The Histamine Diet

Phase 1: Weeks 1-2

Genetics for the People

Many foods can cause problems for those with histamine dysfunction. They typically fall into different categories and you generally react to most foods in those categories.

The categories of histamine-related foods are:
High Histamine Foods: These are foods that naturally contain high levels of histamine.
DAO Blocking Foods: These are foods that lower the activity of the enzyme DAO to be reduced either by blocking DAO, slowing down the activity of DAO, or require processing by DAO, leaving less DAO open to break down histamine.
Histamine Generating Foods: These are foods that may not have high amounts of histamine immediately, but can produce histamine quickly.
Histamine Releasing Foods: These are foods that destabilize mast cells either in the intestines or in the rest of your body, causing them to release histamine and prostaglandins.
Prebiotic Foods for Bacteria: These are foods that feed histamine- producing bacteria in your intestines and cause intesinal histamine levels to rise due to an increase in function and numbers of these bacteria.
Immune Supressing Foods: These foods cause your immune system to be supressed, leading to poorer control of latent viruses. Your body has to use the same compound- SAM- to degrade histamine and keep latent viruses sleeping. If your body has to use a lot of SAM to keep your latent viruses asleep, there will be less SAM to break down histamine.
Immune Provoking Foods: Anything that generates an immune response, including food allergies and/or intolerances can cause mast cells to release histamine.

While these are a great starting list, your personal reaction to food is going to be based on your genetics, the bacteria in your gut, the root cause(s) of your histamine dysfunction, and many other factors.
What To Do:

- I would highly suggest you remove all of the high histamine foods, histamine generating foods, and histamine releasing foods from your diet for at least 1-2 weeks.
- If you suspect you have histamine-producing SIBO, latent viruses, or food allergies and/or intolerances I also suggest you remove the foods associated with those.
- Once they have all been removed from your diet for approximately 1-2 weeks, add the foods back in one-by-one or in small batches. Reactions can take up to four days to occur, may only occur after repeated exposure, and may be due to the overall histamine load and not the specific foods. These associations are sometimes difficult to identify.
- During this entire time, keep a detailed journal of your food, any supplements and medications, sleep, stress level, activities, and histamine symptoms using a phone app or a digital text editor like google docs. This will allow you to track your reactions to factors that may be more difficult to see and email the document to your healthcare provider, Genetics for the People if you chose to do a personal consultation, or feed it into an AI application for additional analysis.
- Track your total macro and micro nutrient intake. Removing large amounts and types of food from your diet can lead to low nutrient intake and vitamin/ mineral deficiencies. We do not want deficiencies of any vitamins, minerals, or macronutrients (carbohydrates, protein, fat), but we especially do not want defiencies in:
    - Micronutrients: Vitamin B2 (riboflavin), Vitamin B6 (pyridoxal-5-phosphate), Vitamin B9 (folate), Vitamin B12 (cobalamin), Vitamin C (sodium acorbate or ascorbic acid), copper, magnesium, zinc, iron, and selenium
    - Macronutrients: Carbohydrates, essential fatty acids (specifically the omega-3 fatty acids EPA and DHA), protein (especially glycine, methionine, histadine, cysteine, taurine, glutamine, tryptophan, tyrosine, arginine, and proline). Please see section on amino acids because many of these are detrimental both in low amounts and high amounts.
    - **We strongly reccommend you consult with a healthcare professional or registered dietitian before making any changes to your diet, medication, supplements, herbal therapies, or lifestyle.**

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Histamine Load vs Breakdown

Histamine in your intestines is broken down by an enzyme called **Diamine Oxidase, or DAO**. If you have enough DAO activity (and a sealed gut) then these foods should not bother you. If you have too little DAO activity compared to the amount of histamine that needs to be broken down (or a leaky gut), histamine can escape getting broken down in the intestines, make it past your intestinal barrier, and then enter your blood causing additional symptoms.

Histamine escaping the gut depends on:

- Having enough DAO to cover the amount of histamine in your intestines.
  - High histamine foods increase the amount of histamine to be broken down.
  - Histamine-producing bacteria also eat the food in your intestines and increase the amount of histamine to be broken down.
- DAO gene (called AOC1) needs to be free of major gene mutations.
- DAO needs copper (to be made correctly) and vitamin C (when it works to prevent it from getting damaged), so any nutritional deficiences in those nutrients can cause a mutation-free DAO enzyme to slow down.
- DAO can be perfectly functional, but get inhibited by foods you eat.

High Histamine Foods

High histamine foods are foods that are naturally high in histamine. These should be avoided when dealing with histamine dysfunction, especially with a leaky gut. Eventually, you should be able to add some of these foods back in low amounts.

- **Fermented dairy:** Aged cheeses (Parmesan, Gouda, Cheddar, Blue), yogurt, kefir, sour cream, and buttermilk.
- **Fermented vegetables:** Sauerkraut, kimchi, pickled vegetables, and soy-based fermented products (soy sauce, miso, tempeh).
- **Processed and cured meats:** Salami, pepperoni, smoked ham, bacon, sausages, hot dogs, and any canned meat (i.e., Vienna sausages, SPAM).
- **Fish and seafood, especially if not ultra-fresh:** Tuna, mackerel, sardines, anchovies are especially bad. Mahi-mahi, shellfish, smoked fish (salmon, mackerel, herring), canned fish (tuna, sardines). Histamine develops rapidly in fish (scombroid poisoning is essentially acute histamine toxicity). Shellfish can be both high in histamine and act as a histamine liberator.
- **Fermented Beverages:** All alcohol (especially wine, beer, champagne, sake), kombucha, vinegar (balsamic, wine, apple cider).
- **Condiments**: Mustard, ketchup, mayonnaise (contain vinegar), soy sauce, fish sauce.
- **Other:** Spinach (especially cooked and stored), eggplant, tomatoes, and other nightshades (disputed, but often problematic). Bone broth, especially if simmered for many hours, as histamine is released from the bones.

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DAO Blocking Foods / Medications / etc

Some foods do not contain histamine but directly block DAO, the enzyme that breaks dov
intestines before it gets into your blood. If you consume these with DAO supplements, they may inactivate the DAO in your intestines as well as the DAO in your supplements. Also, if you have to- or just want to- eat these foods (no judgment here), you can take an additional dose of DAO supplements with vitamin C to overcome the DAO blocking foods and/or work upstream of DAO and take s-adenosyl methionine (SAMe) supplements and/or creatine supplements (if you can tolerate them). By doing this, we are going to break as much histamine down in the intestines as possible and assume that histamine is going to get into your bloodstream and we are giving the body more SAMe to degrade it there as well. Creatine production is the main process your body uses SAMe for, so by supplementing creatine you are allowing more of the SAMe to be shunted towards histamine degradation. This is great for people who have backfired on methyl donors (methylfolate, methyl-B12, trimethylglycine (TMG) or betaine) in the past.

- **Beverages:** Alcohol (the most potent blocker, especially red wine).
- **Foods:** Green tea extract (in supplements), raw egg white (cooked is fine).
- **Energy Drinks:** Energy drinks or other drinks that contain taurine may inhibit DAO.
- **Chemicals:**
  - Citric acid that is commercially produced from microbial fermentation can contribute to gut inflammation and decrease DAO production in people who are sensitive to yeast, increasing leaky gut and histamine escape (from the gut to the blood).
- **Artificial Sweeteners:** Compounds such as Sucralose, Aspartame, and Acesulfame K can alter gut microbiota and negatively impact gut lining integrity (leading to leaky gut and more histamine leaking through to your blood). A damaged gut lining directly reduces the number of enterocytes (intestinal cells) available to produce DAO. These compounds may also trigger low-grade inflammation.
- **Biogenic amines** such as putrescine and cadaverine (found in fermented foods, spoiled fish, and some meats) also need broken down by DAO and can compete with histamine for DAO.
- **Medications:**

Do not discontinue use of any medications before first talking to your healthcare provider. Most of these medications should not be stopped. Instead, talk to your doctor about adding DAO and vitamin C to degrade histamine in the gut and SAMe, creatine, or methylfolate and methyl B12 to help degrade histamine in your body.

  - **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):** Ibuprofen, aspirin, diclofenac, naproxen (see NSAID sheet in appendix) may damage the gut lining and reduce the amount of DAO made in some individuals with MCAS. However, some people with MCAS really benefit from NSAIDs, so individual effects vary.
  - **Antibiotics:** Damage the gut microbiome and mucosa leading to less DAO production. Certain antibiotics may also increase histamine by killing histamine-degrading bacteria.
  - **Chemotherapy Drugs:** multiple. Damage the gut microbiome and mucosa leading to less DAO production.
  - **Corticosteroids:** Chronic use damage the gut microbiome and mucosa leading to less DAO production.
  - **Histamine (H2) Blockers:** Cimetidine, Ranitidine. While H2 blockers block histamine receptors, some also inhibit DAO.
  - **Proton Pump Inhibitors (PPIs):** Omeprazole, esomeprazole, etc reduce gastric acidity and can indirectly reduce DAO activity and impair histamine metabolism.
- **Medical Conditions:** Any condition that damages the intestinal lining such as Inflammatory Bowel Disease (Crohns Disease, Ulcerative Colitis), Celiac Disease, SIBO, Leaky Gut Syndrome (Intestinal Hyperpermeability), food allergies or intolerances, and gastrointestinal infections.
- **Nutrient Deficiencies:** Vitamin B6 (in the P5P form), Vitamin C, and copper are needed directly by the DAO enzyme to degrade histamine. Vitamin B12, folate, glutamine, zinc, and magnesium are needed for a healthy gut lining. Iron deficiency (low ferritin) is commonly associated with reduced DAO production and poor histamine tolerance.

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Histamine Generating Foods

Some foods do not contain much histamine when fresh, but generate histamine when they are left at room temperature or in the fridge. All leftover foods have the ability to become high histamine foods.

Leftover Food

These are often the most problematic and deserve their own category. By the time you buy food off the shelf at the grocery store it is already producing histamine.

- Beef (steaks, roasts) are typically 21-45+ days old.
- Ground beef is on the shelf 1-5 days after grinding, but has a high histamine content even not being as old because grinding dramatically increases histamine-producing surface areas.
- Chicken may be your best bet as it is rapid chilled, and cut/packaged within 1-3 days to be on the grocery shelf by 5-14 days.
- Eggs are often 2-5 weeks old by the time they are on the shelf at the grocery store.

Processing (cutting, grinding) will increase surface area which will cause histamine to develop faster. For example, ground beef has more histamine then home-ground beef. Bagged salad has more histamine than freshly prepared salad from whole heads of spinach/lettuce.

When you buy food from the store, learn the date codes. For meat, find the "pack date" (often a Julian code like "123" for the 123rd day of the year). Choose the most recent. For eggs, use the Julian pack date (001 = Jan 1). Choose the lowest number available. For produce, look for "Packed on" dates on bags/clamshells.

The freezer is your friend. Buy food that is frozen and has been flash frozen as close to harvest as possible. Freeze as much food as you can, especially meat, fish, and bread. Cook from frozen or rapidly defrost foods if possible. Freeze leftovers and re-heat from frozen.

If at all feasible, buy food that is local and in-season from a farmers market or local farm stand. This food has often been harvested within 24-72 hours and is the single best strategy for minimizing histamine in produce and getting truly fresh eggs and meat.

Avoid any cooked protein (meat, fish) that has been stored. Histamine increases significantly after 12-24 hours in the fridge. In the first stages of trying to manage histamine it is best to cook all food fresh, if possible.

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Genetics for the People

Histamine Releasing Foods

Some foods cause mast cells to release histamine and prostaglandins. These are histamine releasing foods, or histamine liberators. Some people can handle these and some cannot.

- **Fruits:** Citrus fruits (oranges, lemons, limes), strawberries, bananas, pineapples, papaya, tomatoes.
- **Vegetables:** Tomatoes (also high-histamine), spinach, eggplant, avocado.
- **Additives:** Artificial colors (like tartrazine), benzoates, sulfites, nitrites/nitrates, MSG, certain preservatives.
  - **Sodium benzoate (E211)**, a common preservative, is a well-documented histamine liberator.
  - **Potassium sorbate (E202)**, another preservative, may change the type and amount of bacteria in your intestines and increase leaky gut, leading to histamine escape (from the gut to the blood).
  - **Artificial colors** such as **Tartrazine (aka Yellow #5)**, **Allura Red (aka Red #40)**, are known to be mast cell destabilizers in susceptible individuals, triggering histamine release. They can also promote systemic inflammation, which can negatively impact gut lining integrity (leading to leaky gut and more histamine leaking through to your blood) but also decrease the amount of DAO made.
  - **Note:** Companies have figured out that people are not buying foods with nitrates or nitrites added due to health concerns about cancer and histamine dysfunction so they started adding celery juice, which contains a large amount of nitrates/nitrites. Its the same exact thing so if you react or are concerned about nitrates/nitrites, do not buy anything that says "celery juice added".
- **Chemicals:** Caffeine is a methylxanthine which can promote histamine release from mast cells and amplify the perception of histamine intolerance symptoms. Guarana, ginseng, and yerba mate can also promote histamine release from mast cells. Caffeine is a minor histamine releaser and may not be worth removing from your diet.
- **Other:** Alcohol (also a DAO blocker), certain nuts (walnuts, peanuts), cocoa (cocoa may be fine due to the magnesium content), shellfish, cows milk, wheat germ, beans/pulses.

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Prebiotic Foods for Bacteria

These are only a problem if you have an overgrowth of histamine-producing bacteria in your small intestines (histamine-producing SIBO). High fiber foods and prebiotic foods can feed these bacteria and give them food they can convert into histamine. However, feeding your gut flora is important and a healthy idea for those who do not have SIBO.

- **Fermentable Fibers (Prebiotics):**
  - **Inulin and fructooligosaccharides (FOS)** found in chicory root, Jerusalem artichokes, dandelion greens, asparagus, onions, garlic, leeks, bananas (especially green), wheat, and many "fiber-added" processed foods. These can be a very good fuel source for histamine-, gas-, and amine-producing bacteria in the intestines.
  - **Galactooligosaccharides (GOS)** found in legumes (chickpeas, lentils, kidney beans), Brussels sprouts, and some nuts. GOS cause gas and can feed histamine-producing bacteria.
- **Some sugars and alcohol:**
  - **Lactose** (in milk and soft cheeses) can feed bacteria in those who are lactose intolerant, leading to fermentation and potential histamine production.
- **Excess simple sugars and sugar alcohols** (sorbitol, mannitol) can feed the bacteria that produce histamine, causing there to be more of those than non-histamine producing bacteria.
- **Fermented Foods:**
  - These can cause problems two different ways. While fermented foods contain histamine, they also contain live bacteria that eat sugar and carbohydrates and use that food to produce histamine. For someone that already has too much histamine in their intestines, adding more lactic acid bacteria (even "good" ones) can sometimes be enough to tip you into a histamine flare. For those with histamine problems, I only recommend specific probiotics that contain only bacteria that do not produce histamine. However, if you make your own fermented foods you can use these probiotics to seed the ferments and, if done correctly, lower your histamine load while also consuming fermented foods
- **Leftover Cooked Starches:**
  - Cooked and cooled potatoes, rice, and pasta develop resistant starch, a prebiotic fiber. While this is great for those that dont have too many histamine-producing bacteria in their intestines, if you do, this can feed the histamine-producing bacteria and make your histamine dysfunction worse.

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Genetics for the People

Immune Supressing Foods / Eating Patterns

These foods and eating patterns, when consumed in excess over long periods of time, can reduce antiviral effectiveness, increase inflammation, or impair cellular energy, which latent viruses can exploit to break out of latency. Please note, most of these foods and eating patterns are fine in small amounts as treats. They only become a problem for latent virus suppression when theyre consumed frequently over long periods of time.

- **High Refined Sugar Intake:** Sugary drinks, candy, desserts, and food containing high-fructose corn syrup
- **Alcohol**
- **Ultra-Processed Foods:** Packaged snacks, fast food, processed meats, artificial additives
- **Excess Omega-6 Fats (Without Omega-3 Balance):** Corn oil, soybean oil, sunflower oil, fried foods
- **Very Low-Protein or Malnourished Diets:** Chronic caloric restriction, protein-deficient vegan diets (if poorly planned), eating disorders
- **Micronutrient-Depleting Eating Patterns:** Diets deficient in zinc, selenium, iron (balanced, not excess), Vitamin A, Vitamin D, Vitamin B12, folate, magnesium

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Immune Provoking Foods

Immune provoking foods are foods that cause an immune reaction in an individual. They are highly specific for each person and one person's list can be completely different from another person's list. These foods can be **true food allergies** or **food intolerances**.

The immune system responds to **True Food Allergies** with Immunoglobulin E (IgE) and these reactions can be life-threatening. True food allergies are why some people carry epinephrine pens (epi-pens). IgE allergies are also not caused by leaky gut, although they can contribute to histamine release. Leaky gut may increase sensitization risk but, once IgE based allergies exist, the gut barrier is no longer the main driver.

The most common True Food Allergies are called "The Big 9" and make up 90% of all food allergies in the U.S

- **Peanuts (legume, not a nut)**
  - **Tree nuts**
  - **Almond**
  - **Walnut**
  - **Cashew**
  - **Pistachio**
  - **Hazelnut**
  - **Brazil nut**
  - **Pecan**
- **Shellfish**
  - **Shrimp**
  - **Crab**
  - **Lobster**
- **Fish**
  - **Salmon**
  - **Tuna**
  - **Cod**
- **Milk (cow's milk proteins)**
  - **Casein**
  - **Whey**
- **Egg**
  - **Ovalbumin (egg white > yolk)**
- **Wheat**
  - **Not the same as gluten intolerance**
- **Soy**
- **Sesame (newest major allergen in U.S.)**

Food intolerances also involve the immune system and can cause some of the same minor symptoms but are non-life threatening. The immune system responds to food intolerances with immunoglobulin A and G (IgA and IgG). IgA's are secreted into your mucus membranes and coat food antigens, prevent immune activation against them, and the bulky structure of the IgA plus the antigen (food protein) helps keep food in the intestinal tract. In leaky gut, the holes allow the food antigens to escape the intestinal tract and the IgA plus food protein trigger additional immune cells, causing an inflammatory response. When food proteins chronically escape the intestinal tract, IgG antibodies can develop which further increases the inflammatory response. However, IgG reactions can take hours or days to develop, meaning that food you ate yesterday is just now causing you problems. Because food intolerances are based on what foods sneak through the gut lining and take an extended period of time to cause symptoms, they are very specific to the person, can change as someones diet changes (new foods get through), and are hard to identify. However, once the gut is re-sealed, the effects of the food intolerances often go away and people can enjoy those foods again.

Most common food intolerances (although they vary based on individual's diet):

- **Dairy**
  - **Lactose and Casein**
- **Gluten/Wheat**
  - **Especially non-organic gluten**
- **Eggs**
- **Soy**
- **Corn**

Some foods can trigger symptoms via fermentation, not immunity. These are considered high- FODMAP

High FODMAP Foods are:

- **Onions**
- **Garlic**
- **Apples**
- **Pears**
- **Legumes**
- **Wheat**