

# Selenium

Enzymes containing Se are very important **antioxidants** (glutathione peroxidase, phospholipid hydrogen peroxide-glutathione peroxidase), they are working in the metabolism of thyroid hormones.



## Source

Sources of selenium are cereals grown on soils rich in selenium and marine products. The recommended daily dose of selenium is: **1 mg/kg; 50-200 µg/day**. It has a positive effect on the immune system (in case of selenium deficiency, the stimulation of lymphocytes decreases, the activity of NK-cells decreases and the production of interferon decreases).

It has anti-cancer effects (it is part of the antioxidant enzyme glutathione-peroxidase, which is used in the prevention of damage caused by free oxygen and peroxide radicals, see oxidative stress). It supports sperm maturation and motility.

Selenium is absorbed in the duodenum, reducing its intake of fiber, methionine, Zn and Cd. It is absorbed independently of its content in the body and excreted mainly by the kidneys. It is not stored in the liver; its serum level falls very rapidly when the supply is insufficient.

## Deficiency

Selenium deficiency is very common here.

A symptom of deficiency is cardiomyopathy, higher incidence of cardiovascular diseases, impaired immunity, increased risk of cancer, myopathy, etc.; selenium deficiency can result in so-called Keshan disease, a juvenile endemic cardiomyopathy described in some areas of China. It is a multifocal cardiomyopathy affecting mainly young children in areas with Se deficiency in the soil and drinking water. In addition to muscle stiffness, weakness and pain, there is depigmentation of hair, skin and nails, weakening of these tissues.

*Long-term parenteral nutrition* without Se can lead to fatal cardiomyopathy. The level of Se is usually very low long before clinical symptoms.

The level in *pregnancy* tends to be low because the fetus accumulates it.

## Toxicity

Se toxicity is rare:

- **Acute poisoning** is manifested by the smell of garlic from the mouth and sweat due to the presence of dimethylselenide.
- **Chronic selenosis** is manifested by loss of hair and nails, skin blisters, damage to the dentition.

## Links

### Related articles

- Trace elements

### External links

- Selen (česká wikipedie)
- Selenium (anglická wikipedie)

## Source

BENEŠ, Jiří. *Studijní materiály* [online]. ©2007. [cit. 2009]. <<http://www.jirben.wz.cz/>>.

## Literature

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- MASOPUST, Jaroslav a Richard PRŮŠA. *Patobiochemie metabolických drah*. 2. vydání. Univerzita Karlova, 2004. 208 s. s. 192.
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