

Monosaccharides - description, benefits, effects on the body and the best sources.

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Abstract. Lately we have often heard expressions such as harmful and healthy carbohydrates, fast and slow, simple and complex. These terms are especially popular among people leading a healthy lifestyle.

Some medical experts believe that carbohydrates, or rather their proper consumption, are the foundation of a healthy body. After all, the consequence of an imbalance of carbohydrates in the body is bad mood, apathy, increased nervousness, decreased mental and physical activity, diabetes and much more.

Many will be interested and useful to learn about the characteristic features and positive qualities of one of the groups of carbohydrates - monosaccharides.

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

Foods rich in monosaccharides:

- Bee honey [1]
- Grapes [2]
- Beetroot [3]
- Cherry [4]
- Bananas [5]
- Raspberry [6]
- Blackcurrant [7]
- Strawberry [8]
- Melon [9]
- Watermelon [10]
- Carrot [11]
- Pumpkin [12]
- Tomatoes [13]
- Artichoke
- Persimmon [14]

General characteristics of monosaccharides

Monosaccharides are a group of carbohydrates [15] called simple sugars. They are not hydrolyzed by water, they look like polyhydroxy compounds containing aldehyde or ketone groups. Monosaccharides are quickly broken down, immediately enter the bloodstream, and are not stored in fat reserves. These carbohydrates are especially important for brain function [16] .

Monosaccharides have a sweet taste of varying degrees and are easily dissolved in water. This form of carbohydrates is represented by the following components:

- glucose is the most common monosaccharide that can be formed as a result of the breakdown of disaccharides and starch in food;
- fructose – easily digestible, does not cause oversaturation of blood with sugar;
- galactose is a product of the breakdown of lactose.

In the free state, the first two components are found in fruits and flowers. Often they are simultaneously included in vegetables, fruits, berries, and are present in bee honey. Galactose is not a food component.

Historical facts

Russian researcher K.G. Sigismund for the first time in 1811 carried out experiments and obtained glucose by hydrolysis of starch. In 1844, the Russian chemist K.G. Schmidt introduced the concept of carbohydrates.

In 1927, scientists discovered the composition of carbohydrates, represented by natural and synthetic substances. Carbohydrates began to be divided into groups. One of which is called “*monosaccharides*”.

Daily requirement for monosaccharides

Depending on activity and age, monosaccharide intake should be 15-20 percent of total carbohydrates. For normal brain function, the daily requirement for monosaccharides is 160–180 g, which is one fourth of all carbohydrates consumed in food (300–500 g per day). For example, if a portion of honey was eaten, then you should forget about other sweets and cereals until the next day.

If there are medical indications, the rate of consumption of monosaccharides can be reduced, but subject to a gradual reduction in the amount to 100 g per day.

The need for monosaccharides increases:

- when engaged in heavy physical labor and sports training;
- with high intellectual stress and a significant decrease in mental activity;
- at an early age, when energy is especially needed for growth;
- with drowsiness and physical lethargy;
- for those who have signs of intoxication of the body;
- for diseases of the liver, nervous system, gastrointestinal tract;
- bad mood [17];
- with low body weight;
- energy exhaustion.

The need for monosaccharides is reduced:

- for obesity [18];
- sedentary lifestyle;
- for older people;

- for hypertension.

Digestibility of monosaccharides

Monosaccharides are easily and quickly absorbed by the body. They provide a quick increase in energy in the body. [19] Therefore, they are recommended for short-term, high-intensity exercise. They contribute to a rapid increase in blood sugar levels, so they are used for hypoglycemia. The consumption of these carbohydrates should be controlled and not exceed the norm.

Beneficial properties of monosaccharides and their effect on the body

- enriching the body with energy;
- increasing brain performance [20];
- removal of toxins;
- used for weakness of the heart muscle;
- necessary to strengthen the immune system [21];
- satisfies hunger well with the right choice of foods (porridge, raw vegetables, fruits);
- restoration of strength after exercise;
- improved mood.

Consumption of vegetables, which are carriers of monosaccharides, is practically safe for those who have a diabetic predisposition. But in this case, fruits should be consumed with caution.

It is important to know that consuming fructose reduces the risk of caries and diathesis, and helps control sugar levels [22] if you are prone to diabetes. After all, fructose does not need insulin to pass into the blood and internal organs.

It is worth noting that the benefit of monosaccharides represented by galactose is that it helps absorb calcium [23], improves the intestinal system, and stimulates nervous regulation processes.

Glucose is very important, as it is part of the blood. This is the most important nutrient for energy.

Interaction with other elements

Monosaccharides promote the absorption of calcium and vitamin C [24]. They do not break down during hydrolysis.

Signs of a lack of monosaccharides in the body:

- decreased blood sugar;
- dizziness;
- hunger;
- metabolic disorder;
- a sharp decrease in body weight;
- depression.

Signs of excess monosaccharides in the body:

- high blood pressure;

- violation of acid-base balance;
- liver dystrophy;
- intolerance to dairy products.

Factors influencing the content of monosaccharides in the body

Basically, monosaccharides enter the body with food. Glucose and fructose can be synthesized with the help of disaccharides and starch.

Monosaccharides for beauty and health

Proper consumption of monosaccharides makes the body active, alert, full of strength and energy. The brain works in full force, the person is not left in a good mood. After all, sweet foods have one important advantage - their consumption promotes the production of the happiness hormone.

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