

# Diamine oxidase activity

## General:

Diamine oxidase (DAO) degrades histamine. DAO is found in most cells, but is especially active in the intestine. The determination of diamine oxidase plays an important role in the diagnostics of histamine intolerance. Histamine belongs to the group of biogenic amines. Related substances are tyramine, phenylethylamine, putrescine, spermine, cadaverine, serotonin etc. These substances trigger symptoms of the histamine effect. Deficiency of DAO is one cause of histamine incompatibility.

Histamine intolerance occurs as a consequence of exogenous histamine intake, if histamine biotransformation is disturbed by a decreased activity of diamine oxidase. DAO-activity is reduced by alcohol intake, diverse drugs, chronic-inflammatory intestinal diseases and Vitamin B6 deficiency (coenzyme of DAO). The prevalence of the disease is approx. 1 % of the population. Inherited traits are very rare.

**Typical symptoms** are diarrhea, headache (also migraine), cold, bronchial asthma, urticaria, dysmenorrhea provoked by ingestion of high amounts of histamine in food. Histamine concentrations in food are indicated in the table (*see below*). Drugs inhibiting diamine oxidase are acetylcysteine, ambroxol, aminophylline, amitryptiline, clavulanic acid, metamizole, metoclo-pramide, propafenone, verapamil. Histamine intolerance in addition to al-lergy can trigger the symptoms considerably. In those cases hyposensibili-zation is less effective.

**Diagnosis:** The diagnosis is based on typical history as well as DAO and Vitamin B6 determination (if required) in serum.

**Therapy:** Systematically avoiding food with high histamine concentrations as well as therapy with histamine blockers or liberators should lead to fast improvement of the described symptoms.

Indication: Histamine hypersensitivity

Material: 1 ml serum

TAT: 7-10 days\*

Method: EIA

Units: U/ml

Ref.- range: >10.0

## The most important histamine containing foods/ beverages

<i>Alcoholic drinks</i>	Histamine (µg/kg)	<i>Cheese</i>	Histamine (µg/kg)
nonalcoholic beer	15 - 40	mountain cheese	10 - 1,200
beer	20 - 50	camembert	10 - 300
champagne	- 670	emmental cheese	10 - 500
red wine	60 - 600	cream cheese	0
red wine (max.values)	3,800	gouda cheese	10 - 200
sparkling wine	15 - 80	austrian blue cheese	10 - 80
white wine	10 - 120	parmesan	10 - 580
wheat beer	120 - 300	quark (skimmed cheese)	10 - 50
		romadur	10 - 100
<i>Fish/fish products</i>		tilsit	10 - 60

fish (freshly-caught)	0		
fish (rotten)	- 13,000	<i>Sausages/ham made from raw meat</i>	
deep-frozen food	0 - 5	cervelat sausage	10 - 100
canned food (tuna fish)	0	fresh meat	<1
<i>vegetables</i>		salami	10 - 280
aubergine	<26	westphalia ham	10 - 300
avocado	<23		
sauerkraut	10 - 200	<i>Vinegar</i>	

spinach	30 - 60	red wine vinegar	- 4,000
tomatoes (ketchup)	<22		

Other food/beverages can nonspecifically liberate histamine (histamine liberators): pineapple, bananas, pears, strawberries, raspberries, kiwi fruit, Papaya, citrus fruit, legumes, nuts, wheat germ.

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit <http://www.fml-dubai.com/parameter-listings/>