

SYNLAB 

DAO ACTIVITY TEST



PATIENT INFORMATION

Doctor:

Company: ---

Gender:

Sample type: Serum

RESULT. ANALYSIS OF DIAMINE OXIDASE (DAO) ENZYME ACTIVITY

DAO ACTIVITY

3,7 ▶

Units
U/mL

HISTAMINE DEGRADATION

39,82 ▶

HDU



Interpretation of the result:

- < 3,74 U/mL (< 40 HDU): Low ability to degrade histamine
- 3,74 - 12,54 U/mL (40-80 HDU): Moderate ability to degrade histamine
- > 12,54 U/mL (> 80 HDU): High ability to degrade histamine

HDU: Histamine Degrading Units

A moderate or low ability to degrade histamine is associated with a higher incidence of histamine intolerance.

Comments

Histamine is a molecule present in a large number of foods. The ability to metabolize and eliminate histamine varies from one person to another and is determined primarily by the activity of the intestinal diamine oxidase (DAO) enzyme. In people with normal DAO activity, histamine from the diet is rapidly degraded. In people with reduced activity there is an excess of histamine in blood, increasing the probability of presenting various symptoms known as DAO-deficiency, food histaminosis or histamine intolerance.

The symptoms associated with DAO-deficiency are very diverse and represent chronic pathologies of great prevalence in the population (see table 1). People with DAO deficiency do not necessarily have all the symptoms described, although most tend to have several, with migraine being especially prevalent among them. The appearance of symptoms is not linked to the consumption of a specific food, but can be associated with a wide range of foods with variable contents of histamine, and also the appearance of symptoms is not immediate, as there is no direct temporal relationship between the intake of foods with a high content of histamine or histamine releasers and clinical symptoms due to DAO-deficiency.

As a consequence, it is difficult to establish a direct relationship between diet and symptoms, which makes the clinical diagnosis of DAO-deficiency difficult. The identification of a reduced DAO enzyme activity as an intrinsic factor that triggers the clinical symptoms of DAO-deficiency, enables effective preventive treatment of histamine intolerance, with the consequent improvement in the quality of life of the patient.

DAO enzyme activity does not always correlate with the concentration of the enzyme, it is possible that the person has an enzyme concentration within the limits of normality, but with a reduced activity. For this reason, the evaluation of DAO activity has a better correlation with the appearance of symptomatology. During pregnancy there is an important placental synthesis of DAO enzyme, for this reason it is not advisable to perform the test in pregnant women.

There are different factors that cause DAO-deficiency, being the most frequent genetic predisposition. In addition, this activity can also be temporarily reduced by pathological situations such as intestinal inflammatory diseases, or by the intake of inhibitors such as alcohol or certain drugs. Inhibition by drugs is a relatively common cause, since there is a high number of drugs capable of inhibiting the DAO activity (see table 2).

Table 1. Symptoms associated with DAO-deficiency:

- Migraine and other vascular cephalaeas
- Gastrointestinal disorders: especially those associated with irritable bowel syndrome, such as constipation, diarrhoea, satiety, flatulence or swollen feeling
- Dermatological disorders: such as dry skin, atopy or psoriasis
- Osseous conditions: osteopathic pains
- Muscular alterations: soft-tissue pains usually diagnosed as fibromyalgia
- Chronic fatigue
- In childhood and adolescence, DAO deficiency has been linked to attention deficit and hyperactivity disorder and cyclic vomiting syndrome

Table 2. Active ingredients with inhibitory effect on DAO enzyme

(Veciana-Nogués MT y Vidal-Carou, Nutrición y dietética clínica. 3ª Edición. 2014)

Active ingredient	Pharmacological Group
Metamizole	Analgesic
Propafenone	Antiarrhythmic
Clavulanate	Antibiotic
Amitriptyline, tranylcypromine	Antidepressant
Metoclopramide	Antiemetic
Dihydralazine, verapamil	Antihypertensive
Promethazine, cimetidine	Antihistamine
Chloroquine	Antimalarial medication
Isoniazid	Antitubercular
Ambroxol	Mucokinetic
Acetylcysteine	Mucolytic

Limitations

Do not perform the test in case of anaphylactic shock or during pregnancy.

Analysis technique

The test evaluates the DAO enzyme activity by a REA (RadioExtractionAssay) technique. The DAO enzyme is incubated with a labelled substrate. After the action of the DAO enzyme a marked product is obtained which is selectively extracted. The extracted product is quantified with a beta counter, and the signal obtained is directly proportional to the activity of the DAO enzyme in the sample.

Bibliography

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