

HISTAMINE INTOLERANCE

WHAT IS HISTAMINE?

Histamine is a compound produced in the body from the amino acid histidine. This chemical is needed for the proper functioning of many body systems, including the immune system, digestive system, and central nervous system. Histamine is a neurotransmitter (which communicates important messages from the body to the brain), increases stomach acid (which helps break down food), is essential in defending the body against invasion by potentially disease-causing organisms such as bacteria and viruses, keeps us awake, and regulates our hormones, the contraction of muscles, and the permeability of blood vessels. Histamine is also a key mediator for many allergic reactions.

In addition to being found in the body, histamine is also in food. Some foods contain histamine, while others trigger its release from cells.

While histamine has many beneficial effects, too much of it can also be a source of problems for many people depending on their histamine tolerance.

WHAT IS HISTAMINE INTOLERANCE?

There are two enzyme systems that break down histamine to prevent excess histamine levels in the body, a situation referred to as "Histamine Intolerance." These are Diamine Oxidase (DAO) [the main enzyme used in the digestive tract to break down ingested histamine] and histamine N-methyl transferase (HNMT).

Normally, when histamine levels rise above a certain level, these enzymes rapidly degrade the excess. However, if there is a deficiency or inactivity of these enzymes, the body is unable to break down histamine sufficiently, and histamine levels can build up. Once those levels surpass that individual's tolerance threshold (imagine it like a bucket where everything is fine until the water level reaches the top of the bucket and overflows), symptoms such as nasal congestion, flushing, headaches, and hives can occur.

Histamine Intolerance can be difficult to recognize because it can manifest as such a wide variety of symptoms and the response is cumulative and delayed, not immediate. Often symptoms will appear several hours after consumption of histamine-rich foods, as the total level of histamine in the body gradually increases and overwhelms the enzyme's capacity to break it down. A person with Histamine Intolerance will typically experience a constant fluctuation in symptoms in response to changing conditions. Factors such as seasonal pollen, how many other histamine-rich foods were recently eaten, and hormonal changes can affect an individual's histamine tolerance threshold. In women, DAO levels are significantly higher during the luteal phase (last half of their menstrual cycle) than during the follicular phase (first half of their cycle). This is why some women experience headaches and more food reactions right before their period (when their DAO levels are starting to drop). During pregnancy, many women find relief of their symptoms because the placenta makes a large quantity of DAO.

Because histamine is required for digestion and therefore released in the gut every time food is eaten, it may appear that an individual is reacting to everything they eat.

HOW CAN A LOW HISTAMINE DIET HELP?

A Low Histamine Diet helps prevent excess histamine levels in the body and reduce symptoms. The key is to avoid: foods that contain high amount of histamine, foods that trigger the release of histamine from our cells, and foods that inhibit the production of the enzymes that break down histamine.



HISTAMINE INTOLERANCE SYMPTOMS:

Histamine excess may cause symptoms resembling an allergic reaction.

- Digestive Problems (pain, bloating, cramping, diarrhea, constipation, heartburn, reflux, nausea, etc)
- Headaches & Migraines
- Skin Issues (rashes, spots, hives, flushing, sweating, feeling like skin is on fire, eczema, rosacea, etc)
- Pruritus (itching, especially of the skin, eyes, ears, and nose)
- Conjunctivitis (irritated, watery, reddened eyes)
- Nasal Congestion, runny nose, seasonal allergies
- Tissue swelling (face/throat)
- Numbness & tingling
- Fatigue
- Shortness of Breath
- Sunlight Sensitivity
- Bone/Joint/Chest Pain
- Drop in Blood Pressure
- Tachycardia ("heart racing")
- Anxiety & Panic Attacks
- Vision Problems & Eye Pain
- Hearing Problems & Tinnitus
- Dizziness / Loss of consciousness
- Reactions to odors, chemicals, insect stings, anesthesia
- Attention & Memory Problems

HISTAMINE INTOLERANCE

WHAT FACTORS CONTRIBUTE TO HISTAMINE INTOLERANCE?

There are multiple factors which contribute to excess histamine levels in the body, but it mostly comes down to a problem of too much histamine coming in or being released and/or too little DAO enzyme to break down histamine.

- ◇ **Over-consumption of foods that are histamine-rich, release histamine, or block DAO enzyme in the body:** Some foods naturally contain very high levels of histamine (fermented foods such as alcohol, cheese, and vinegar), while other foods are “histamine liberators” which stimulate the release of histamine from cells (chocolate, citrus fruits, strawberries, tomatoes). There are also foods (and medications) which block the production of DAO enzyme or reduce its effectiveness (alcohol, green/black tea, H2 blockers, SSRI’s, painkillers, asthma medications, expectorants, etc).
- ◇ **Leaky Gut:** When proteins escape through the gut lining into the bloodstream and the immune system attacks them, histamine is released.
- ◇ **Intestinal Damage:** A healthy small intestine makes DAO enzyme in the tips of the villi. If the villi are damaged (due to pathogens, bacterial overgrowth, gluten, etc), the body is not able to produce sufficient quantities of DAO.
- ◇ **Bacterial Overgrowth (Dysbiosis/SIBO):** Some species of bacteria have the ability to convert histidine in the diet into histamine. If these bacteria are present in high numbers, histamine can build-up in the gut, causing a heightened sensitivity to histamine-containing foods.
- ◇ **Candida:** Toxins from Candida can trigger histamine release.
- ◇ **Nutritional Deficiencies:** Vitamin C and copper are needed to form DAO, and Vitamin B6 is required as a cofactor to DAO to break down histamine. HNMT, the enzyme which deactivates histamine in the central nervous system, requires the methylation process to inactivate histamine, so deficiencies in nutrients required for methylation (folate, Vitamin B12, Vitamin B6, magnesium, SAmE) will impair its function.
- ◇ **Genetic Polymorphisms (SNPs):** Some individuals have less of a capacity to deal with histamine excess and don’t degrade histamine as well through DAO. Genetic polymorphisms can impair the ability to produce both DAO and HNMT. Having a MTHFR mutation may lead to under-methylation; the methylation process is required by HNMT to inactivate histamine.

LOW HISTAMINE DIET TIPS

- Since any food or beverage that undergoes fermentation contains high levels of histamine, **reacting to fermented foods is a classic sign of histamine intolerance.**
- **Alcohol is a “double whammy” when it comes to histamine**—not only is it very high in histamine but it reduces DAO enzyme levels as well.
- **Histamine is NOT degraded by heat or cold temperatures.** Freezing, boiling, baking, or microwaving will NOT reduce the content.
- **Histamine levels vary based on the maturation process and the degree of freshness.** The fresher the food, the less histamine content. The longer food is stored (such as leftovers kept in the refrigerator) or left to mature (ripen), the greater its histamine content and the more problematic it can be for individuals with Histamine Intolerance.
- **Instead of green/black tea** (which inhibits DAO production), try **Tulsi tea**, which is made from Holy Basil, a natural herbal anti-histamine.
- **Consider supplementing with natural anti-histamine substances** such as **quercetin** and **vitamin C**, which are both mast cell stabilizers and anti-histamines.
- **Consider supplementing with DAO enzyme.** This supports healthy degradation of food-derived histamine in the digestive tract and can help reduce symptoms. DAO products include “HistDAO” (Xymogen) and “Histamine Block” (Seeking Health). Start with 1 capsule 2 times per day. For extreme histamine issues, 2 capsules 2 times per day can be taken. If an individual has a reaction to foods eaten during a meal, 2-4 capsules may be taken after the meal to calm down the reaction more quickly (in a similar manner to Benadryl).

LOW HISTAMINE DIET - FOOD LIST

FOODS TO AVOID

(CONTAIN HIGH LEVELS OF HISTAMINE, STIMULATE THE RELEASE OF HISTAMINE, AND/OR INHIBIT DAO)

MEAT/PROTEIN:

* Eat only freshly cooked meats and poultry. Do not eat leftovers; freeze any uneaten protein-based food in individual containers.

* Bone broth is high in histamine. The longer it cooks, the higher the levels. Meat broth (no bones) contains less histamine.

➤ **All Fish & Shellfish** (Fresh, Frozen, Aged, Smoked, Canned, or Fish Sauces) [unless caught, gutted, and cooked within 30 minutes] (The longer a fish remains ungutted after it dies, the higher the level of histamine in its tissues. Histamine levels in ungutted fish can double every 20 minutes. Shellfish are not gutted so the bacteria in their gut will continue to produce histamine as long as they remain uncooked)

➤ **Meat—Smoked or Processed** (salami, bologna, bacon, ham, sausage, pepperoni, luncheon meat, hot dogs, etc)

➤ **Fermented Soy Products** (tempeh, miso, tofu, etc)

➤ **Raw Eggs** (raw egg whites are a histamine liberator) [cooked eggs in baked products such as pancakes or muffins are acceptable]

DAIRY:

➤ **All Fermented Milk Products** (cheese, yogurt, buttermilk, kefir, etc)

FRUITS:

* Avoid eating overripe fruits & vegetables as histamine levels rise as these foods ripen.

- Apricots
- Bananas
- Cherry
- Cranberries
- Currents
- Dates
- Grapefruit
- Kiwi
- Lemons/Limes
- Mango
- Pineapple
- Strawberries
- Raspberries
- Tangerines
- Dried Fruit (raisins, prunes, etc)

VEGETABLES:

- Avocado
- Eggplant
- Fermented vegetables (sauerkraut, pickles, relishes, olives in vinegar, etc)
- Mushrooms
- Pumpkin
- Spinach
- Tomatoes

NUTS/SEEDS:

➤ **Nuts & Seeds** (especially peanuts, cashews, walnuts, and sunflower seeds)

GRAINS/LEGUMES/BEANS:

- Buckwheat
- Wheat
- Soybeans
- Red Beans

BEVERAGES:

- Alcohol (especially red wine)
- Kombucha
- Coffee
- Black/Green Tea & Mate Tea
- Cola Drinks
- Energy Drinks

SPICES:

- Anise
- Chili Powder
- Cinnamon
- Cloves
- Curry Powder
- Nutmeg
- Paprika

CONDIMENTS:

- Vinegar & Vinegar-containing dressings, marinades, and condiments (mayonnaise, mustard, etc)
- Ketchup
- Soy Sauce

MISC:

- Yeast
- Artificial Dyes & Preservatives (tartrazine and other artificial food colors, preservatives- especially Benzoates and Sulfites, MSG)