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

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Abstract. Our food is rich in various beneficial acids that we receive without even thinking about it. However, for many years, scientists have been studying these beneficial substances and finding the use of biological acids in medicine, cosmetology, dietetics, etc. One such beneficial acid is quinic acid.

Basically, quinic acid is found in plants: in shoots, leaves, bark and fruits of plants. People get it from fruits, berries, fruit juices, tinctures, etc.

Key words: quinic acid, general characteristics, daily requirement, digestibility, beneficial properties, signs of deficiency, signs of excess

Foods rich in quinic acid:

- Coffee beans
- Plums [1]
- Apples [2]
- Cranberry
- Quince
- Blueberry
- Grapes [3]
- Pears [4]
- Peach [5]
- Cherries [6]
- Strawberry [7]
- Fruit puree
- Fruit juices, jams
- Dietary supplements [8]
- Pine honey [9]

General characteristics of quinic acid

Quinic acid was first identified as an independent substance in 1790 by the scientist Hoffmann. The source was the cinchona tree, which grows in South America, as a result of which the acid received its name.

Many plants are very rich in quinic acid. It can account for about 13% of the total mass of raw materials. For example, in North America there grows a valuable, from a medical point of view, herbaceous plant - wild quinine.

Quinic acid is produced industrially in several ways.

1. The crushed bark of the cinchona tree is soaked in cold water for a long time. After this, lime milk is added there, then the resulting mixture is filtered and evaporated. The result is a kind of

syrup, from which the quinine-calcium salt is released in the form of crystals. These crystals are decomposed with the help of oxalic acid, and from this solution pure quinic acid is evaporated, which solidifies in the form of crystals.

2. Also, quinic acid can be created synthetically at the enterprise, by hydrolysis of chlorogenic acid.

Quinic acid has a crystalline structure and is a monobasic polyhydroxycarboxylic acid. Its formula is $C_7H_{12}O_6$.

In its pure form, quinic acid has the following properties. It is easy to dissolve in cold water [10], in hot water it is worse; it can be dissolved in ether or alcohol, but it is more difficult. It melts at about 160 degrees Celsius, but if heated to 220 degrees, it turns into quinine. If you combine quinic acid with hydrogen iodide and heat it, it turns into benzoic acid.

The acid is actively used both in its pure form and its derivatives.

Quinic acid is used in traditional medicine, homeopathy, and folk medicine. It is included in medications for colds, gastrointestinal disorders, etc.

Daily requirement for quinic acid

The body's need for this acid is, on average, about 250 mg per day. However, in case of excess subcutaneous fat layer, consumption of this acid in a volume of 500 mg is allowed.

If you have low body weight, you should take no more than 150 mg per day.

Some nutritionists believe that in order to avoid a lack of quinic acid, it is enough to simply eat more fruits and berries.

The need for quinic acid increases:

- during colds;
- for nervous disorders;
- at elevated temperatures;
- digestive problems.

The need for quinic acid is reduced:

- with allergic reactions [11] to quinine;
- for peptic ulcers [12] of the stomach and intestines.

Digestibility of quinic acid

Quinic acid is well absorbed by the body. Like any other organic acid, it improves the absorption of nutrients.

Beneficial properties of quinic acid and its effect on the body

Quinic acid has a beneficial effect on the human body. It has antipyretic properties [13], which is why it is so often used to create medications for colds.

This acid is an indispensable substance in the fight against influenza [14], whooping cough [15] and other diseases that accompany an increase in temperature. It is also actively used to restore a weakened body after a long treatment.

Quinic acid helps improve appetite and gastric juice secretion. Therefore, with its help, many diseases associated with stomach and intestinal disorders are treated.

It also helps with headaches and migraines [16], and various neurological diseases. Treats gout [17] and fever.

In addition, quinic acid significantly reduces the level of various fats in the blood, including cholesterol [18,19].

It has been used for many years to treat malaria [20]. The beneficial effects of quinic acid were also noted during the treatment of radiation sickness.

Interaction with other elements

When interacting with caffeic acid, quinic acid is converted to chlorogenic acid. Upon contact with alkaline foods, quinic acid salts are formed. Calcium salt occupies a special place. Upon contact with oxygen, the acid breaks down into quinone, formic and acetic acid.

Signs of quinic acid deficiency

- weakness;
- intestinal disorders;
- deterioration of immunity.

Signs of excess quinic acid:

If quinic acid is used in excessive quantities, symptoms of body poisoning may appear. Also, quinic acid can cause dizziness and fainting, or vice versa, overexcitement.

In people with poor health and special sensitivity to quinine, quinic acid can cause visual and hearing problems, and sometimes even cardiac arrest.

Factors influencing the content of quinic acid in the body

1. Eating food leads to a decrease in acid levels by blocking insulin.
2. The subcutaneous fat layer also affects the presence of acid in the body and causes a decrease in its concentration.

Quinic acid for beauty and health

Since acid reduces the absorption of glucose [21], fat reserves are used to provide the body with energy. Thus, weight normalization occurs and the thickness of the subcutaneous fat layer decreases.

From all of the above, we can conclude that quinic acid helps the active functioning of the body, playing a certain role in the treatment of diseases, and helps in achieving harmony.

Like any biological acid found in fruits and berries, it cannot in any way harm health. In the case of its separate use - the use of industrially produced acid - you must be careful and follow the recommended dosages.

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Abstract. Our food is rich in various beneficial acids that we get without even thinking about it. However, over the years, scientists have been studying these beneficial substances and finding uses for biological acids in medicine, cosmetology, dietetics, etc. One such useful acid is cinnamic acid. Mostly, cinnamic acid is found in plants: in the shoots, leaves, bark and fruits of plants. People get it with fruits, berries, fruit juices, tinctures, etc.