

# Relaunch of the modified DAO Test



## Diaminoxidase Concentration as Marker for Histamine Intolerance

Histamine is a biogenic amine emerging from the amino acid L-histidine, which is mainly developed by basophilic granulocytes and mast cells.

### H-1-Receptor Effect:

- Bronchoconstriction
- Intestinal Contraction
- Vasodilatation via endothelial NO release
- Increase of vessel permeability
- Increased adrenalin secretion (NN)

### H-2-Receptor Effect:

- Increase of gastric juice secretion
- Vasodilating
- Tachycardia
- Positive inotropic at the heart

### H-2-Receptor Effect:

In the central nervous system histamine modulates hormone secretion, sleep-wake-rhythm, memory and learning processes, food consumption and nausea.

### Typical Symptoms of Histamine Intolerance:

Headaches (migraine), nausea, rhinitis, dyspnoea (asthma), urticaria, gastrointestinal complaints (colics, meteorism or diarrhoea)

The enzyme diaminoxidase (DAO) is responsible for the decomposition of extracellular histamine. It is developed in the enterocytes of the small intestine mucosa. An imbalance of histamine release / consumption and histamine decomposition leads to histamine intolerance.

Possible causes of this histamine intolerance can therefore be differentiated as follows:

- **Reduced DAO production**  
(especially in case of gastrointestinal diseases)
- **Inadequate DAO Activity**  
(especially if high-histamine or histamine-releasing foods or drugs are consumed)

- **Competitive inhibition of DAO by alcohol or drugs**

This new test is a classic sandwich-immunoassay (ELISA), which measures the DAO concentration. During clinical evaluation of the test an excellent compliance with the reference method REA (activity test) could be observed. As the ELISA method has prevailed, DAO values are made comparable by conversion for use in practice.

<b>DAO &lt; 3 kU/l</b>	<b>Indication of histamine intolerance or pseudo-allergy</b>
<b>DAO 3-10 kU/l</b>	<b>Grey area</b>
<b>DAO &gt; 10 kU/l</b>	<b>Histamine intolerance or pseudo-allergy unlikely</b>

**New Reference Ranges:**

If reduced DAO concentrations are determined, the co-factors (vitamin C, vitamin B6, copper and manganese) should be analysed. Also DAO inhibition by medication should be taken into consideration.

**Drugs inhibiting DAO activity are for example:**

- Acetylcysteine
- Clavulanic Acid
- Pancuronium
- Ambroxol
- Dihydralazine
- Propafenone
- Aminophylline
- Isoniazid
- Verapamil
- Amitriptyline
- Metamizole
- Chloroquine

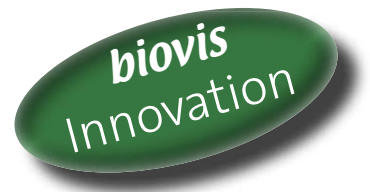
Additional diagnostic parameters:

- Histamine in stool
- Methyl histamine in acidified 24h collected urine
- Histamine in 2nd morning urine

**See also: Expert Information / Determination of Histamine in Stool / [www.biovis.de](http://www.biovis.de)**

**Do you have further questions?**

**Please call us!  
We gladly provide  
further information.**



**Occurrence and Content of Histamine in Selected Foods**

<b>Foods</b>	<b>Amine content [mg/kg]</b>
Tuna fish	0,1 – 13000
Sardine	110 – 1500
Sauerkraut	6 – 200
Spinach	38
Tomatoes	22
Salami	0,1 – 279
Westphalian ham	38,2 – 159
Red wine	0,6 – 3,8
Emmental-type Cheese	0,1 – 555
Harz Cheese	390
Gouda	29,5 - 180