

Is Histamine to Blame for Your Headache, Hives and Heartburn?

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April 13, 2024

STORY AT-A-GLANCE

- › Several symptoms may reveal an allergy, such as sneezing or a rash, but many of the same symptoms are caused by histamine overload, which is cumulative
- › Diamine oxidase (DAO) is the main enzyme responsible for breaking down ingested histamine, so if you're deficient in DAO (which a test can tell you), you probably have symptoms
- › An elimination diet is probably the most accurate way to find out whether or not you're reacting to the histamines in food
- › Scientists say eliminating very high-histamine foods, then limiting medium- to low-histamine foods in your diet, may be a starting point to improve symptoms

Editor's Note: This article is a reprint. It was originally published January 25, 2017.

If you've ever had allergies with hives, nasal congestion, headaches or coughing, you may already know histamine, a chemical neurotransmitter your body produces, is what drives the most common allergy symptoms.

However, in around 1% of the population, histamine overload may lead to symptoms such as constipation and/or diarrhea, migraines, rapid heartbeat and low blood pressure that are serious enough to cause discomfort, but vague enough for a doctor to have trouble diagnosing.

Histamine intolerance is a disorder that causes a wide range of symptoms, and it's often confused with a host of other ailments. Many doctors have never heard of this common but misunderstood condition and keep treating symptoms without understanding the actual cause.

Whatever the trigger – everything from allergies and leaky gut to enzyme deficiency and high intake of histamine-rich foods can lead to high histamine levels – it's no exaggeration to say histamine intolerance can make you miserable.

Although it's controversial, some scientists say about 1% of the population is histamine intolerant and, among them, 80% are middle-aged.¹

Histamine and Histamine Intolerance

Histamine is in a group with other small molecule neurotransmitter substances such as serotonin, epinephrine (adrenaline) and dopamine, and a small amount is always circulating throughout your body, communicating messages to your brain, Regenerative Medicine notes.²

As a chemical neurotransmitter, histamine is passed between neurons in the nervous system, and the neurons release molecules and pass from the end of the neuron through the synapse (a gap between neurons). It's then:

*"... taken up by a 'receptor' area on the receiving neuron. That neuron then continues to pass the neurotransmitter, resulting in a reaction. The constant stimulation of neurons causes reactions in the body which are specific to the type of neurotransmitter that is passed."*³

It helps regulate sleep, physiological function in the gut and even benefits your sexual response. But Paleo Leap explains:

"When an allergen triggers the immune system, mast cells (a type of white blood cells) release histamines as part of the inflammatory immune reaction. It's this inflammation that gives you puffy, swollen eyes or a blistering skin rash ...

*As well as being produced during the immune response, histamines can also be absorbed from histamine-containing foods, and produced by bacteria in the gut."*⁴

DAO Enzyme Breaks Down Histamines (in a Perfect World)

When a toxic chemical like poison ivy or an insect bite aggravates your skin, larger amounts of histamine rush to the site. However, in healthy people, the amount of histamine is balanced by diamine oxidase (DAO), an enzyme in your gut that breaks down the histamines.⁵

Optimally, your system balances out the amounts released, but if there's a DAO deficiency, histamines can build up in your body and cause unpleasant symptoms. (Another enzyme, N-methyltransferase, or HMT, not quite as common, can also contribute to symptoms that resemble an allergic reaction.)

If your body isn't capable of breaking down histamine properly, a build up of the substance can result. A good metaphor is one of a bathtub: When too much water runs in, a drain at the top releases the excess to prevent an overflow.

DAO functions as the overflow protection in healthy people, while those with histamine intolerance experience what could be called a flood; their "tub" overflows. When people have an allergic reaction, but an allergen didn't set it off, some scientists refer to it as a "pseudoallergy."

To find out if your symptoms are from an allergy or histamine intolerance, you can get a DAO test to check your levels, but it may be skewed as other enzymes can degrade histamine. There's also the skin prick test; one study showed 79% of histamine-intolerant subjects had a reaction, but only 19% of the non-intolerant subjects did, so it's not very precise, either.⁶

Complications are worse for women, as DAO production can fluctuate with menstrual cycles,⁷ being higher (aka worse) during the luteal phase (about a week after periods

end until the next one begins), and lower (improved) during the follicular phase (the rest of the time). With everything else going on, histamine levels are easy to miss.

Counteracting Excess Histamine

Here's the kicker: Your body is not equipped to handle large amounts of this chemical. It can counteract histamine by producing epinephrine (adrenaline) to help deactivate it. Besides being responsible for the "fight-or-flight" response, adrenaline can also initiate feelings of anxiety and even a panic attack.

Some doctors suggest taking Benadryl or other antihistamines to suppress histamine in your body and the histamine response along with it. That's why advertisements for people with a head cold might mention a product is an antihistamine to relieve nasal swelling and stimulate fluid secretion.

Unfortunately, these drugs can cause significant side effects and relief tends to be short-lived. Antihistamines can also cause drowsiness, as ordinarily your body carefully regulates the amount of histamine available for circulation, which is important to keep your body awake and alert.

Histamine also plays a role in gastric secretion by inducing acid production in your stomach. The American Journal of Clinical Nutrition (AJCN) published a list of foods rich in histamine, which might cause symptoms in someone with histamine intolerance.

This includes ketchup, parmesan cheese and champagne.⁸ Mind Body Green⁹ lists common symptoms of this problem:

Headaches/migraines

Light sleep, trouble getting to sleep

Hypertension

Vertigo or dizziness

Arrhythmia, or accelerated heart rate

Difficulty regulating body temperature

Nasal congestion, difficulty breathing	Anxiety	Nausea, vomiting
Flushing	Abdominal cramps	Fatigue
Abnormal menstrual cycle	Hives	Tissue swelling

Other symptoms of an excess in histamine include blacking out, confusion, chest pain, conjunctivitis, an increased heartbeat and severe itching.¹⁰

A Better Idea to Diagnose Histamine Intolerance: An Elimination Diet

An elimination diet is probably the most accurate way to find out whether or not you're reacting to the histamines in food. Paleo Leap says the process entails going four weeks without eating foods that contain natural histamine content, followed by a reintroduction challenge:

"Four weeks without histamines, followed by a reintroduction challenge, is the most accurate way of determining whether or not a person is really reacting to the histamines in food. This is long enough to get an idea of a long-term trend."¹¹

It's also long enough for women's monthly cycles to hit every phase so you're not misled by occasional fluctuations.

What foods should be eliminated during a histamine tolerance elimination diet? Studies show it's not the histamines in food, but on them, that cause the problem. It's produced as part of the metabolic process, so for anyone with histamine intolerance, aged and fermented foods can be problematic. Three categories cover most of them:

- **Very-high-histamine foods** include seafood, particularly canned or smoked fish.

- **High-histamine foods** include aged cheese, fermented foods like kimchi, sauerkraut, kombucha, yogurt and kefir, all alcohol, vinegar and cured meat.
- **Medium-histamine foods** include spinach, mushrooms, tomatoes, eggplant, canned vegetables, dried fruit, strawberries, papaya, avocados and pineapple.

In many cases, you can improve by avoiding high-histamine foods, even if you eat medium-histamine foods occasionally. One study revealed a case in which a 6-year-old boy with atopic dermatitis, ostensibly from pork, participated in a food challenge test. When high-histamine foods were eliminated and medium-histamine food intake was moderated, he improved.¹²

Histamine Triggers

Another category involves eating foods that don't contain histamine but can trigger your body to release more. This is particularly the case in people sensitive to sulfur-containing foods such as strawberries, onions and **kiwi**. It can be very serious, because this sensitivity can produce shock and even be deadly. Chris Kresser, a licensed integrative medicine clinician, says:

*"For anyone experiencing histamine intolerance, strict adherence to a low-histamine diet is necessary for a period of time. After that, smaller amounts of histamine may be tolerated depending on the person. Individual sensitivity varies tremendously."*¹³

Histamine intolerance is related to Small Intestine Bacterial Overgrowth (SIBO)¹⁴ and dysbiosis,¹⁵ in which your gut's good flora is diminished and bad bacteria flourishes; the latter may be one of the primary causes of the former, Kresser says, because:

"... [A] primary cause of histamine intolerance is an overgrowth of certain types of bacteria that make histamine from undigested food, leading to a buildup of histamine in the gut and overwhelming the body's ability to catabolize the excess histamine. This causes a heightened sensitivity to histamine-containing

*foods and an increase in symptoms that are commonly associated with allergies."*¹⁶

To improve your tolerance to foods that cause a reaction, you must allow your gut to heal and address any dysbiosis or SIBO issues that may exist. You may find that eliminating very-high-histamine foods and limiting medium- to low-histamine foods for a time may be a starting point to improve symptoms.

Histamine Hack: Eating Fermented Foods

Most of the DAO your body releases comes from the small intestine,¹⁷ and when your small intestine is healthy, it contains enzymes that eliminate histamine.¹⁸

Unfortunately (because they otherwise offer many health benefits) fermented foods, such as cultured veggies and kefir, fall into the high-histamine category. Even good bacteria produce histamine during the fermentation process. Reacting to fermented foods is actually a classic sign of histamine intolerance, especially if **probiotic supplements** are tolerated. According to Paleo Leap:

*"The importance of gut flora in creating and destroying histamine can give rise to a sudden onset of histamine intolerance later in life, if you take **antibiotics** or make a drastic change to your diet.*

*When the gut flora start growing back after this kind of trauma, the environment is ripe for bacterial overgrowth problems, and a predominance of histamine-producing bacteria might be just one of those issues. And in a cruel coincidence, the probiotic fermented foods that you eat to heal your gut are all high in histamine, so they only make the problem worse."*¹⁹

However, ultimately the solution to histamine intolerance isn't avoiding fermented and other histamine-rich foods. As noted by Body Ecology:²⁰

"If you believe that you have recently developed histamine intolerance, avoiding high-histamine foods may make you feel better. But it won't heal the root of the

disorder. Your diet, your inner ecosystem and your immune system (which includes histamine) all work together in concert.

Restoring balance is ultimately more important than avoiding trigger foods. To fully heal histamine intolerance and welcome fermented foods back into your life, you must heal your gut."

People with histamine intolerance should stay away from foods that are rich in long-chain fats, as they stimulate the release of histamine during digestion (while medium-chain fats in coconut oil shouldn't cause a problem).²¹

Interestingly, the study concludes by saying, "It is tempting to speculate that an imbalance between the histamine-DAO system may be involved in intestinal disorders such as inflammatory bowel disorder."²² Another study reveals that soluble fiber obtained through your diet can boost enzyme levels that break down histamine and safeguard against leaky gut.²³

Low-Histamine Foods

Mind Body Green²⁴ itemizes several low-histamine foods:

Grass fed meat and poultry	Fresh, wild-caught or canned Alaskan and sockeye salmon, sardines
Organic, pastured eggs	Fresh vegetables except for tomatoes, spinach and eggplant
Healthy amounts of fruit: Mango, pear, watermelon, apple, kiwi, cantaloupe and grapes (except avocados)	High-quality olive oil, coconut oil
Leafy herbs	Herbal teas

You can optimize your DAO levels by stocking your diet with vitamin C and vitamin B6. Studies show these vitamins can reduce your histamine load by supporting DAO enzyme activity.²⁵

Leftovers can fall into the medium-histamine category, too, because if a food "ages" long enough, it can collect bacteria. Additionally, there's no foolproof way to list foods and the histamine they produce. One day you might eat 6 ounces of fish with no problem, but the next day have the same kind in the same amount and break out in hives.

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