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

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Abstract. Our body's resistance to adverse environmental conditions is explained by its ability to make timely reserves of nutrients. One of the body's important "reserve" substances is glycogen, a polysaccharide formed from glucose residues.

Provided that a person receives the required amount of carbohydrates every day, then glucose, which is in the form of cell glycogen, can be left in reserve. If a person experiences energy hunger, then glycogen is activated, with its subsequent transformation into glucose.

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

Glycogen-rich foods:

- Sugar
- Honey [1]
- Chocolate
- Dates [2]
- Gingerbread
- Raisin
- Marmalade
- Sweet straw
- Apple jam
- Bananas [3]
- Fruit juices
- Watermelon [4]
- Persimmon [5]
- Figs
- Irga

General characteristics of glycogen

Glycogen is colloquially called *animal starch* . It is a storage carbohydrate that is produced in the body of animals and humans. Its chemical formula is $(C_6H_{10}O_5)_n$. Glycogen is a compound of glucose, which in the form of small granules is deposited in the cytoplasm of muscle cells, liver, kidneys, as well as in brain cells and white blood cells. Thus, glycogen is an energy reserve that can compensate for the lack of glucose in the absence of adequate nutrition of the body.

This is interesting!

Liver cells (hepatocytes) are leaders in the accumulation of glycogen! They can consist of 8 percent of their weight from this substance. At the same time, cells of muscles and other organs are capable of accumulating glycogen in an amount of no more than 1 - 1.5%. In adults, the total amount of liver glycogen can reach 100-120 grams!

The body's daily requirement for glycogen

According to the recommendation of doctors, the daily glycogen requirement should not be lower than 100 grams per day. Although it must be taken into account that glycogen consists of glucose molecules, and the calculation can only be carried out on an interdependent basis.

The need for glycogen increases:

- In case of increased physical activity associated with performing a large number of monotonous manipulations. As a result of this, the muscles suffer from a lack of blood supply, as well as from a lack of glucose in the blood.
- When performing work related to brain activity [6] . In this case, glycogen contained in brain cells is quickly converted into energy necessary for work. The cells themselves, having given up what they have accumulated, require replenishment.
- In case of limited nutrition. In this case, the body, not receiving enough glucose from food, begins to process its reserves.

The need for glycogen decreases:

- When consuming large amounts of glucose and glucose-like compounds.
- For diseases associated with increased glucose consumption.
- For liver diseases.
- With glycogenesis caused by impaired enzymatic activity.

Glycogen digestibility

Glycogen belongs to the group of quickly digestible carbohydrates, with a delay in execution. This formulation is explained as follows: as long as there are enough other energy sources in the body, glycogen granules will be stored intact. But as soon as the brain signals a lack of energy supply, glycogen, under the influence of enzymes, begins to be converted into glucose.

Beneficial properties of glycogen and its effect on the body

Since the glycogen molecule is represented by a glucose polysaccharide, its beneficial properties, as well as its effect on the body, correspond to the properties of glucose.

Glycogen is a complete source of energy for the body during periods of nutrient deficiency and is necessary for full mental and physical activity.

Interaction with Essential Elements

Glycogen has the ability to quickly convert into glucose molecules. At the same time, it has excellent contact with water [7], oxygen, ribonucleic (RNA), and deoxyribonucleic (DNA) acids.

Signs of lack of glycogen in the body

- apathy;
- memory impairment;
- decreased muscle mass;
- weak immunity;
- depressed mood [8] .

Signs of excess glycogen

- blood thickening;
- liver dysfunction;
- problems with the small intestine;
- weight gain [9] .

Glycogen for beauty and health

Since glycogen is an internal source of energy in the body, its deficiency can cause a general decrease in the energy level of the entire body. This affects the activity of hair follicles, skin cells, and also manifests itself in a loss of shine in the eyes.

A sufficient amount of glycogen in the body, even during a period of acute shortage of free nutrients, will maintain energy, blush on the cheeks, beauty of the skin and shine of the hair!

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