

# Hydroxylysine - description, benefits, effect on the body and the best sources

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**Abstract.** Hydroxylysine is a non-essential amino acid that, under favorable conditions, is produced by our body independently. Hydroxylysine plays an important role in protecting our body from tumors. In addition, it is part of the collagen protein and glycoproteins.

**Key words:** hydroxylysine, general characteristics, daily requirement, digestibility, beneficial properties, signs of deficiency, signs of excess

## Foods rich in hydroxylysine:

- Milk
- Cottage cheese [1]
- Hard cheeses
- Homemade yogurt [2]
- Brynza
- Beef
- Mutton
- Chicken
- Turkey
- Fatty fish
- Chicken egg [3]
- Quail egg
- Soybeans
- Beans [4]
- Seafood

## General characteristics of hydroxylysine

According to its chemical structure, hydroxylysine is a non-standard amino acid with the formula  $C_6H_{14}N_2O_3$ . Thanks to the enzyme lysyl hydroxylase, this amino acid is formed in our body as a result of interstitial synthesis from lysine.

Currently, there are 2 forms of hydroxylysine - natural, produced in our body, and produced artificially in enterprises in the form of dietary supplements.

This amino acid, produced as a supplement to sports nutrition, according to some sources, is perceived by the body as an absolutely useless chemical compound that is excreted from the body unchanged.

## Daily requirement for hydroxylysine

When a sufficient amount of lysine is consumed (23 mg/kg for adults and 170 mg/kg for children), hydroxylysine is produced by the body in sufficient quantities.

### **The need for hydroxylysine increases with:**

- increased physical activity [5];
- joint injuries and tendon strains;
- damage to muscle fibers;
- neoplasms;
- age-related changes in the male body;
- a disease called lathyrism, which manifests itself in damage to the nervous system;
- Ehlers-Danlos syndrome.

### **The need for hydroxylysine is reduced:**

- after 25 years, when the formation of the body is completed;
- in case of individual intolerance to products and preparations containing lysine.

### **Hydroxylysine absorption**

As mentioned above, the absorption of hydroxylysine directly depends on its origin. If the amino acid lysine was involved in its occurrence, and the synthesis occurred directly in our body, then this type of hydroxylysine will be absorbed in full in the shortest possible time.

Used as a dietary supplement, hydroxylysine has a completely different structural formula, in contrast to that synthesized within the body. As a result of this, the chemically created hydroxylysine molecule is not able to integrate into cellular structures and leaves our body without having any effect on it.

Therefore, in order for everything to always be in order in our body, we should take care of consuming foods containing the amino acid lysine.

### **Beneficial properties of hydroxylysine and its effect on the body:**

Hydroxylysine is the original component of collagen, and its effect on the body is based on the property of collagen to maintain the integrity of cell membranes [6].

Hydroxylysine ensures the normal functioning of ligaments and systems, promotes the healing of microtraumas of muscle tissue. In addition, this amino acid can prevent the occurrence and development of tumors.

### **Interaction with other elements:**

Hydroxylysine has good contact with arginine and vitamin A [7], C [8] and B1. In addition, iron [9] and bioflavonoids [10] play an important role in the synthesis of hydroxylysine.

### **Signs of a lack of hydroxylysine in the body**

- increased fatigue;
- headache [11];
- muscle weakness;
- joint pain;

- decreased appetite;
- alopecia (excessive hair loss) [12];
- decreased libido;
- frequent ARVI;
- skin problems.

### **Signs of excess hydroxylysine**

Hydroxylysine is not prone to accumulation and is consumed as it occurs. Therefore, signs of its excess in the body were not found.

### **Factors influencing the content of hydroxylysine in the body**

With the simultaneous consumption of proteins [13] and sugars, the synthesis of hydroxylysine in the body decreases. Therefore, separate and rational nutrition in this case can bring invaluable benefits to the body that needs this amino acid.

### **Hydroxylysine for beauty and health**

In our body, hydroxylysine is a source of collagen, and its presence in the body affects not only the appearance of the skin [14] and muscles, but also the general condition of the body.

Hydroxylysine is an important nutritional component for bodybuilders, thanks to which the necessary muscle relief is formed faster, microtraumas heal faster, and muscle mass is formed [15].

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**Abstract.** Hydroxylysine is a substituted amino acid that our body produces on its own under favorable conditions. Hydroxylysine plays an important role in our body's defense against neoplasms. It is also part of the collagen protein and glycoproteins.