As noted in one study, fermented foods helped improve the metabolic health of the participants, including insulin sensitivity and glucose control.<sup>19</sup>

**4. Reduce hidden sources of inflammation** – Inflammation is the link between aspartame, insulin resistance and vascular disease. Cutting artificial sweeteners is just the beginning – you also need to eliminate the biggest dietary sources of inflammation, namely vegetable oils, as they're high in [linoleic acid \(LA\)](#), an omega-6 polyunsaturated fatty acid.

LA drives oxidative stress and worsen insulin resistance. To minimize your intake, I recommend cooking your own food with tallow, grass fed butter and ghee.

**5. Improve cellular energy production with sunlight** – Artificial sweeteners disrupt cellular metabolism, but there are still other ways to restore energy production naturally, namely sun exposure. It stimulates mitochondrial function, helping your cells generate ATP (adenosine triphosphate) – the fuel your body runs on.

Aim for daily morning and midday sunlight, avoiding harsh UV exposure until you've been off vegetable oils for at least six months. That's because when sunlight hits your skin, the LA embedded in it metabolizes, contributing to inflammation and DNA damage. For a more in-depth explanation on this topic, read my article "[Vitamin D Deficiency Complicates Autoimmune Disease.](#)"

## **Frequently Asked Questions About the Impact of Aspartame on Human Health**

**Q: How does aspartame affect metabolism if it has no calories?**

**A:** Aspartame stimulates the vagus nerve, tricking your body into releasing insulin as if sugar were present. Over time, these unnecessary insulin surges lead to insulin resistance, making it harder for your body to regulate blood sugar and increasing the risk of metabolic dysfunction.

**Q: Can aspartame cause inflammation in blood vessels?**

**A:** Yes, research shows that aspartame-driven insulin spikes trigger the release of CX3CL1, an inflammatory protein that attracts immune cells to blood vessel walls. This leads to chronic inflammation, artery damage and an increased risk of atherosclerosis.

**Q: What are some common foods and drinks that contain aspartame?**

**A:** Aspartame is found in diet sodas, sugar-free gum, flavored yogurts, protein powders, sugar-free candies and even some over-the-counter medications. Checking ingredient labels for "aspartame," "acesulfame potassium," or "sucralose" is key to avoiding it. Beyond aspartame, be sure to avoid other products containing other artificial sweeteners.

**Q: If I stop consuming aspartame, how long does it take for my metabolism to recover?**

**A:** Your metabolism starts improving as soon as you remove artificial sweeteners, but full recovery depends on individual factors like the current state of your gut health and the diet you're eating. Restoring insulin function with targeted carbohydrate intake and healing the gut microbiome with fermented foods will jumpstart the healing process.

**Q: What is the best way to naturally regulate blood sugar without artificial sweeteners?**

**A:** Focus on whole-food carbohydrates like potatoes, ripe fruit and white rice to provide steady energy without insulin spikes. Supporting gut health with bone broth and probiotic-rich foods also improves blood sugar control and overall metabolic health.



## Sources and References

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