



Food as Medicine

The Counseling Center at CELA

Histamine & Food

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If you feel that you may have a mast cell disease (MCD), a mast cell activation related disorder, or environmental illness contact a qualified physician to receive medical help. The information presented here is not medical advice and is in no way a substitute for receiving medical advice and treatment from a doctor.

Acknowledgement:

Thank you to the health professionals who have so generously shared their work on the internet. This booklet/ebook/pdf would not exist without your dedication, knowledge, giving spirit, and compassion.

About Mast Cells

Everyone has mast cells throughout their body in every organ system including the skin and the brain. Mast cells tend to proliferate in those places where our body comes into direct contact with the outside environment (the respiratory system, GI/digestive system, the skin, the brain.) Mast cells come from a person's bone marrow and are part of the immune system. They have multiple functions including protecting our health by providing a line of defense against pathogens.

In a mast cell/mast cell activation related disorder, something has gone wrong with the mast cells. There may be, for example, too many of them, they could be irregularly shaped, or they could be degranulating—as in Mast Cell Activation Syndrome (MCAS) and other mast cell activation spectrum disorders—and be over-active for unknown reasons. A person with a mast cell/mast cell activation related disorder may experience severe and life-threatening reactions after exposure to even the smallest amounts of a chemical or substance. Individuals with mast cell activation spectrum related disorders need to avoid exposures to the chemicals and substances to which they react.

What is Histamine?

Histamine is a biological substance that can be found not only in humans but also in plants, animals, and even in insect venom. In people, histamine can be found in nearly all tissues of the body. It is stored primarily in the granules of mast cells. Once released from mast cell granules, histamine produces many different effects within the body including the contraction of smooth muscle tissues of the lungs, uterus, and stomach; the dilation of blood vessels which increases permeability and lowers blood pressure; the stimulation of gastric acid secretion in the stomach; and the acceleration of a person's heart rate. Histamine is also a neurotransmitter and carries chemical messages between nerve cells (<https://britannica.com/science/>).

Histamine is part of a local immune response to the presence of invading bodies. Histamine is produced in the human body by the granules in mast cells and basophils. The basophils and mast cells are found in nearby connective tissue and are particularly abundant at sites where an injury might occur such as the nose, mouth, feet, surfaces of the internal organs, and blood vessels. Histamine is also made in the brain where it acts as a neurotransmitter or chemical messenger that carries signals between nerves (<https://www.news-medical.net/health/What-Does-Histamine-Do.aspx>).

Cells need a way to interact and communicate with substances such as hormones, drugs, and even sunlight. This is where cell receptors come in. A cell receptor is a protein molecule in a cell or on the surface of a cell to which a substance can bind and

cause a change in the activity of that particular cell (www.verywellhealth.com). It can help to think of a cell receptor as a doorway leading into the cell. Every substance has its own special doorway through which it can enter the cells of the body, for example, the cell receptor for sugar will only let sugar through; it will not let in caffeine. Caffeine receptors will only let caffeine in and will not let nicotine through. This “letting through” that cell receptors do is called binding.

The cells’ receptors are very specialized and there are hundreds of different types of receptors. Most receptors respond to chemical substances such as hormones, drugs, or allergens, while some even respond to pressure or to light (for example, the body produces vitamin D when sunlight hits the skin.) If a cell doesn’t have the correct receptor for a particular substance, then that substance won’t affect the cell. An example of this is the hormone leptin. Leptin is the hormone that causes a person to feel full after eating a meal. Cells that don’t have any receptors for leptin won’t respond to that hormone. Cells that do have receptors for leptin will respond to it, inhibiting the release of other hormones that make a person want to eat more (verywellhealth.com).

In an allergic reaction, the immune system’s hypersensitivity reaction to what are usually harmless foreign substances (called antigens in this context) that enter the body cause mast cells to release histamine in inordinate amounts. Immune system proteins, called antibodies, that are bound to mast cells, bind to the antigens to remove them. In the process, the mast cells are stimulated to degranulate and they release their histamines. This causes the visible symptoms of reactions in the different body systems and organ systems that are affected by the mast cell degranulation and the pumping of histamine and other chemicals into the body. Histamine also contributes to anaphylaxis, a severe, immediate, and often fatal response to exposure to an antigen (IBID).

Histamine Awareness

Histamine is found in mast cells. It is released to help fight infection, illness, injury, keep us awake, regulate our hormones, run our digestive system, and as a neurotransmitter. Some people’s mast cells release too much histamine. Their mast cells can be irregularly shaped, there can be too many mast cells, or the mast cells can be degranulating for unknown reasons (healinghistamine.com).

Histamine is also found in food. Some foods contain it while other foods trigger its release. Many people choose a low histamine diet to help manage their mast cell activation disorder (IBID).

Histamine works by binding to histamine receptors on the surface of cells. There are four kinds of histamine receptors, called H1, H2, H3, and H4. The activity of histamine

can be blocked by various chemical drugs called antihistamines which prevent the binding of histamine to these receptors (www.britannica.com/science/histamine). Benadryl (diphenhydramine), for example, Atarax (hydroxyzine), and Zyrtec (cetirizine) are H1 receptor blockers. Zantac (ranitidine), Pepcid/Pepcid AC (famotidine), and Tagamet (cimetidine) are examples of H2 receptor blockers.

What it Means to Eat Low Histamine

The information provided here is solely for educational and informational purposes and is not in any way intended to be medical advice, recommendation, diagnosis, treatment, or a substitute for medical advice from a doctor. Always check with your primary care physician and/or practitioner before starting any diet or eating plan.

Histamine causes a lot of reactions in the human body. When degranulating mast cells pump histamine (and all the other mast cell chemicals) into the body of a person who does not have a mast cell activation related disorder, it's to help the body get rid of something bothersome. It's all about the body trying to keep us safe from harm. In a person with a mast cell activation related disorder, it's a whole different ballgame: histamine unleashed.

One of the most important health goals for a person with a mast cell activation related disorder is to decrease and inhibit their mast cells' degranulating and pumping out that histamine; to keep the lowest levels of histamine in their bodies that they are able. It can be a juggling for balance. An example of the juggling is red wine which, although a mast cell stabilizer, is high in histamine. Another example is raspberries which are high in histamine but, according to current research, (see Finn & Walsh, 2013,) also have quercetin in them which is a mast cell stabilizer.

For a personal experience of eating low histamine and personalizing a low histamine diet, see mastattack.org: <https://www.mastattack.org/2015/06/how-to-eat-low-histamine-if-youre-me/> This is a wonderful website full of important information.

One of the biggest challenges when putting together lists of low to high histamine foods for others is the fact that a person's reactions to histamine can be very individualized. One person may not do well and have bad reactions when they eat tomatoes or food made from or containing tomatoes. Tomatoes are high in histamine. However, another person may have no problems at all eating tomatoes and tomato products. This is true for most if not all histamine food items. Person A might be fine eating a food that is high in histamine while person B could have severe to life-threatening reactions to the same food item. Therefore, it is important to know your own reactions to foods.

Part of the process of learning your own reactions to foods involves journal keeping. You need to track your responses and reactions to different foods, which can mean journal keeping over a period of time. It doesn't have to be lengthy journal entries. Instead, simply note down what you ate for each meal and then if you had any negative reactions after eating each meal and the severity of the reaction. Reactions can be immediate for some people while for others reactions can happen hours after finishing a meal—or even the next day or two days later. Stick with the journaling for at least several weeks. It will provide you with a dietary roadmap of you and better insights into your reactions when it comes to food. Keeping a food journal can help with the initial trial-and-error process of what foods do and do not work for each individual.

Additional Considerations Regarding Food

It isn't enough to only look at the food items and their histamine content and/or mast cell stabilizing properties. We also need to look at packaging. Many people have reactions when they are exposed to or come into contact with plastics. This includes wraps, containers, linings inside of containers (for instance, to make things leak-proof.) This can be another area of food that is highly individualized as some people are better able to manage plastics, or certain plastics, in their lives than others. Plastics are in inks, and dyes, in processed foods. Plastics are in many foods we eat.

Produce in markets is frequently kept fresh by being sprayed through thin, plastic hoses inside the refrigerated display areas. This moistening of the produce is often spraying chemicals/chemical residue from the plastic with the water over the produce. Plastic chemicals leech into food items and can make them highly reactive for individuals with a mast cell activation related disorder for this reason.

Paper bags can also be problematic due to the chemicals used in their manufacturing process and/or the inks used on the exterior of the bags (with the name of the market or seasonal images.)

Storage of food at home is another area about which to be knowledgeable and aware. Many people are more successful using glass containers for food storage than with plastics. People also use foil to wrap and store food items in the refrigerator, and will also use glass, as well.

And don't forget the soap you use to wash your dishes can also play a part in reactions. Most dish soaps are packaged in plastic and this may add to the challenge. What is important is that we can each find what works for us to help decrease mast cell degranulation and lower the amount of histamine in the body to help manage reactions.

Histamine in Foods List

The following list of histamine in foods has been compiled from information from various sources including but not limited to: healinghistamine.com; The Swiss Interest Group Histamine Intolerance (SIGHI) at histaminintoleranz.ch/en/downloads.html#foodlist; alisonvickery.com.au. There can be differences in which foods are included on any histamine foods list as well as their categorization as low, medium, or high in their histamine content. The listing presented here is by no means exhaustive.

Remember: (1) each person's body is different and foods that may be tolerated by one person may not be tolerated by another; (2) the information presented here is for educational and informational purposes only and is not intended as medical advice, recommendation, diagnosis, treatment, or as a substitute for medical advice from a doctor; (3) always consult with your physician prior to starting any eating plan.



Foods **Very High** in Histamine

Fruit:

- dried fruits
- raisins
- prunes
- plums
- grapes
- dates

Grains:

- breadcrumbs
- yeast
- wheat germ

Vegetables:

- sauerkraut
- onions
- pickles
- olives
- seaweed
- spirulina
- bell peppers
- eggplants
- jalapenos
- sweet peppers
- tomato
- tomatillo

Spices:

- cayenne
- paprika

Beverages:

- beer/ale/stout/lager
- cider
- champagne
- wine, sherry
- brandy, liquers, scotch

Protein:

- anchovy
- mackerel
- sardines
- fish that is not fresh
- salami
- ham
- bacon

Fats/Oils:

- walnut oil
- sesame oil
- avocado oil
- almond oil
- refined oils

Dairy:

- commercial yogurt

Nuts & Seeds:

- mixed nuts
- peanuts
- walnuts
- nut butters
- roasted nuts
- seed butters
- roasted seeds
- tahini
- buckwheat

Beans:

- black
- garbanzo/chickpeas
- kidney
- lentils
- lima
- soybeans
- navy & white navy
- green peas

Sweeteners:

- cocoa
- licorice
- marzipan
- white chocolate
- carob

Misc.:

- vinegar
- brewer's yeast
- nutritional yeast
- mustard (sauce)
- soy sauce
- worcestershire sauce
- wasabi
- teriyaki sauce
- oyster sauce

Foods High in Histamine

Fruits:

- figs
- avocado
- strawberries
- raspberries
- bananas
- grapefruit
- oranges
- lemons
- limes
- guava
- pineapple
- watermelon
- passion fruit
- kiwi
- mango
- papaya

Protein:

- aged beef
- pork
- eggs (chicken)
- tuna (fresh)
- cod (fresh)
- salmon (fresh)
- trout (fresh)
- clams
- mussels
- scallops
- oysters
- crab
- lobster
- liver
- tongue
- gizzards (heart, kidneys)
- roasted chicken
- poultry skin

Grains:

- yeast-risen breads
- bagel
- croissant
- English muffins
- sour dough
- pumpernickel

Fats/Oils:

- chicken & duck fat
- lard
- suet

Vegetables:

- spinach
- arugula
- radicchio
- chard
- mustard greens
- collard greens
- mushrooms
- lettuce
- leeks
- broccoli
- pumpkin

Spices:

- anise
- coriander
- paprika
- mustard
- cinnamon
- nutmeg
- cocoa powder
- cloves
- white pepper
- black pepper

Beverages:

- rosehip
- peppermint
- black tea
- green tea
- chai
- tonic water
- gin
- sake
- rum
- vodka

Dairy:

- gruyere cheese
- cheddar cheese
- mozzarella cheese
- goat cheese

Nuts & Seeds:

- brazil nuts
- hazelnuts
- almonds
- macadamia nuts
- pecans
- pine nuts
- pistachios
- pumpkin seeds
- sunflower seeds

Foods with Medium Histamine

Fruit:

- avocado (firm not soft)
- coconut (flesh)
- cranberries
- currants
- bananas (firm not soft)

Grains:

- matzo
- scones
- crackers
- biscuits
- baking powder leavening

Vegetables:

- carrots
- chives
- bamboo shoots
- endive
- shallot
- kale
- daikon
- radishes
- onions

Spices:

- ginger
- turmeric
- vanilla (extract)

Beverages:

- fruit juice
- soda water
- sparkling spring water

Protein:

- fresh white fish
- duck

Dairy:

- cottage cheese
- ricotta cheese
- yogurt cheese
- goat's milk
- buttermilk
- raw milk
- cream
- sour cream

Fats/Oils:

- coconut milk
- coconut cream
- coconut butter

Nuts & Seeds:

- cashews
- fresh coconut flesh

Misc.:

- baking powder
- gelatin
- tamarind

Foods **Low** in Histamine

Fruit:

- apples
- rhubarb
- pomegranate
- plantains
- peaches
- apricots
- pears
- star fruit
- nectarines
- boysenberries
- blackberries
- lychee
- honeydew
- cherries
- cantaloupe
- blueberries

Grains:

- rice noodles
- brown & white rice
- rice flour
- rice cakes
- barley
- couscous
- durum
- bulgar
- kamut
- oats
- rye
- semolina
- wheat & wheat bran
- spelt
- amaranth
- corn
- potato starch
- quinoa
- tapioca
- millet

Protein:

- poultry with skin removed
- chicken
- goose
- turkey
- beef that has not been hung
- lamb
- veal
- protein powders: hemp, whey

Fats/Oils:

- olive oil
- coconut oil
- red palm oil
- hemp oil
- flax oil
- macadamia oil
- butter
- ghee

Nuts & Seeds:

- flax
- hemp
- poppy
- sesame
- linseed

Misc.:

- baking soda
- citric acid
- cream of tartar
- horseradish
- saffron threads
- pectin
- lemongrass
- sea salt

Vegetables:

- asparagus
- alfalfa
- bok choy
- brussel sprouts
- chicory
- celery
- sugar snap peas
- snow peas
- turnip greens
- watercress
- zucchini
- all fresh herbs
- all sprouts
- cucumber
- fennel
- green beans
- lettuce
- artichoke
- chestnuts
- parsnips
- sweet potato
- turnips
- water chestnuts
- yams
- butternut squash
- okra
- spaghetti squash
- sweet corn
- taro
- Jerusalem artichoke

Sweeteners:

- raw honey
- maple syrup

Beverages:

- tea made from fresh herbs
- ginger tea
- spring water
- tap water

References for all cited information and food list information used in this publication are listed below in the order in which they appear in the text.

References

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