

Glutamic acid - description, benefits, effects on the body and the best sources

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Abstract. Glutamic acid is one of twenty amino acids essential for the body. Participates in nitrogen metabolism, binds ammonia and other substances toxic to the body. It is present in various foods and is part of medicines. Its analogue, made from plant materials, is included in some finished products as flavorings and spices.

When it comes to glutamic acid and the substances produced from it: monosodium, potassium, calcium, ammonium and magnesium glutamate, many are confused. According to some information, glutamate is harmless. Others classify it as a substance that can harm our body and deprive us of our natural sense of taste. What kind of substance is this, actually? Let's figure it out.

Keywords: glutamic acid, general characteristics, daily requirement, digestibility, beneficial properties, signs of deficiency, signs of excess

Foods rich in glutamic acid:

- Mushrooms
- Seafood
- Fish
- Dried fruits
- Spices
- Tomatoes [1]
- Walnuts [2]
- Some hard cheeses, such as Roquefort
- Yogurt [3]
- Ketchup
- Soy sauce
- Fish sauce
- "Lactonia"
- Some types of beer
- Juice in tetra packs

General characteristics of glutamic acid

Glutamic acid was discovered in Japan back in 1908 by the Japanese chemist Kikunae Ikeda. They found a substance that became fifth in the flavor line after bitter and sweet, sour and salty. Glutamic acid has a special taste, which is why it acquired the name "umami", that is, "pleasant to the taste."

The source of umami turned out to be kombu seaweed (a type of kelp).

The chemical formula of this substance is $C_5H_9NO_4$. It has the unique ability to improve the taste of protein foods [4] or even imitate it. This is achieved thanks to L-glutamate receptors located on the tongue.

A year after his discovery, Ikeda launched the industrial production of acid. Initially, “umami” spread to Japan, China and other countries of Southeast Asia.

However, during World War II, this flavoring supplement was added to the culinary supply of US troops. Thanks to her, soldiers' rations became more tasty and nutritious, and better provided the body with the necessary substances.

Daily requirement for glutamic acid

The amount of permissible consumption of glutamic acid depends not so much on the person himself, but on the region of his residence. For example, in Taiwan, the norm for umami consumption is 3 grams per day. In Korea – 2.3 g., Japan – 2.6, Italy – 0.4 g., in the USA – 0.35.

In our country, according to research by the FAO/WHO toxicological committee of experts, “the permissible daily dose of ajinomoto (another umami designation) is not established.”

The need for glutamic acid increases:

- in case of early gray hair (up to 30 years);
- for depressive conditions [5];
- in a number of pathologies of the nervous system;
- for some male diseases;
- for epilepsy [6].

The need for glutamic acid is reduced:

- during breastfeeding [7];
- with excessive excitability;
- in case of intolerance to glutamic acid by the body.

Absorption of glutamic acid

Acid is an active natural neurotransmitter that is absorbed by our body without residue. At the same time, most of it goes to ensure the health of the nervous system (in particular, the brain [8] and spinal cord [9]). In addition, successful absorption of acid is associated with the presence in the body of a sufficient amount of hydrochloric acid, which is part of the gastric juice.

Beneficial properties of glutamic acid and its effect on the body

Glutamic acid is capable of not only regulating the higher nervous activity of our body, but it also plays the role of a regulator of redox reactions occurring in the body.

In addition, due to its nutritional characteristics, it is able to activate the activity of the entire digestive system, including the liver [10], stomach [11], pancreas [12], as well as the small and large intestines [13].

Interaction with other elements:

Glutamic acid is highly soluble in water [14] and actively contacts fats [15] and their derivatives. In addition, it interacts well with proteins [16], which acquire their true taste and richness.

Signs of lack of acid in the body

- disruption of the gastrointestinal tract;
- early gray hair (before 30 years);
- problems with the central nervous system;
- problems with the autonomic nervous system;
- memory impairment;
- weak immunity;
- depressed mood.

Signs of excess glutamic acid

- blood thickening;
- headache;
- glaucoma [17];
- nausea;
- liver dysfunction;
- Alzheimer's disease [18].

Glutamic acid: additional uses

Glutamic acid can be found not only in all kinds of food products, it is present in all kinds of cosmetics: shampoos, creams, lotions, conditioners, soaps. In medicine, glutamic acid is present in vaccines with live virus, and is also part of some drugs.

It is believed that negative reviews about glutamic acid obtained artificially arose in our country due to one study by scientists. This amino acid was added to the food of laboratory rats in the amount of 20% of the total daily diet. And this, you see, is quite a large volume of acid, which, naturally, can cause serious problems not only with the gastrointestinal tract, but with the entire body!

Glutamic acid for beauty and health

The ability to maintain your natural hair color for a long time [19] is the reason that attracts the attention of many beauty connoisseurs to the additional use of amino acids for the purpose of prevention, as well as to eliminate the existing problem.

In addition, glutamic acid improves skin nutrition, making it healthy and elastic [20]. It is able to stimulate blood microcirculation, which was discovered back in the 30s of the twentieth century. It was then that this acid was first added to cosmetic creams that guaranteed elastic and healthy skin.

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