

Bromelain - description, benefits, effects on the body and the best sources

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Abstract. Advertising of bromelain as a means of losing excess weight once covered all media. After some research, it turned out that bromelain is not a panacea in the fight against excess weight and does not always help.

Despite this, bromelain has found its place among the beneficial substances that help our body. Today bromelain is used in the medical and food industries, folk medicine and sports for a variety of purposes.

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

Bromelain-rich foods:

- Fresh pineapple [1]
- Fresh frozen pineapple
- Papaya
- Kiwi [2]
- Wild lemon
- Acanthostachys (fruit)
- Pineapple juice [3]
- Pineapple smoothie
- Pineapple cream
- Candied pineapple

General characteristics of bromelain

Bromelain is a plant-derived catalytic enzyme found in plants of the bromeliad family. Another name for bromelain is “pineapple extract”, which it received due to its main source - the exotic fruit pineapple.

Bromelain is found in the core of the fruit and is also found in the stems and leaves of pineapple. The substance is a brownish powder. There are two types - *bromelain from pineapple stems* (stem bromelain) and fruit *bromelain*.

Bromelain is used in pharmaceuticals. It can be found in pharmacies in the form of capsules and tablets. Used for the production of dietary supplements [4], used in sports nutrition. In industry, bromelain is used to soften meat products. Most often it is used for the production of smoked meat.

Daily requirement for bromelain

Bromelain is not a vital substance for our body. If necessary, an adult is recommended to take from 80 to 320 mg 2 times a day.

Additional bromelain intake should be regulated depending on the result that is desired and which body systems are affected.

The need for bromelain increases:

- with overeating, low production of digestive enzymes;
- for injuries: sprain, fracture, rupture, dislocation (relieves soft tissue swelling and inflammation);
- for oncological diseases (to slow down the growth of tumors), as well as for the prevention of tumors;
- arthritis [5] (with simultaneous use of rutin);
- with excess weight associated with low production of the enzyme pepsin and metabolic disorders;
- with an increased level of platelets in the blood (used for vascular sclerosis);
- with reduced immunity [6];
- for skin diseases (urticaria [7], acne);
- for asthma [8];
- for some viral diseases.

The need for bromelain is reduced:

- with high blood pressure (contraindicated);
- with elevated cholesterol levels [9];
- contraindicated for people with pre-infarction and pre-stroke conditions;
- during pregnancy [10];
- in young children;
- for kidney disease;
- for liver diseases;
- in case of individual intolerance to the substance.

Bromelain Absorption

Bromelain is best absorbed on an empty stomach. Like any enzyme, it is perfectly absorbed in the intestine and enters the blood through its walls. According to some reports, soy and potatoes [11] contain substances that can reduce the absorption of bromelain by the body.

Studies have shown that bromelain is absorbed up to 40% within six to nine hours. At elevated temperatures, bromelain is destroyed; at low temperatures, its activity decreases.

Beneficial properties of bromelain and its effect on the body

Bromelain is an enzyme that works like trypsin and pepsin (stomach enzymes). It breaks down proteins, which allows them to be better absorbed in the stomach and intestines.

Bromelain helps improve the digestion process. When the secretion of pancreatic enzymes decreases or overeating, bromelain has a stimulating effect.

It is worth noting that bromelain does not have a significant effect on the breakdown of fat cells. However, there are quite tangible benefits from it. Bromelain, as an enzyme, has a complex effect on the body, stimulating the normal functioning of the stomach and intestines, and affects metabolic processes. Improves the functioning of the circulatory system, immune system, etc.

Athletes take bromelain for faster recovery from injuries. Sprains, tissue tears, joint injuries - bromelain helps to recover faster, reduces pain and relieves inflammation.

Athletes also use it to quickly gain muscle mass. Bromelain helps reduce body fat only with regular physical activity. It has proven itself in the fight against excess weight with low production of the enzyme pepsin.

The anti-inflammatory and healing properties of bromelain help fight arthritis and asthma. Bromelain helps improve immunity and the body's recovery processes.

Used to reduce the growth rate of malignant tumors. It is also used for preventive purposes if there are no contraindications for this.

Interaction with other elements:

Bromelain reacts with proteins [12], helping to break them down. Participates in the breakdown of fats [13] and carbohydrates [14].

Signs of excess bromelain in the body

Cases where there is too much bromelain in the body are very rare. If this happens, signs may include:

- nausea;
- increased blood pressure;
- diarrhea;
- flatulence [15];
- increased bleeding during menstruation.

Signs of bromelain deficiency in the body

Since bromelain is not an essential substance in our body, no signs of its deficiency have been identified.

Factors affecting the amount of bromelain in the body

With food, the human body receives the required amount of this substance. For certain disorders, it is possible to compensate for the deficiency of the substance with the help of concentrates, dietary supplements and medications.

Bromelain for beauty and health

The complex effect of the bromelain enzyme on the body helps strengthen and rejuvenate it. Bromelain has beneficial effects on skin [16] and hair [17].

Bromelain helps heal wounds on the face, relieves swelling [18] and inflammation, and stimulates skin restoration. Fruit acids and the antibacterial effect of bromelain help in caring for oily skin.

In addition, the substance is used by athletes to build muscle mass [19]. This requires a protein diet and active physical activity.

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Received 11.03.2019

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