

# Alanine - description, benefits, effects on the body and the best sources

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**Abstract.** For the first time, the world heard about alanine in 1888. It was in this year that the Austrian scientist T. Weil worked on studying the structure of silk fibers, which later became the primary source of alanine.

**Keywords:** alanine, general characteristics, daily requirement, digestibility, beneficial properties, signs of deficiency, signs of excess

## Alanine-rich foods:

- Beef
- horsemeat
- Mutton
- Pork ham
- Chicken meat
- Turkey
- Hard cheese (Russian, etc.)
- Brynza
- Goat cheese
- Chicken eggs [1]
- Low-fat sea fish
- Squid
- Turtle soup
- Pork jellied meat
- Jellied fish

## General characteristics of alanine

Alanine is an aliphatic amino acid [2], which is part of many proteins and biologically active compounds. Alanine belongs to the group of non-essential amino acids, and is easily synthesized from nitrogen-free chemical compounds, from digestible nitrogen.

Once in the liver, the amino acid is transformed into glucose [3]. However, if necessary, reverse transformation is possible. This process is called gluconeogenesis and plays a very important role in human energy metabolism.

Alanine exists in the human body in two forms – alpha and beta. Alpha-alanine is a structural element of proteins, beta-alanine is part of biological compounds such as pantothenic acid and many others.

## Daily requirement for alanine

The daily allowance of alanine is 3 grams for adults and up to 2.5 grams for school-age children. As for children of the younger age group, they need to take no more than 1.7-1.8 grams. alanine per day.

#### **The need for alanine increases:**

- with high physical activity [4]. Alanine is able to remove metabolic products (ammonia, etc.) formed as a result of long-term physically demanding activities;
- with age-related changes manifested by decreased libido;
- with reduced immunity;
- for apathy and depression [5];
- with decreased muscle tone;
- with weakening of brain activity;
- urolithiasis;
- hypoglycemia.

#### **The need for alanine decreases:**

For chronic fatigue syndrome, often referred to in the literature as CFS.

#### **Alanine absorption**

Due to the ability of alanine to be converted into glucose, which is an essential product of energy metabolism, alanine is absorbed quickly and completely.

#### **Beneficial properties of alanine and its effect on the body**

Due to the fact that alanine is involved in the production of antibodies, it successfully fights against all kinds of viruses, including the herpes virus [6]; used to treat AIDS [7], used to treat other immune diseases and disorders.

Due to its antidepressant ability, as well as the ability to reduce anxiety and irritability, alanine occupies an important place in psychological and psychiatric practice. In addition, taking alanine in the form of medications and dietary supplements reduces headaches [8], up to their complete disappearance.

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

Like any amino acid, alanine interacts with other biologically active compounds in our body. In this case, new substances useful to the body are formed, such as glucose, pyruvic acid and phenylalanine. In addition, thanks to alanine, carnosine, coenzyme A, anserine, and pantothenic acid are formed.

#### **Signs of excess and deficiency of alanine**

##### **Signs of excess alanine**

Chronic fatigue syndrome, which has become one of the most common diseases of the nervous system in our age of high speeds, is the main sign of excess alanine in the body. Symptoms of CFS that are signs of excess alanine:

- a feeling of fatigue that does not go away after 24 hours of rest;
- decreased memory and ability to concentrate;
- sleep problems [9];
- depression;
- muscle pain;
- joint pain.

### **Signs of alanine deficiency:**

- increased fatigue;
- hypoglycemia;
- urolithiasis disease;
- reduced immunity;
- nervousness and depression;
- decreased libido;
- decreased appetite;
- frequent viral diseases.

### **Factors influencing alanine content in the body**

In addition to stress, which requires a huge amount of energy to suppress, alanine deficiency is also caused by vegetarianism [10]. After all, alanine is found in large quantities in meat, meat broths, eggs, milk, cheese and other animal products.

### **Alanine for beauty and health**

The good condition of hair, skin and nails [11-13] also depends on sufficient consumption of alanine. After all, alanine coordinates the work of internal organs and strengthens the body's defenses.

Alanine can be converted to glucose if necessary. Thanks to this, a person who regularly consumes alanine does not experience hunger between meals. And this property of the amino acid is successfully used by lovers of all kinds of diets.

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