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

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Abstract. O na ranks first on the list of acids found in most berries and fruits. Despite its name, it plays a major role in the acid concert of not only lemons, limes and oranges, but also a number of other fruits and berries. Citric, malic and quinic acids account for up to 90% of the acidity in peaches and apricots.

Nowadays, citric acid, along with glycerin, sugar, acetone and other substances, is one of the products that the European Union calls *bulk commodities* - they are produced to meet the needs of the global market and in huge quantities.

E330, E331 and E333 - under these names today you can find it in many food products.

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

History of discovery

Citric acid was first obtained in 1784 by the Swedish chemist and pharmacist Carl Scheele from unripe lemons [1].

Citric acid began to be produced industrially in our country in 1913. *Calcium citrate* was used for this.

Then the world war began, and enterprises, having lost their raw material base, were forced to close. In the thirties of the last century, attempts were again made to resume the production of citric acid by extracting it from plants, as well as through the fermentation of sugar.

Foods rich in citric acid:

- Citrus juices
- Citrus
- Pineapple [2]
- Strawberries
- Blackcurrant [3]
- Cherries [4]
- Rowan [5]
- Barberry
- Gooseberry
- Cranberry
- Tomatoes [6]
- Apricots [7]
- Peach [8]
- Quince
- Plums [9]

General characteristics of citric acid

Citric acid is a food acid. The main sources of citric acid, as well as other food acids, are plant materials and their processed products.

In nature, citric acid is found in plants, various fruits, and juices. The taste of fruits and berries is often created by combining citric acid with sugars and aromatic compounds.

Citric acid, as well as its salts - citrates, are the main regulators of food acidity. The action of citric acid and its salts is based on their ability to chelate metals.

An acid with a pleasant, light taste; used in the production of processed cheeses, mayonnaise, canned fish, as well as confectionery and margarines.

More than a million tons of citric acid are produced annually through fermentation.

Daily requirement for citric acid

The Food and Agriculture Organization expert committee at the World Health Organization has established an acceptable daily dose of citric acid for humans: 66-120 milligrams per kilogram of body weight.

Citric acid should not be confused with ascorbic acid, which is vitamin C [10].

The need for citric acid increases:

- with increased physical activity [11];
- when the body is exposed to extreme external factors;
- when the consequences of stress manifest themselves [12].

The need for citric acid is reduced:

- at rest;
- with increased acidity of gastric juice;
- with erosion of tooth enamel.

Digestibility of citric acid

Citric acid is well absorbed by our body, which is why it has gained great popularity all over the world.

Beneficial properties of citric acid and its effect on the body

This acid is useful for people with kidney problems. It slows down the formation of stones and breaks down small stones. It has protective properties; The higher its content in the urine, the better the body is protected from the formation of new kidney stones.

This acid occupies a special place in the metabolic process. It is an obligatory intermediate product in providing the body with energy. This acid is found in muscle tissue, urine, blood, bones, teeth, hair, and milk.

Interaction with other elements

This acid promotes better absorption of other substances. For example, potassium [13], calcium [14] and sodium [15].

Signs of citric acid deficiency

The desire to eat something sour signals the body about a lack of acid in the body, including citric acid. With a prolonged lack of organic acids, the internal environment of the body becomes alkalized.

Signs of excess citric acid

Excess citric acid leads to an increase in the content of calcium ions in the blood. With an excess of citric acid, burns of the mucous membrane of the oral cavity and gastrointestinal tract can occur, and this can lead to pain, coughing and vomiting.

Excessive consumption of citric acid can damage tooth enamel and stomach lining.

Factors influencing the content of citric acid in the body

Citric acid enters our body with food. It is not produced independently in the human body.

Citric acid for beauty and health

This acid has a healing effect on the scalp [16] and narrows excessively enlarged pores. It is helpful to add citric acid to tap water to soften it before rinsing your hair. This is an excellent replacement for hair rinses. The following ratio should be used: one teaspoon of citric acid per liter of water. Your hair will become softer and gain shine, making it easier to comb.

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HTML version articles

Received 08.02.2019

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