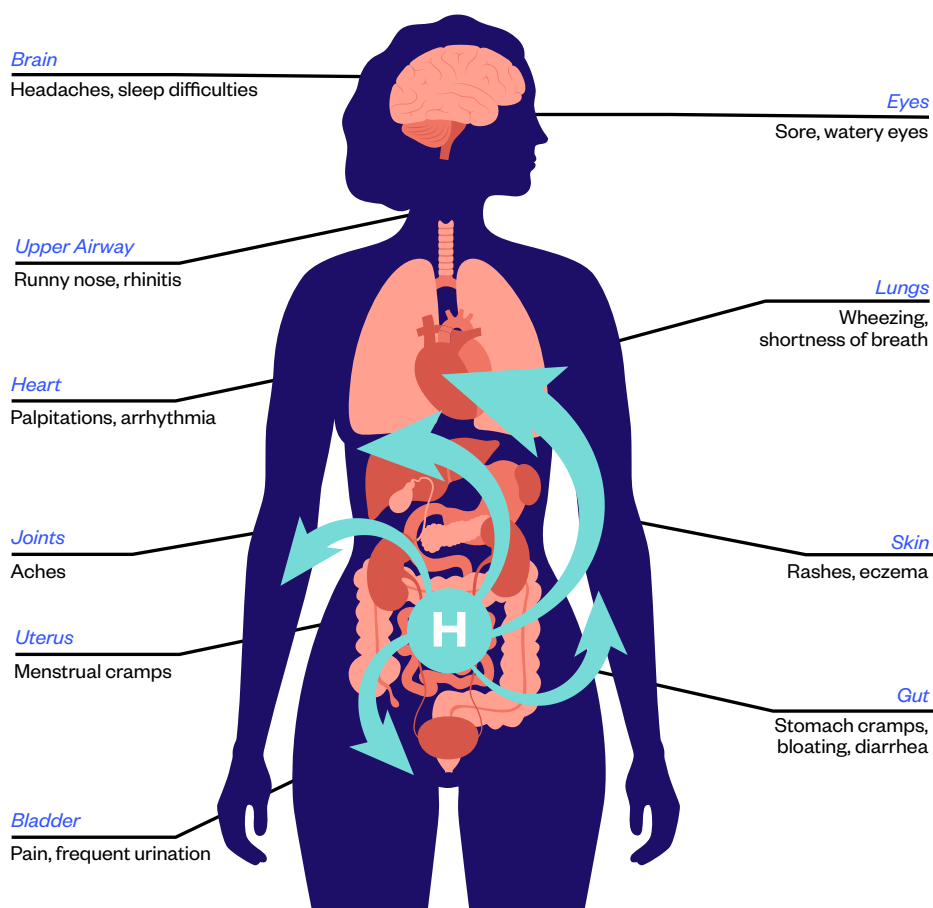


## DAO Enzyme:

# How to Use It

A significant number of histamine symptoms are triggered by histamine originating from the gut. If you have high histamine levels in your gut, you may also have high histamine levels potentially everywhere.

**Histamine from the gut gets into the blood and flows everywhere throughout the body.**



**Taking a supplement that naturally digests histamine will support healthy histamine levels.**

**The most important enzyme that digests histamine in the gut is diamine oxidase (DAO).**

*The DAO enzyme keeps histamine levels in balance.\**

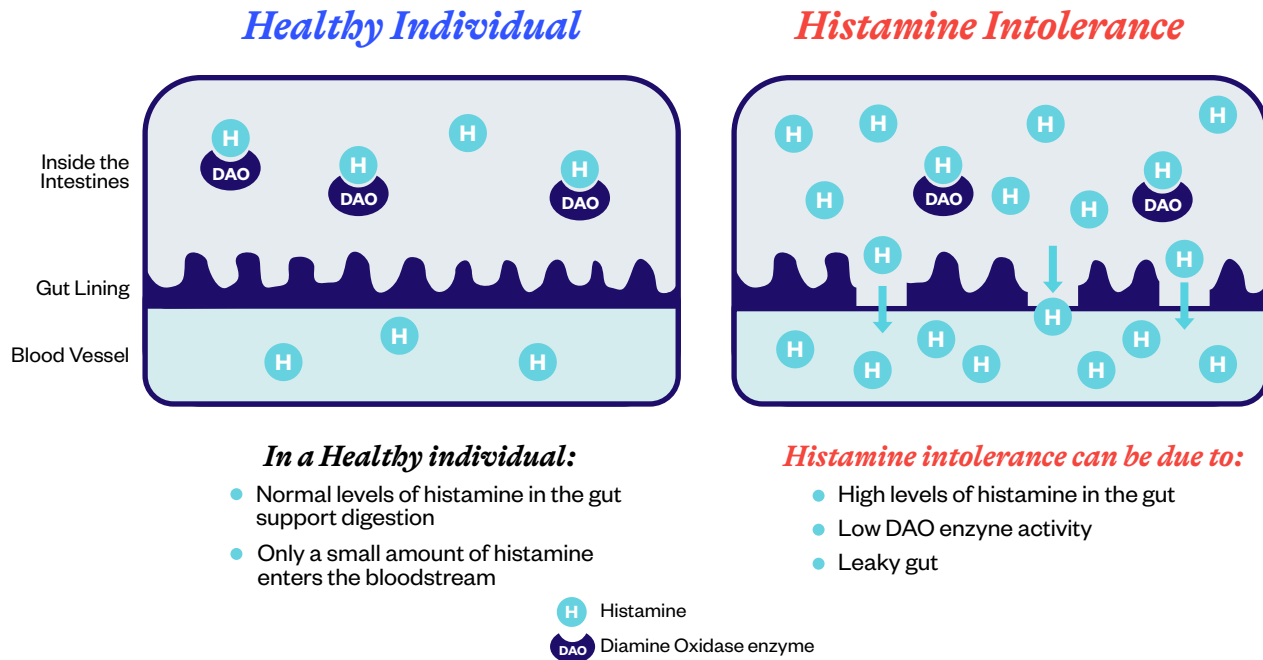
\*These statements have not been evaluated by the Food and Drug Administration (FDA). This product is not intended to diagnose, treat, cure, or prevent any disease.

# Healthy Histamine Levels

In a healthy individual, **histamine is generated in the gut to support digestion**. DAO enzymes in the gut break down histamine to maintain a healthy level of histamine.

If a body is digesting histamine properly via these DAO enzymes, only a small amount of histamine enters the bloodstream from the gut.

**If histamine isn't broken down properly, too much histamine may be absorbed into the bloodstream from your gut, circulating throughout your body, causing various symptoms related to histamine intolerance.**<sup>1,2,3</sup>



## *In a Healthy individual:*

- Normal levels of histamine in the gut support digestion
- Only a small amount of histamine enters the bloodstream

## *Histamine intolerance can be due to:*

- High levels of histamine in the gut
- Low DAO enzyme activity
- Leaky gut

# Histamine Intolerance

Any combination of the following can cause histamine intolerance:

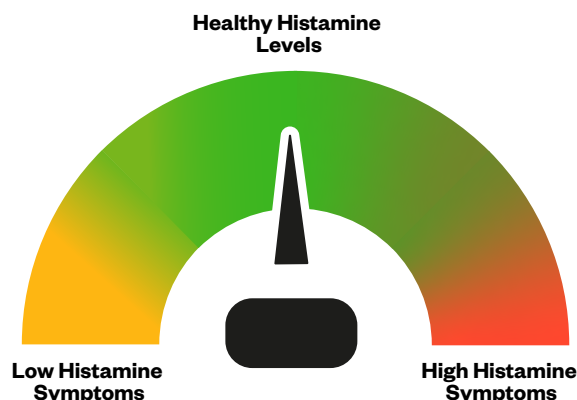
- **A high level of histamine in your gut.** This can overwhelm the capacity of the DAO enzymes in your intestines to break it down. A high histamine load in your gut can come from many sources:
  - Food and drink (fermented foods, fermented drinks)
  - Medications (metformin, ibuprofen, aspirin)
  - An imbalance of gut bacteria (dysbiosis)
- **Low enzyme activity.** You may have been born with a genetic variant (SNP) form of the DAO enzyme, which reduces its capacity to break down histamine effectively.<sup>1,2,3</sup> Or, your DAO enzyme may have become dirty.
- **A 'leaky' gut.** Your intestines may be more permeable to histamine due to inflammation in the gut.

*Your body needs some histamine, but if it doesn't have enough DAO in your gut, histamine can easily overwhelm your immune system.*

**This deficiency can lead to aggravating symptoms, such as asthma, joint pain, migraines, sleep difficulties, irritability, rapid heart rate, or reactions to foods and other triggers.**<sup>1,2,3</sup>

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# How Is Your DAO Enzyme Doing? *Check!*



Using the table below, identify where the majority of your **current** symptoms are.

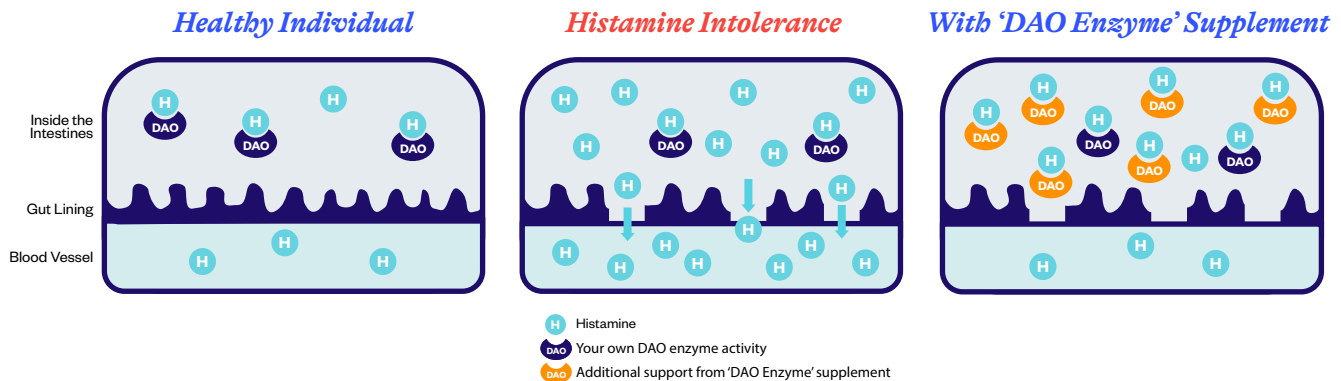
GUT SIGNS AND SYMPTOMS		OTHER PARTS OF THE BODY SIGNS AND SYMPTOMS
<b>Low DAO</b> <sup>1,2,3</sup>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Sensitive to high-histamine foods and drink</li> <li><input type="checkbox"/> Sensitivity to alcohol</li> <li><input type="checkbox"/> Sensitivity to fermented foods</li> <li><input type="checkbox"/> Leaky gut</li> <li><input type="checkbox"/> Stomach pain and cramps</li> <li><input type="checkbox"/> Acid reflux (especially nighttime)</li> <li><input type="checkbox"/> Loose bowel movements or diarrhea</li> <li><input type="checkbox"/> Bloating within minutes of eating</li> <li><input type="checkbox"/> Nausea with or without vomiting</li> <li><input type="checkbox"/> Extreme morning sickness during pregnancy</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Headaches and migraines</li> <li><input type="checkbox"/> Skin issues, such as hives, rashes, and eczema</li> <li><input type="checkbox"/> Irritability</li> <li><input type="checkbox"/> Trouble falling asleep and staying asleep</li> <li><input type="checkbox"/> Bladder issues (bladder pain, frequent urination, bedwetting)</li> <li><input type="checkbox"/> Heart palpitations, rapid heart rate, arrhythmia</li> <li><input type="checkbox"/> Nasal congestion, sneezing, rhinitis</li> <li><input type="checkbox"/> Breathing problems</li> <li><input type="checkbox"/> Menstrual cramps</li> <li><input type="checkbox"/> Low or high blood pressure (depends)</li> </ul>
<b>Healthy DAO</b> <sup>1,2,3</sup>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Normal digestion of histamine-containing foods</li> <li><input type="checkbox"/> Normal breakdown of histamine produced in the gut and the gut microbiome</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Stable blood pressure</li> <li><input type="checkbox"/> Normal heart rhythm</li> <li><input type="checkbox"/> Clear airways</li> <li><input type="checkbox"/> Normal menstrual cycle without histamine-related symptoms</li> <li><input type="checkbox"/> Normal skin barrier function, no histamine-mediated skin reactions</li> <li><input type="checkbox"/> Normal breakdown of histamine produced in the uterus, bladder, and prostate</li> </ul>
<b>Too much DAO</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Constipation</li> <li><input type="checkbox"/> Poor digestion</li> <li><input type="checkbox"/> Bloating</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fatigue</li> <li><input type="checkbox"/> Poor concentration</li> <li><input type="checkbox"/> Poor long-term memory</li> <li><input type="checkbox"/> Feeling sleepy</li> <li><input type="checkbox"/> Low mood</li> <li><input type="checkbox"/> Poor wound healing</li> <li><input type="checkbox"/> Cold hands and feet</li> <li><input type="checkbox"/> Little to no sweating</li> <li><input type="checkbox"/> Low libido</li> <li><input type="checkbox"/> Erectile dysfunction</li> <li><input type="checkbox"/> Difficulty orgasming</li> </ul>

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# How to Support *Healthy* Histamine Levels

By supporting healthy histamine levels in the gut, you indirectly help all your organs function better. This is the reason Dr. Lynch created **DAO Enzyme**.<sup>†</sup>

**DAO Enzyme** helps support the break down of histamine in your gut. This helps keep histamine levels in your body under control while you work on addressing the things that are causing the high histamine in the first place.<sup>†</sup>



*Some days, you may need to take DAO Enzyme a few times,  
while on other days, you may not need it at all.  
Only take it when your gut histamine levels are high—or are going to be high—  
as DAO Enzyme supports healthy histamine levels.<sup>†</sup>*

If you start feeling any of the symptoms listed under 'Too much DAO,' you may be taking too much. **Stop taking DAO Enzyme for a while and see if the symptoms resolve.**

Here are some reasons why your gut might have too much histamine, not enough DAO enzyme to break it down, or why your gut might be leaky. These are what you need to work on to see long-term improvements:

- Gut conditions like Crohn's disease, ulcerative colitis, or celiac disease.<sup>4,5</sup>
- Taking certain medicines, like metformin, pain relievers (NSAIDs), or acid reflux drugs (PPIs).<sup>6</sup>
- A leaky gut, where the gut lining is inflamed or damaged.<sup>7</sup>
- SIBO (too many bacteria in the small intestine).<sup>7</sup>
- SIFO (a fungal overgrowth, such as candida, in the small intestine).
- Gut dysbiosis—an imbalance of histamine-producing bacteria compared to beneficial bacteria such as bifidobacteria.<sup>26</sup>
- Eating foods or drinking beverages that are high in histamine (fermented foods, fermented drinks, aged meats and cheeses, leftovers, citrus).
- Eating foods or drinks that you have an immune sensitivity to (common ones are eggs, dairy, gluten, peanuts, and latex family such as avocado, mango, pistachios).
- Not eating sufficient fiber to feed the beneficial bacteria.<sup>26</sup>
- A diet high in sugar and processed foods that feed the histamine-producing bacteria and yeast infections (if present).
- Drinking alcohol, especially red wine, dark beer, aged alcohol like whiskey and bourbon, cider, and champagne.
- High physical or mental stress.
- Not getting enough nutrients, like copper.
- Changes in the DAO gene that affect how your body processes histamine.
- Poor bile production or flow. Bile helps to keep pathogenic bacteria and yeast infections at bay.

**If any of these apply to you, DAO Enzyme might support histamine balance.<sup>†</sup>**



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DAO Enzyme is suitable for:

- Children over the age of 4
- Breastfeeding mothers: High histamine levels during breastfeeding may be associated with infant eczema and colic.<sup>16,17</sup>
- Pregnant women: [High histamine during pregnancy](#) can be associated with pregnancy complications, especially during the first trimester.<sup>18</sup> Talk to your healthcare professional first.

**Important:**

**This product is derived from porcine (pig).** Avoid if allergic to pork. It is not suitable for vegetarians and vegans. DAO Enzyme is NOT EFFECTIVE for celiac disease or anaphylactic allergies, such as peanuts, shellfish, eggs, dairy, etc. Those with NCGS (non-celiac gluten sensitivity) may find it helpful for supporting healthy histamine levels as histamine intolerance plays an important role in gluten sensitivity.<sup>20</sup>



## How to Use DAO Enzyme

**DAO Enzyme** can be taken any time of the day or night, with or without food, as needed.

**With food and drink:** Take with food to break down histamine found in food and drink.<sup>†</sup>

This is how most people use DAO Enzyme. If you're eating a low-histamine meal or not drinking alcohol, you may not need to take it.

**Without food or drink:** Take on an empty stomach to break down histamine produced by or released in response to overgrown or harmful gut organisms. This method could be beneficial for those with SIBO (small intestinal bacterial overgrowth), SIFO (small intestinal fungal overgrowth), or leaky gut to support balanced histamine levels.<sup>†</sup>

## Typical Suggested Usage Schedule:

Different situations may need different ways of using DAO Enzyme. **It depends on what you want to achieve or where the histamine is coming from.** Here are a few common examples for usage you can choose from to match your own needs.

### Histamine Symptoms Associated with Exercise

If you're exercising and experience a bright red face, ringing in your ears, excessive sweating, or it's harder to catch your breath, these may be all related to high histamine.

- Take 1 capsule prior to exercise ideally with 1 serving of Optimal Electrolyte in a glass of filtered water.

### Histamine Symptoms Associated with Food and Drinks

If you experience stomach pains or bloating after eating, headaches, sweating, reflux, or perhaps you get loose stools, hives (rashes), difficulty breathing, or rapid heart rate after eating certain foods, it may be that you don't have sufficient DAO enzyme in your intestines to deal with these foods effectively.

Start with 1 capsule when consuming high-histamine foods or drinks. You should notice increased tolerance when eating these foods.<sup>†</sup>

- If your reaction is less, but you are still experiencing some symptoms, then take 2 capsules with your next high-histamine meal.<sup>†</sup>

**The number of capsules is determined by the amount of histamine foods and drinks you consume in one sitting, not by your age or your weight.** If you are having a meal containing fermented foods or fish and also drinking a few alcoholic drinks, you may need more than just 1 capsule.<sup>†</sup>

If needed, capsules may be opened and sprinkled on a bite of food. This isn't ideal, though, as we use special capsules that are resistant to stomach acid to protect the DAO enzyme. You will still get benefits, but not 100% due to the stomach acid destroying some of the DAO enzyme.

**Remember: Do not eat foods you are known to be allergic to, as these foods should be avoided.**

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### Histamine Symptoms Associated with Alcohol

If, as soon as you start drinking alcohol, you experience symptoms, this may be a sign that your DAO enzyme is not working effectively. Symptoms may include: feeling flushed (with a red face and neck), difficulty breathing\*, headaches, irritability or a rapid heart rate.

\*Difficulty breathing may be due to the sulfur content of the wine.

- Take 1 capsule every hour while you are consuming alcohol to support a healthy histamine response.†
- Take 1 capsule when you have finished drinking, if it has been a long night, to further support histamine digestion.†

Alcohol stays in your gut for 30-90 minutes before it is absorbed. Alcohol consumed on an empty stomach absorbs more quickly than when mixed with food.

**Your only opportunity to break down as much histamine as possible is while food or drink is still in your gut.**

### Histamine Symptoms Associated with Gut Bacteria

If you don't consume a lot of high-histamine foods but still experience gut histamine symptoms, you likely have gut dysbiosis.

- Take DAO Enzyme on an empty stomach. This may be first thing in the morning, last thing at night, in between meals, or all three times if needed.

This helps digest histamine produced by or released in response to gut organisms, which is common in leaky gut, SIBO, and SIFO.†

**Stack with [ProBiota HistaminX](#) (if needed):**

Gut organisms that produce or stimulate the release of histamine increase your risk of histamine intolerance by a lot! ProBiota HistaminX supports a healthy histamine level within your gut microbiome.†

- Take 1 capsule upon waking. For best results, it should be taken every morning for a month, then rest for a couple of weeks, and then used for a few days a week for maintenance.

### Histamine Symptoms Associated with Morning Sickness<sup>28</sup>

Histamine is produced heavily by the placenta, which can overwhelm the mother's DAO enzyme. **High histamine is associated with morning sickness.**

- Take 1 capsule as needed with or without food during this time to support a healthy histamine response.†
- Read this [Morning Sickness Guide](#)

### Histamine Symptoms Associated with PMS<sup>18,19</sup>

Many women notice their histamine symptoms get worse right before ovulation and just before their period. **This is typically when DAO enzyme function is slower and histamine levels are higher.** High histamine also causes estrogen levels to rise.

- Take 1 or more capsules away from food or drink during the times you experience PMS symptoms, to support healthy histamine levels.†

**Stack with [Histamine Nutrients](#) (if needed):**

You may need more systemic support if DAO Enzyme does not adequately support you.†

The DAO enzyme breaks down histamine in the gut. But, once histamine has left the gut and is absorbed into the bloodstream, a different set of enzymes is responsible for breaking down histamine in the body. **Histamine Nutrients** contains a range of nutrients that help these enzymes break down histamine throughout the rest of your body.†

- Take 1 to 2 capsules of Histamine Nutrients with DAO Enzyme.†

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# Interactions with Medications

While DAO Enzyme does not interfere with medications, some medications may:

1. Reduce DAO enzyme activity or production.
2. Increase histamine release.

This increases your histamine symptoms and the need for gut histamine support.

**Here are some common medications that can increase the workload for DAO enzymes.**

This list is not exhaustive. Talk with your healthcare professional to ensure there are no interactions.

CLASS OF DRUG	COMMON NAMES	SEVERITY OF INTERACTION
<b>NSAIDs</b> <sup>21</sup>	Ibuprofen, Aspirin, Naproxen (strongest effect)	Moderate (#1)
<b>Painkillers</b> <sup>21</sup>	Codeine, Morphine	Moderate (#2)
<b>Beta-Blockers and Blood Pressure Medications</b> <sup>22, 23</sup>	Atenolol, Acebutolol, Metoprolol, Propranolol, Cardizem, Norvasc	Moderate (#1 and #2)
<b>Diabetes Medication</b> <sup>25</sup>	Metformin	Moderate (#1)
<b>Immune-Modulating Drugs</b>	Humira, Plaquenil, Enbrel	Moderate (#1)
<b>Antidepressants</b> <sup>24</sup>	Prozac, Zoloft, Cymbalta, Effexor	Moderate to Minor (#1)
<b>Antihistamines</b>	Benadryl, Phenergan	Moderate to Minor (#1)
<b>Histamine H2 Blockers</b>	Tagamet, Pepcid, Zantac	Moderate to Minor (#1)

## Supportive Supplements for DAO Enzyme<sup>†</sup>



### ProBiota™ HistaminX™

A probiotic specially made for people sensitive to histamine. Highly, highly recommended. Take upon waking in the morning.



### Histamine Nutrients

Supports the healthy breakdown of histamine in the body. Take 2 capsules any time of day or night. Take before bed to support a healthy onset of sleep.



### Bile Nutrients

Supports healthy bile production and flow, which is needed to support a healthy small intestine, and, thus, histamine levels in the gut. Take 2-4 capsules before dinner.



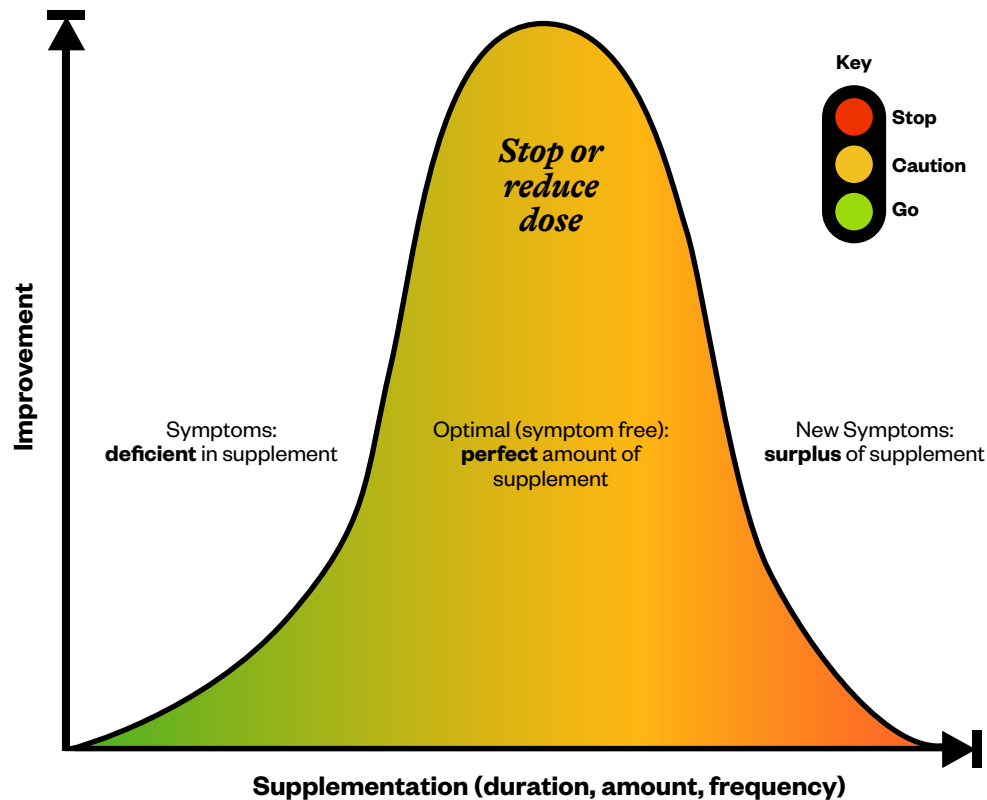
### Gut Nutrients

Supports a healthy gut lining that can become irritated by high histamine. Take 2 capsules upon waking and 3 capsules before bed. This works best away from food.

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# How to Use Supplements

*The Pulse Method* is Dr. Lynch's method for starting, pausing, or stopping a supplement based on how you're feeling. Implement this method after consulting with your healthcare practitioner and introducing a new supplement into your diet and after consulting with your doctor. The Pulse Method has helped people reduce side effects, support healthy outcomes, and save money.



## What Does It Mean To Supplement?

The word supplement literally means “to add to or enhance.” **Supplementation is used to “top off” nutrients you should already receive daily from eating, though sometimes you may not.** It is also a tool to aid the body in supporting nutritional balance, which can be offset due to poor food quality and a lack of essential vitamins and minerals.



## How to Further Optimize Your Histamine

- **Reduce your intake of high-histamine foods and beverages.**  
Download our free [Histamine Intolerance Guide](#) or get our [Dirty Genes: This Histamine Workbook](#) to help you figure out where your histamine issues could be coming from.
- **Support a healthy gut.**  
Download our free [Leaky Gut Guide](#) to learn how to start addressing your gut problems.

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# FAQs



## Is DAO Enzyme safe to take?

Studies have shown that taking 4.2 mg of DAO enzyme, the amount in DAO Enzyme, 2-3 times a day before meals, is safe and **does not cause any harmful reactions in healthy people.**

## How long does DAO Enzyme stay in the body?

Free porcine DAO has a half-life of about 19 minutes.<sup>15</sup> Since its action in the intestine is short-lived, it's important to take DAO Enzyme at the right time.

**DAO Enzyme is most effective during the digestive process, particularly within the first hour after food or drink.\***

## How do I know when I no longer need DAO Enzyme?

As your gut lining gets healthier and your gut microbiome becomes more balanced, you'll need less DAO Enzyme.

How do you know this is the case? Your high histamine symptoms will be supported\*.

**You can always take it whenever you feel you need extra support,** such as when you're eating more histamine-rich foods or consuming alcohol.\* Listen to your body.

## I take DAO Enzyme because I have histamine intolerance symptoms, but I feel worse when taking it. Why is that?

Every time DAO enzymes do work, whether it's your own DAO enzymes or enzyme supplements you are taking, ammonia and hydrogen peroxide are released in the process.

If you are not able to deal with these expected byproducts of histamine metabolism, then you may experience symptoms.

**For your body to process these unwanted byproducts, you'll need adequate amounts of glutathione.** For this reason, Dr Lynch developed Glutathione Plus, which contains glutathione, as well as the main nutrients to recycle and maintain healthy glutathione levels.\*

- **Glutathione Plus Lozenge** up to 1 lozenge by mouth as needed. Slowly chew, allow to fully dissolve, then swallow.

Do not take glutathione supplements within 3 hours of bedtime, as they may interfere with sleep.

## I've been more constipated since taking DAO Enzyme.

**You may be taking too much DAO Enzyme.**

Histamine plays an important role in digestion and gut motility. If the DAO enzyme reduces histamine levels too much, it may slow bowel movements, leading to constipation.

**Take the following steps:**

1. Stop taking it for a few days.
2. While this seems crazy, consume a bit of foods and drinks higher in histamine, such as kombucha, vinegar, and pickled foods, to reverse constipation. It doesn't take much.
3. Take DAO Enzyme only when you need to support healthy histamine levels, with or without food or drink. Skip it when you're feeling good.

## I was already suffering from constipation before taking DAO Enzyme, but now I feel even worse.

It may be that you are dehydrated, have a sluggish gallbladder and low bile production, or have low levels of magnesium, acetylcholine, or serotonin. Read the [How Your Digestion Works Guide](#) to learn more.

It's estimated that around 50% of the American population has less magnesium than they need.<sup>27</sup>

- Low magnesium can be a cause of constipation itself.
- **Optimal Magnesium** 1 capsule as needed, with or without food, any time of day or night.
- **Optimal Electrolyte** contains 100 mg of magnesium along with other nutrients, such as taurine and creatine, to support a healthy bowel movement. Use this to get additional hydrating and bowel-moving benefits.\*

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# FAQs

## Will I have to take DAO Enzyme forever? Will I have to avoid high-histamine foods forever?

No.

**Many healthy foods are high in histamine.** The reason you are reacting is most likely that your histamine bucket is just too full. This means you have to look at whether you are eating too many high-histamine foods, or whether you have gut bacteria that are producing or stimulating the release of too much histamine.

**Work through our [Histamine Workbook](#) to identify many sources of histamine that may be hiding from you—and likely are.**

## Should I take DAO Enzyme with food or on an empty stomach?

**It depends on the outcome you are looking for.**

If you are eating a lot of high-histamine foods and you would like to compensate for this, then take DAO Enzyme with food.<sup>†</sup>

If you are not eating a lot of high-histamine foods but you have been diagnosed with gut dysbiosis or SIBO (small intestinal bacterial overgrowth), it may be more beneficial to take DAO Enzyme on an empty stomach to break down histamine produced and released by these bad bacteria.<sup>†</sup>

**Always consult with a healthcare provider before starting any new supplement, especially at higher doses.**



## References

1. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8308327/>
2. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5806734/>
3. <https://pubmed.ncbi.nlm.nih.gov/17490952/>
4. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10297875/#sec5-ijms-24-09937>
5. <https://pubmed.ncbi.nlm.nih.gov/3088248/>
6. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10707353/>
7. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8069563/>
8. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6859183/#Sec6>
9. <https://pubmed.ncbi.nlm.nih.gov/29475774/>
10. <https://pubmed.ncbi.nlm.nih.gov/29698966/>
11. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10607251/>
12. <https://pubmed.ncbi.nlm.nih.gov/18499706/>
13. <https://pubmed.ncbi.nlm.nih.gov/29475774/>
14. <https://pubmed.ncbi.nlm.nih.gov/29698966/>
15. <https://pubmed.ncbi.nlm.nih.gov/32090335/>
16. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8144954/>
17. <https://www.nature.com/articles/pr200445>
18. <https://www.sciencedirect.com/science/article/pii/S0002916523280533?via%3Dihub>
19. <https://pubmed.ncbi.nlm.nih.gov/8147232/>

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