

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

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**Abstract.** Proline is an amino acid that was introduced to the world in 1901. It was discovered by E. Fischer, a German organic chemist, when he was researching casein.

Proline is one of the twenty amino acids involved in building our body. According to research by Finnish biochemists, proline is part of almost all proteins of living organisms. A connective tissue protein called collagen is especially rich in proline.

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

## Proline rich foods:

- Rye bread
- Fig [1]
- Wild rice
- Wheat and products made from it
- Oats and oatmeal cookies
- Flax-seed
- Beef
- Mutton
- Herring
- Tuna
- Hard cheese
- Squid, octopus and cuttlefish
- Oysters
- Crustaceans
- Reptile meat

## General characteristics of proline

Proline is not an essential amino acid. In other words, it can be synthesized in our body from the foods we consume. It is especially well synthesized from glutamic acid. However, if there is information about a violation of its synthesis, in this case proline should be used as part of dietary supplements.

Proline is also famous for the fact that, unlike other amino acids, its amine nitrogen is attached not to one, but to two alkyl groups. Due to this, proline is classified as a so-called secondary amine.

## Daily requirement for proline

The daily requirement of proline for our body is 5 grams. It should be noted that the most beneficial is proline synthesized in our body or consumed with food. In third place in terms of benefits is proline,

produced by the pharmaceutical industry. This is due to the fact that the proline contained in pharmaceuticals is absorbed by a maximum of 70–75%.

**The need for proline increases with:**

- intoxication of the body;
- toxicosis of pregnant women [2];
- reduced immunity [3];
- depression [4];
- stress [5];
- muscular dystrophy;
- increased fatigue;
- blood loss (including during menstruation);
- wounds and injuries associated with violation of the integrity of the skin and ligaments;
- during mental work [6].

**The need for proline decreases with:**

- intolerance to proline and products containing it;
- diseases that result in impaired absorption of proline;
- complete synthesis of proline from glutamic acid (without consuming foods and medications containing this amino acid).

**Proline digestibility**

Proline is necessary for a huge number of chemical reactions occurring in the body and is absorbed by the body 100%.

**Beneficial properties of proline and its effect on the body:**

- proline is responsible for the formation and accumulation of glycogen in muscles and liver;
- participates in detoxification of the body;
- improves metabolism [7];
- stimulate the pituitary gland [8];
- takes part in the synthesis of thyroid hormones [9] and adrenal glands [10];
- participates in the formation of collagen [11] and elastin;
- promotes restoration of skin [12] and bone tissue;
- used in wound healing;
- takes part in hematopoiesis;
- improves gastrointestinal tract function;
- has a general tonic and adaptogenic effect;
- normalizes blood pressure;
- has an analgesic effect [13];
- relieves headaches [14] and pain associated with diseases of the joints, spine, as well as menstrual pain.

**Interaction with other elements:**

In the body, proline is synthesized from glutamic acid. Thus, we can say that the interaction of these two amino acids occurs at the highest level. In addition, proline interacts well with ascorbic acid, converting to hydroxyproline.

### **Signs of proline deficiency in the body**

- weakness;
- muscular dystrophy;
- anemia [15];
- decreased brain activity;
- skin problems;
- menstrual pain and headaches;
- metabolic disorders.

### **Signs of excess proline**

Typically, proline is well absorbed by the body and there are no signs of its excess.

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

The main criteria responsible for the presence of proline in the body are: normal synthesis of proline by the body itself, the absence of diseases in which proline becomes an irritant, as well as the consumption of foods rich in this amino acid.

### **Proline for beauty and health**

Due to the fact that proline takes an active part in the regeneration of damaged areas of the skin, it can be classified as a substance responsible for beauty. Thanks to proline, the skin acquires elasticity, velvety, and a soft shine. In addition, under the influence of proline, a developed network of blood vessels is formed in the thickness of the skin, which leads to improved skin nutrition, smoothing of fine wrinkles and blush on the cheeks.

### **Literature**

1. Tarantul, A., & Eliseeva, T. (2021). Rice (lat. Orýza). *Journal of Healthy Eating and Dietetics*, (15), 61-74. DOI: 10.59316/.vi15.98
2. Eliseeva, T., & Tkacheva, N. (2020). Food during pregnancy. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.24
3. Tarantul, A., & Eliseeva, T. (2020). Food to boost immunity. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.34
4. Tkacheva, N., & Eliseeva, T. (2020). Food against depression. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.46
5. Tkacheva, N., & Eliseeva, T. (2020). Food against stress. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.47
6. Tkacheva, N., & Eliseeva, T. (2020). Eating under great mental stress. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.31

7. Tkacheva, N., & Eliseeva, T. (2020). Food to improve metabolism. *Journal of Healthy Eating and Dietetics*, (11), 75-84. DOI: 10.59316/j.edpl.2020.11.14
8. Tkacheva, N., & Eliseeva, T. (2021). Nutrition for the pituitary gland - useful and dangerous foods, recommendations. *Journal of Healthy Eating and Dietetics*, (15). DOI: 10.59316/j.edpl.2021.15.9
9. Eliseeva, T., & Tkacheva, N. (2015). Nutrition for the thyroid gland - useful and dangerous foods, recommendations. *Journal of Healthy Eating and Dietetics*, (21). DOI: 10.59316/j.edpl.2021.15.14
10. Eliseeva, T., Tkacheva, N., & Shelestun, A. (2021). Nutrition for the adrenal glands - healthy and dangerous foods, recommendations. *Journal of Healthy Eating and Dietetics*, (15). DOI: 10.59316/j.edpl.2017.1.7
11. Tkacheva, N., & Eliseeva, T. (2021). Food for collagen production. *Journal of Healthy Eating and Dietetics*, 3 (17), 70-75. DOI: 10.59316/vi17.127
12. Tkacheva, N., & Eliseeva, T. (2021). Food for the skin - 12 products for its beauty and health. *Journal of Healthy Eating and Dietetics*, 3 (17), 44-48. DOI: 10.59316/vi17.121
13. Tkacheva, N., & Eliseeva, T. (2021). Food for pain relief. *Journal of Healthy Eating and Dietetics*, (17), 6-11. DOI: 10.59316/vi17.111
14. Tkacheva, N., & Eliseeva, T. (2020). Food against headaches. *Journal of Healthy Eating and Dietetics*, (11). DOI: 10.59316/j.edpl.2020.11.19
15. Lazareva, V., & Eliseeva, T. (2021). Anemia - signs and symptoms, useful and dangerous foods, folk remedies. *Journal of Healthy Eating and Dietetics*, (15). DOI: 10.59316/j.edpl.2021.15.42

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