Histamine Panel

for

Sample Report

Date of birth: 06 Sep 1979	Date reported: 29 Aug 2023	Sample number: DNA000000ZA
Referring practitioner: Private		

The histamine panel report offers insights into your body's ability to degrade histamine, offering recommendations to better manage high levels of histamine.

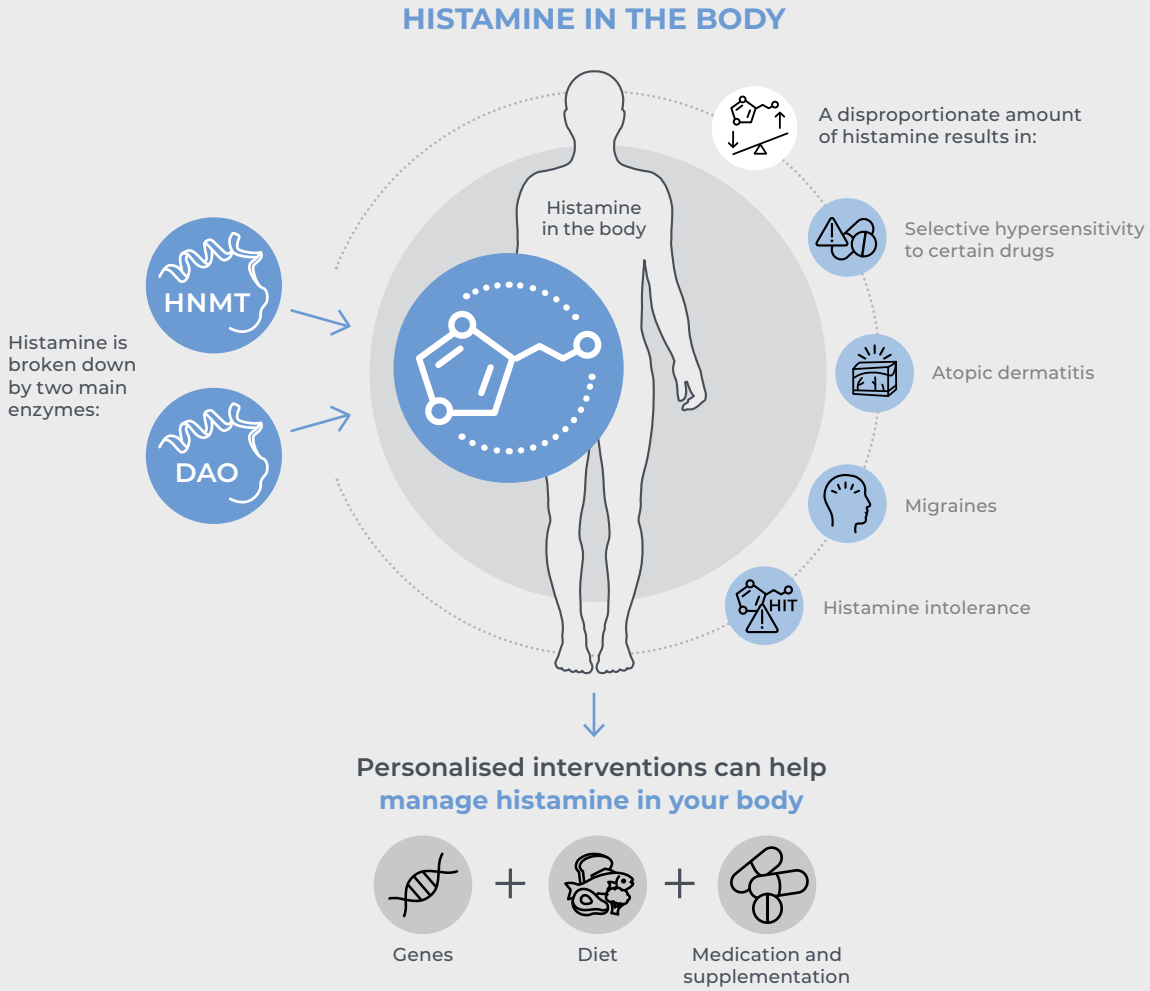
Histamine overview

Histamine is regarded as a neuro-immuno-endocrine system mediator and is produced by many cell types, including basophils and mast cells. These cells are responsible for releasing endogenous histamine in response to immunological and nonimmunological stimuli. Histamine plays many key roles in the human body; it functions as a bronchoconstrictor in the lungs, a key mediator of wheal formation on the skin, a controller of gastric acid secretion, and a neurotransmitter in the brain. Another main source of histamines is food. The fresher the food, the lower the probability of histamine formation.

There are two main enzymes responsible for the degradation of histamine in the human body, Histamine N-Methyltransferase (HNMT) and Diamine Oxidase (DAO). Genetic polymorphisms in the genes encoding these enzymes can lead to a disproportionate amount of histamine in the body resulting in selective hypersensitivity to certain drugs, migraines, atopic dermatitis, and histamine intolerance which is characterised by gastrointestinal, skin, and respiratory problems, following the ingestion of histamine-rich foods.

There are many inconsistencies in the literature, around the association of histamine with various other allergies such as asthma and allergic rhinitis. This could be due to several reasons:

- Gender-related differences observed in the activities of the two histamine-degrading enzymes
- Interactions with unknown genetic polymorphisms
- Racial heterogeneity
- Various environmental factors which interact with an individual's genetic architecture



Histamine N-Methyltransferase (HNMT)

Histamine N-methyltransferase (HNMT) is an important histamine-degrading enzyme involved in the inactivation of intracellular histamine.

Thr105Ile (314 C>T)

The 105Ile amino acid or the T allele is associated with a significant decrease in HNMT enzyme activity and thermal stability. This decrease in activity is associated with increased histamine levels. The T allele is more frequent in patients with atopic dermatitis and childhood asthma, both conditions which present with high levels of histamine.

939 A>G

The 939A allele is associated with lower levels of HNMT enzymatic activity, HNMT mRNA stability, HNMT protein expression and higher histamine release when compared to the 939G allele. The A allele has been found to increase one's susceptibility to aspirin intolerant chronic urticaria and atopic dermatitis.

Your HNMT results

Genotype result table:

GENE NAME	GENE VARIATION	YOUR RESULT	VARIANT DETECTED
HNMT	Thr105Ile C>T (314 C>T)	CC	No
	939 A>G	AA	Yes

Diamine Oxidase (DAO)

Diamine Oxidase, also designated as amiloride-binding protein (ABP1), plays a key role in the inactivation and scavenging of extracellular histamine.

His645Asp (C>G)

The G variant displays lower enzyme activity compared to the C allele. Individuals with the G variant are more prone to developing asthmatic symptoms while having lower IgE levels, suggesting the G allele may be related to clinical symptoms rather than increasing one's susceptibility to asthma.

Thr16Met (C>T)

The 16Met amino acid or the T allele reduces DAO activity. This decrease in enzyme activity results in decreased ability to metabolize extracellular histamine, resulting in higher levels of histamine present in the extracellular space. The T allele increases the risk of developing selective hypersensitivity to acetylsalicylic acid or aspirin and is associated with the development of migraines, in women.

Histamine intolerance

Sub-optimal enzyme function, together with foods and drink high in histamine can result in a disproportionate amount of histamine in the body and can all collectively trigger histamine intolerance (HIT). Characteristic symptoms of HIT include diarrhoea, nausea and vomiting, headache, itchy skin, oral allergy syndrome as well as red eyes and swollen eyelids. .

Your DAO results

Genotype result table:

GENE NAME	GENE VARIATION	YOUR RESULT	VARIANT DETECTED
DAO	His645Asp C>G	CG	Yes
	Thr16Met C>T	CT	Yes

Recommendations

If any of the HNMT or DAO variants have been detected:

- Avoid HNMT-inhibiting drugs such as antihistamine diphenhydramine, antifolate drug metoprine, anticholinesterase drug tacrine and anti-malarial drug amodiaquine
- Ensure adequate intake of cofactors promoting the activity of DAO such as vitamin B6, copper, zinc, or vitamin C
- Recommend a low-histamine diet (fresh meat and fish, fresh fruit with limited citrus, fresh vegetables with limited tomato, eggplant and spinach, wholegrain products and herbal teas)
- Avoid histamine-rich foods (such as fermented foods, legumes, citrus, processed meats and alcohol).

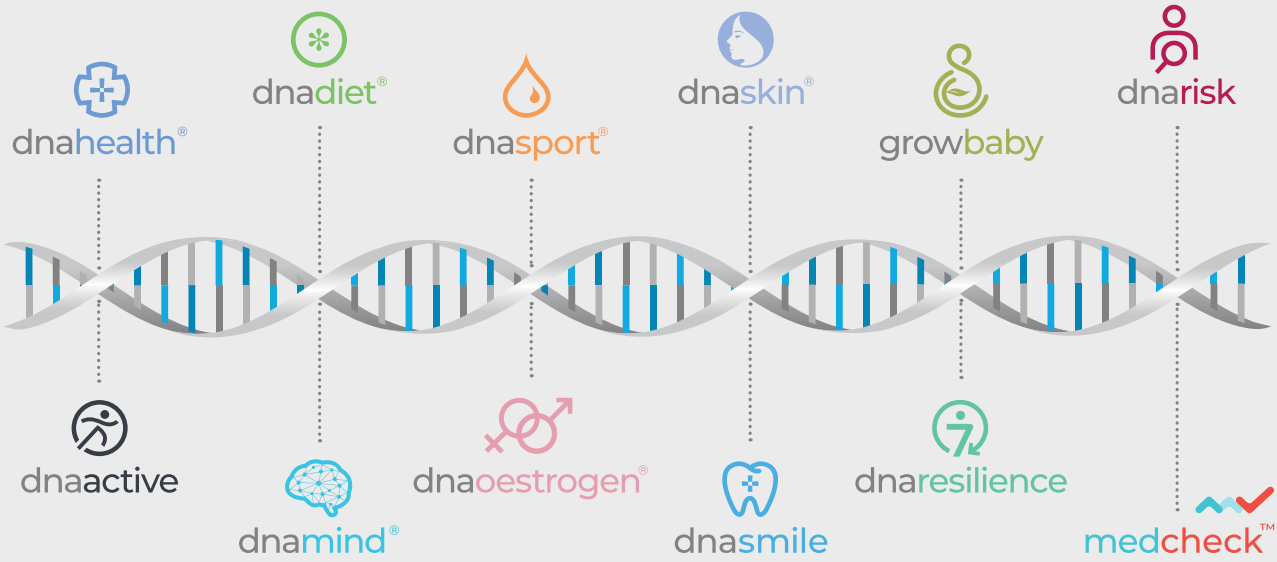
Next steps:

- Consider the following test: **Histamine DAO**

  This THAK test determines the total histamine degradation capacity, regardless of the degradation pathway.

A lifetime of optimal health awaits you

Your genes do not change, which means our laboratories will only ever need one sample* from you. Throughout your life, as your health goals and priorities change, we can continue to provide valuable health insights from this single sample* to support your unique health journey.



Requires finger prick blood spot sample collection

Our Commitment

DNAlysis Biotechnology is continuously developing new tests with the highest standards of scientific rigour. Our commitment to ensuring the ethical and appropriate use of genetic tests in practice means that gene variants are only included in panels once there is sound motivation for their clinical utility and their impact on health outcomes.

ADVANCED technology | ACTIONABLE interventions | APPROPRIATE use in practice

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