Histamine Intolerance

Information for Patients

Histamine Intolerance

Many people suffer unpleasant symptoms, particularly after meals, such as bloating, diarrhoea, nausea, headaches, breathing difficulties or a runny nose. The cause of these symptoms could be histamine intolerance. Statistically speaking, women are affected more often than men.

What is histamine?

Histamine is a biogenic amine that is created during the break-down (degradation) of the amino acid histidine, which is found naturally in the body and also in many foods.

Histamine has many useful functions in the body, such as:

- Regulating gastric juice secretion
- Dilating blood vessels
- Healing wounds
- Working as a neurotransmitter ('messenger chemical') in the brain
- Affecting alertness, sleep, appetite

Histamine is constantly being created and stored within us. In a healthy body the histamine reserves are constantly kept at a harmless level – there is a balance between supply, creation and degradation. However if there is a surplus of histamine present then this can lead to various symptoms that vary considerably in their intensity:

- Light headache to migraine
- Breathing difficulties to asthma attack
- Stomach and intestinal problems (tummy ache or diarrhoea)
- Blushing, nettle rash (urticaria) and hot flushes
- Blocked or runny nose
- Chronic low blood pressure
- Tiredness and dizziness
- Period pains (Dysmenorrhoea)
- Palpitations and feelings of anxiety

Symptoms appear around 15 minutes to 3 hours after eating and disappear after 8 to 12 hours.

Where does histamine come from?

Just as histamine is created in the body by the degradation of histidine, this process is often intentionally used for the ripening and fermentation of certain foodstuffs (smoking sausages, maturing of some types of cheese, brewing beer). The longer a foodstuff is stored, the faster the histamine level rises.

A high histamine level can also be a sign of deterioration. Fish that is frozen immediately after being caught contains less histamine than fish that has only been refrigerated, because at temperatures below freezing the bacteria that convert the histidine into histamine can no longer reproduce. Fish that has been kept in the kitchen at room temperature for several hours before being finally prepared can contain extremely high quantities of histamine.

A list of foods that is rich in histamine can be found below, but it is important to remember that there can be considerable variation in the amount of histamine in a particular food, depending on how long it has been stored, and in what conditions.

When does an excess of histamine occur?

When the body can no longer break down the excess histamine then the symptoms mentioned above occur. The cause of a histamine overload is eating too much histamine-rich food.

The enzyme Diamine Oxydase (DAO) is mainly responsible for the degradation of histamine within the body. If this is present in sufficient quantities and is working properly, then it degrades 60 to 70% of the histamine. Is there too little DAO present in the body or if it is biologically inactive then too little histamine is degraded, resulting in a histamine overload.

It has to be taken into account that the DAO is not just responsible for the degradation of histamine, but also for the degradation of other biogenic amines. This means that foods that contain only little or no histamine but which do contain other biogenic amines can cause or reinforce symptoms.

There are also certain foodstuffs that may contain little or no histamine but which can release histamine inside the body (so-called histamine liberators). Here, too, ingesting too much can lead to symptoms.

DAO levels can be too low for several reasons:

- Infection or inflammation of the intestines can reduce DAO activity
- Some people naturally produce less DAO for genetic reasons
- Alcohol and certain drugs can interfere with DAO activity, reducing levels of DAO in the body.

- Stress, and certain infections, can increase the amount of histamine in the body, overwhelming the available DAO

What is the connection between histamine and allergies?

If an allergic person comes into contact with their allergy 'trigger' then various immune system chemicals are released, including histamine. This causes symptoms such as a runny nose, wheezing, itchy eyes and skin, and an over-active gut. Patients with allergies and histamine intolerance can suffer a double effect: they produce histamine because of the allergy but are unable to degrade it because of the histamine intolerance.

What role do female hormones play in histamine intolerance?

There are some clues that female hormones are associated with the production of histamine. Women who suffer histamine intolerance find that their symptoms improve when they are taking the pill or using oestrogen patches.

The uterus is sensitive to histamine. Between the 3rd and 9th months of pregnancy DAO levels increase between 103 and 500 times in order to protect the uterus from histamine. Many symptoms caused by histamine (hay fever, asthma) disappear during pregnancy.

Period pains (dysmenorrhoea) are a typical symptom of histamine intolerance, and histamine intolerance often only appears in women at the start of the menopause.

Histamine levels in foodstuffs

The foods which contain the highest levels of histamine and/or can be histamine liberators and which are the main causes of symptoms are:

1. Alcoholic drinks (especially red wine)
2. Cheese (particularly mature cheeses such as Emmental)
3. Chocolate
4. Salami and similar processed sausage
5. Nuts
6. Fish
7. Tomatoes, sauerkraut, spinach
8. Citrus fruits, kiwis, strawberries

Histamine is resistant to heat and cold and is not destroyed by boiling, roasting, baking or freezing.

For a more detailed list of histamine-rich foods, and a suggested low-histamine diet, see the separate information sheet.

Fresh animal products contain hardly any histamine and can, because of this, be eaten freely. In general, all processed or smoked sausages and meats are histamine-rich. Similarly, there is no problem with freshly caught fish. However many fish products have high histamine levels because of how they are stored or preserved. This also applies to all other seafood.

While products made from fresh milk (buttermilk, some yoghurts, cream) and fresh milk itself contain hardly any histamine, cheeses, particularly those that have been matured for longer, contain large amounts of histamine and, besides alcoholic drinks, are the main cause of symptoms. Cottage cheese is fine.

Among the alcoholic drinks, red wine and beers have the highest histamine levels and are the most frequently mentioned cause of symptoms.

It is rare to find high histamine levels in fresh or frozen vegetables. However, histamines are often contained in fermented (pickled) vegetables and in the marinades used in preserved foods. Over-ripe fruit and vegetables can be rich in histamines. Caution is also advised for yeast extracts in flavouring and prepared meals as well as spicy sauces, soy sauces and taste enhancers.

Biogenic Amines

The following foodstuffs contain substances similar to histamines (biogenic amines) that can also lead to unwelcome symptoms:

- All fish and meat
- Oranges, pears, grapefruit, bananas, pineapple, papaya, raspberries
- Cashew nuts, walnuts
- Beans
- Wheat germ

Histamine liberators

Some foods can directly trigger the release of histamine from cells in the body.

- Strawberries, citrus fruit, pineapple, kiwi
- Tomatoes, mushrooms
- Additives: Glutamate, benzoate, some colourings, sulphite, nitrate

E-numbers

When used normally, additives are not toxic for humans. The E-numbers listed below are ‘histamine liberators’ and should not be used in cases of histamine intolerance. You will find the E-numbers in the list of ingredients on the food packaging.

Food colours and dyes

Number	Name
E 100	Curcumin
E 101	Lactoflavin, Riboflavin
E 101a	Riboflavin-5-phosphate; Lactoflavin phosphate ester
E 102	Tartrazine
E 104	Quinoline
E 120	Cochineal, carminic acid, carmines
E 123	Amaranth
E 127	Erythrosine
E 128	Red 2 G
E 131	Patent blue V
E 132	Indigotine; Indigo carmine

Preservative agents

Number	Name
E 200	Sorbic acid
E 201	Sodium sorbate
E 202	Potassium sorbate
E 203	Calcium sorbate
E 210	Benzoic acid
E 211	Sodium benzoate
E 212	Potassium benzoate
E 213	Calcium benzoate
E 214	Ethyl p-hydroxybenzoate
E 215	Sodium ethyl p-hydroxybenzoate, sodium salt
E 216	Propyl p-hydroxybenzoate
E 217	Sodium propyl para-hydroxybenzoate, sodium salt
E 218	Methyl p-hydroxybenzoate
E 219	Sodium methyl p-hydroxybenzoate, sodium salt
E 220	Sulphur dioxide
E 221	Sodium sulphite
E 222	Sodium hydrogen sulphite
E 223	Sodium metabisulphite
E 224	Potassium metabisulphite
E 226	Calcium sulphite
E 227	Calcium hydrogen sulphite
E 228	Potassium hydrogen sulphite

Other additives and coating agents

E 620	Glutamic acid
E 621	Monosodium glutamate
E 622	Monopotassium glutamate
E 623	Calcium diglutamate
E 624	Monoammonium glutamate
E 625	Magnesium diglutamate

Drugs that impair diamine oxidase (DAO) activity

Some drugs interfere with the DAO enzyme, reducing its activity:

ACTIVE INGREDIENT	NAME
Aminophylline	Phyllocontin, Uniphyllin, Nuelin, Slo-Phyllin
Amitriptyline	Triptafen
Chloroquine	Avloclor, Malarivon, Nivaquine, Paludrine/Avloclor
Clavulanic Acid	Augmentin, Co-amoxiclav
Isoniazid	
Metoclopramide	Maxalon, Paramax
Propafenone	Arythmol
Verapamil	Cordilox, Securon

Anti-inflammatory/painkilling drugs can increase histamine release in allergy sufferers

ACTIVE INGREDIENT	NAME
Mefenamic acid	Ponstan,
Diclofenac	Voltarol, Dicloflex, Diclomax, Motifene, Arthrotec
Indometacin	Indacid, Rimacid
Flurbiprofen	Froben
Naproxen	Naprosyn, Synflex, Napratec, Arthroxen
Ketoprofen	Orudis, Oruvail
Acetylsalicylic acid	Aspirin, Caprin, Anadin and many others

Contrast media for x-ray based imaging, sleeping pills and anaesthetics can act as histamine liberators. Make sure to tell the responsible medical professional that you are suffering from Histamine Intolerance before you go to the x-ray examination

Therapy

1. Strict observation of a low-histamine diet for three weeks!

2. Vitamin C	lowers the histamine level in the blood
Vitamin B6	is an important co-factor of the enzyme diamine oxidase
Calcium:	reduces the development of wheals and flushing of the skin
Zinc:	has anti-allergic and anti-inflammatory properties and constrains histamine release
Copper:	is able to elevate the plasma level of DAO slightly
Magnesium:	a magnesium deficit lowers the allergic reaction threshold
Manganese:	elevates diamine oxidase activity

3. DAO enzyme capsules: dietary foodstuff with purely biogenic counter-histamine DAO (diamine oxidase). With the aid of DAO it is possible to reintroduce those natural ingredients to the body that it lacks in order to deal with the surplus histamine. Where necessary, take 1 capsule according to package instructions, maximum 3 capsules a day.

4. Anti-histamines are able to block the effects of histamine, and can either be taken continuously or when required (eg. Cetirizine, Loratadine, Acrivastine).[1]

[1] *We would like to thank for the kind permission of Univ. Prof. DDr. Hans Schön to translate information from the patient information leaflet provided to his patients. The information above has been translated from the document: "Histaminunverträglichkeit-Histaminintoleranz, Patienteninformation" by Facharztpraxis Labor Doz. Schön, Univ-Doz. Prim. Dipl.-HTL-Ing. chem. Dr. med. univ. Dr. phil. Hans J. SCHÖN, Universitätsdozent für klinische Chemie und Laboratoriumsmedizin, Facharzt für med. & chem. Labordiagnostik, ÖÄK-Diplom für Genetik.www.labmed.at*