

Is There a Diet for Histamine Intolerance?

THE INCIDENCE OF FOOD allergies and intolerances appears to be increasing in the United States in both children and adults. The American Academy of Allergy, Asthma, and Immunology defines a food intolerance (or sensitivity) as an event that affects the digestive system after eating a particular food.¹ A food allergy, in comparison, involves the immune system, produces a repeatable response, and can be confirmed with a series of tests.

Although there is no specific diagnostic test at this time to aid in the clinical diagnosis of a histamine intolerance, also known as enteral histaminosis, the use of a skin-prick test and double-blind placebo-controlled histamine food challenges have been proposed.²⁻⁷ However, the span of time it takes for histamine to build up in the body is usually longer than what is allowed during testing.⁵

The prevalence of histamine intolerance is estimated to be 1% of the population, and it has typically presented more often in people who are middle-aged.^{2,4,5,7,8} Symptoms can vary or seem similar to an allergic reaction, and affect multiple organs and/or systems in the body, thus making its diagnosis difficult.²⁻⁸ The reports of ailments have ranged from itching or hives to sneezing, watery eyes, asthma, headaches, abdominal pain, flatulence, diarrhea, tachycardia, and hypotension, among others.^{2,5-8}

Histamine, a biogenic amine, is released from mast cells within the immune system when an allergen is detected by the body.^{2-5,7,8,9} A disproportionate amount of histamine is suspected to result from either an allergic response, ingestion of a large quantity of histamine-containing foods

or beverages, consumption of foods or other substances that cause histamine to be released, or an impaired ability for enzymes (ie, diamine oxidase [DAO] and histamine N-methyl transferase [HNMT]) in the body to break it down.²⁻⁸

After food allergies have been ruled out, a low-histamine diet is often recommended, and a favorable response to it can help aid in the diagnosis of a histamine intolerance.^{2,3,5-7} Because exposure to histamine exists beyond diet, total avoidance of histamines is not attainable.⁵ In some cases, antihistamine medications may be prescribed to help minimize symptoms.^{2-5,7}

Dietary sources that are high in histamine include many aged and fermented foods and beverages (eg, cheeses, yogurt, processed meats, alcoholic beverages, sauerkraut, soy²⁻⁸); some fish, especially frozen, smoked, and canned varieties; fruits, such as strawberries and cherries; vegetables, including spinach, tomatoes, and eggplant; and seasonings, such as chili powder, cinnamon, cloves, and vinegar.²⁻⁸

The list is not exhaustive, and the amount of histamine from dietary sources can vary.^{5,7} Foods that are minimally processed are encouraged, since even the removal of skins or peels on produce can increase their histamine content.^{2,5} Certain foods, beverages, additives, and drugs are also thought to either aid in the release of histamine or inhibit the enzymes needed to break it down. A few examples of these include citrus fruits, nuts, alcoholic beverages, teas, egg whites, food additives, some preservatives, and medications such as aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs) or isoniazid and doxycycline.^{2,5,7,8,10}

In addition, bacteria that inhabit the large intestine are able to convert the amino acid histidine found in protein foods into histamine, thereby contributing to internal levels.⁵ Similar microorganisms exist in other sources, which is why higher amounts of histamine are found in some spoiled foods, especially fish.^{5,7} Scromboid poisoning, also known as scrombotoxic fish poisoning or histamine toxicity, is the result of ingesting spoiled finfish, such as tuna or mackerel, that contain high amounts of

histamine that have been produced from bacterial overgrowth.¹⁰

Because each person's level of tolerance to histamine is unique and ever-changing, the approach to reduce dietary sources of histamine needs to be individualized.⁵ Rotation diets are considered to be helpful for intolerances that are dose-dependent, although there is a lack of research at this time in support of them.⁵ Since the consumption of a variety of foods can be a challenge for patients with food intolerances, a registered dietitian nutritionist (RDN) can assist with the initial trial of a histamine-restricted diet, while ensuring the patient's total diet remains adequate in all nutrients.

References

1. American Academy of Allergy, Asthma, and Immunology. Food Intolerance. <http://www.aaaai.org/conditions-and-treatments/conditions-dictionary/food-intolerance.aspx>. Accessed August 6, 2014.
2. Rosell-Camps A, Zibetti S, Perez-Esteban G, Vila-Vidal M, Ferrer-Ramis L, Garcia-Teresa-Garcia E. Histamine intolerance as a cause of chronic digestive complaints in pediatric patients. *Rev Esp Enferm Dig*. 2013;105(4):201-207.
3. Schwelberger HG. Histamine intolerance: A metabolic disease? *Inflamm Res*. 2010; 59(suppl 2):S219-S221.
4. Kofler L, Ulmer H, Kofler H. Histamine 50-skin-prick test: A tool to diagnose histamine intolerance. *ISRN Allergy*. 2011;2011:1-5.
5. Vickerstaff Joneja J. *The Health Professional's Guide to Food Allergies and Intolerances*. Chicago, IL: Academy of Nutrition and Dietetics; 2013:291-304.
6. Hoffman KM, Gruber E, Deutschmann A, Jahnle J, Hauer AC. Histamine intolerance in children with chronic abdominal pain [letter]. *Arch Dis Child*. 2013;98(10):832-833.
7. Maintz L, Novak N. Histamine and histamine intolerance. *Am J Clin Nutr*. 2007;85(5):1185-1196.
8. Zopf Y, Baenkler HW, Silbermann A, Hahn EG, Raithe M. The differential diagnosis of food intolerance. *Dtsch Arztebl Int*. 2009;106(21):359-370.
9. American Academy of Allergy, Asthma and Immunology. Histamine. <http://www.aaaai.org/conditions-and-treatments/conditions-a-to-z-search/histamine.aspx>. Accessed August 1, 2014.
10. Centers for Disease Control and Prevention. Marine Toxins. http://www.cdc.gov/ncezved/divisions/dfbmd/diseases/marine_toxins/. Accessed August 12, 2014.

This article was written by **Jill Balla Kohn, MS, RDN, LDN**, of the Academy of Nutrition and Dietetics' Knowledge Center Team, Chicago, IL. Academy members can contact the Knowledge Center by sending an e-mail to knowledge@eatright.org.

<http://dx.doi.org/10.1016/j.jand.2014.09.009>