

Lactose - description, benefits, effect on the body and the best sources.

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Abstract. Milk and dairy products have been familiar to us since early childhood. Nutritious milk, rich in vitamins and microelements, is necessary for the growth and normal development of the human body. This product is especially important in the very first years of life.

For many peoples, the consumption of milk remains the fundamental basis of the diet throughout life: they drink it, add it to all kinds of dishes, and ferment it. Among the many beneficial components of milk, lactose, or *milk sugar*, as it is commonly called, plays an important role.

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

Lactose-rich foods

- Women's milk
- Cow's milk
- Buffalo milk
- Goat milk
- Yogurt [1]
- Ice cream
- Curdled milk [2]
- Cream
- Sour cream 20%
- Kefir
- Cottage cheese [3]
- Whey
- Butter [4]
- Kumis
- Buttermilk

General characteristics of lactose

Lactose is a disaccharide composed of glucose and galactose molecules, which belongs to the class of carbohydrates. The chemical formula of lactose is as follows: $C_{12}H_{22}O_{11}$, which indicates the presence of carbon, hydrogen and oxygen in certain quantities.

In terms of sweetness, milk sugar is inferior to sucrose. It is found in the milk of mammals and humans. If we take the degree of sweetness of sucrose as 100%, then the percentage of sweetness of lactose is 16%.

Lactose provides the body with energy. It is a complete source of glucose, the main supplier of energy, as well as galactose, which is necessary for the normal functioning of the nervous system.

Daily requirement for lactose

This indicator is calculated taking into account the body's need for glucose. On average, a person needs about 120 grams of glucose per day. The amount of lactose for adults is about 1/3 of this volume. In infancy, while milk is the baby's main food, children receive all the main components of nutrition, including lactose, directly from milk.

The need for lactose increases:

- In infancy, when milk is the main food product and source of energy for the child.
- During high physical activity and sports, since lactose is an energetically valuable component of nutrition.
- Active mental activity leads to an increase in the body's need for easily digestible carbohydrates, which include lactose.

The need for lactose is reduced:

- In most people, with age (the activity of the lactase enzyme decreases).
- For intestinal diseases when lactose digestion is impaired.

In this case, it is recommended to reduce the consumption of milk and dairy products.

Lactose digestibility

As mentioned above, for the complete absorption of milk sugar, the enzyme lactase must be present in sufficient quantities in the body. Typically, early children have enough of this enzyme in their intestines to digest large quantities of milk. Later, in many people, the amount of lactase decreases. This makes it difficult to digest milk sugar. In the human body, lactose breaks down into 2 monosaccharides - glucose and galactose.

Signs of lactase deficiency include various intestinal dysfunctions, including flatulence, rumbling in the abdomen, indigestion, and various allergic reactions [5].

Beneficial properties of lactose and its effect on the body

In addition to the energy that milk sugar can give to the body, lactose has another important advantage. It helps normalize intestinal activity, reduces the development of pathogenic microorganisms, and promotes healthy gastrointestinal microflora due to an increase in lactobacilli.

Lactose contained in human milk is considered especially valuable. The nitrogen-containing carbohydrates contained in this milk promote the rapid growth of lactobacilli colonies, which protect the body from all kinds of fungi and parasites. In addition, lactose prevents the development of caries.

Interaction with Essential Elements

Interacts with calcium, iron and magnesium, [6-8] promoting their absorption. In people with intestinal diseases and lack of the required amount of the lactase enzyme, milk sugar can cause water retention in the body.

Signs of lactose deficiency in the body

Most often, young children suffer from this. In adults, no obvious signs of lactose deficiency were identified. With a lack of lactose, lethargy, drowsiness and instability of the nervous system are observed.

Signs of excess lactose in the body:

- symptoms of general poisoning of the body;
- allergic reactions;
- bloating;
- loose stools or constipation [9] .

Factors affecting lactose content in the body

Regular consumption of lactose-containing products leads to the fact that beneficial bacteria living in the intestines receive everything they need to exist and perform their functions.

The greater the number of colonies living in the body, the higher its immunity. Therefore, to maintain immunity at a high level, a person must replenish the amount of lactose by getting it from dairy products.

Lactose for beauty and health

Lactobacilli, which develop due to the protection of the lactase enzyme, strengthen the body's immunity, make a person more energetic, which naturally affects appearance. Normal functioning of the intestines helps cleanse the skin [10], heals the female genital area, and strengthens the nervous system. Naturally, this effect is observed only when milk sugar is fully absorbed by the body.

In addition, consuming foods containing lactose helps reduce the need to consume refined sugar, which is important for maintaining the natural whiteness of teeth and a radiant smile [11].

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