

*Diamine oxidase (DAO) is an enzyme mainly produced in the gut that helps break down or block histamine from foods or bacteria that produce histamine in the gut. Several factors can affect DAO production, including gut microbiota imbalances and genetic variations that reduce DAO levels, increasing the chances of a histamine reaction.*

## DAO Impact Genes

Many factors can impact DAO production, including gut health, nutrient deficiencies, and even chronic stress. You may have a gene variant that affects production and increases your histamine intolerance risk. If you have a gene variant, supporting that gene with the proper nutrition and lifestyle habits is essential.

When looking at a gene report, look for the following rs-numbers and the impact alleles. These genes are genotyped on older 23andMe (V4) or Ancestry except for the rs 2052129, which can be found on 23andMe V5. However, the most significant impact rs-number is rs 1049793, reported on 3x4 Genetics.

- ACO1 - Reduced Activity
  - rs 10156191 - TT
  - rs 1049793 - GG
  - rs 2052129 - TT

## DAO

Gut health and a balanced microbiota are the key to the healthy production of DAO. Imbalances like increased LPS (lipopolysaccharide) are commonly seen with a “leaky gut.” Increased LPS has been shown to decrease DAO and intolerance to foods high in histamine.



*Low DAO levels are often seen with a low fiber and low plant diet, as this impacts the gut microbiota.*



# DAO Enzyme

## How to Increase DAO

### Gut Health

Even though you may or may not have a gene variant that affects DAO production, a healthy and balanced microbiome is essential for healthy DAO production. When our microbiome becomes imbalanced, this can lead to intestinal permeability or leaky gut, which significantly impairs the production of DAO. This can lead to histamine intolerance, as you have a reduced ability to block histamine from your food. Overcoming histamine intolerance and healing the gut can be challenging as most foods that help heal leaky gut, like fermented vegetables, are high in histamine. Focusing on low-histamine plant-based foods rich in fiber is the best way to rebuild and balance the microbiota while you work on resolving histamine intolerance and can back in fermented foods.

### Key Nutrients

DAO enzymes rely on co-factors like vitamins B2, B6, C, and copper for proper production. While it might seem helpful to take supplements for these nutrients, it's important to prioritize a food-first approach and get tested to see if you actually need them. Over-supplementing can lead to nutrient imbalances, which could worsen your histamine intolerance. Remember: test, don't guess.

### Foods High In DAO

Some foods, such as alfalfa and lentil sprouts, are high in DAO and can easily be added to your diet. Pea shoots are also extremely high in DAO as a plant-based source. Pork kidney, however, is the richest source of DAO.

### Foods that Reduce DAO

Two common favorites—caffeine and alcohol—can lower DAO production. This happens because the same compound that breaks down caffeine and alcohol is also responsible for breaking down DAO.

### Medications

Many medications can reduce DAO production, including some commonly used antihistamines, anti-inflammatory (NSAIDs), antihypertensives, and N-acetylcysteine (NAC) supplements. For a more complete list, download it [here](#).



# DAO Enzyme Supplements

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## Do DAO Supplements Work?

DAO supplements can be helpful for managing histamine intolerance, but their effectiveness depends on several factors. If you have gut health issues or trouble digesting food, DAO supplements might help, even if you don't have a genetic variant affecting DAO production. For those with a genetic variant or reduced DAO function, supplements are more likely to be beneficial.

However, not all DAO supplements are equally effective. Some are made from plant sources like pea shoots, but there is little research supporting their effectiveness. The best results seem to come from supplements made from porcine kidney extract, which also contain the antioxidant catalase and small amounts of vitamin C.

Additionally, the amount of DAO in the supplement matters. Look for supplements with at least 20,000 HDUs (histamine-degrading units) to ensure they're strong enough to help manage your symptoms.



OmneDiem® Histamine Digest delivers natural-source DAO in a designed-release capsule that dissolves in the small intestine, where it acts directly on dietary histamine to support digestive health and comfort.

Recommend Histamine Digest, which contains over 20,000 HDUs per capsule, antioxidants, catalase, and vitamin C.

Get yours from my [Fullscript Dispensary—the Best Supplements for Histamine Intolerance](#). You will receive 15% off; free shipping is available on orders over \$50.00.

\*\*You will need to sign up my dispensary to gain access to my recommendations - super easy to do - just your name and email.