

USE OF DIETARY FIBER IN THE HUMAN DIET

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ANNOTATION

This article discusses the use of dietary fiber in the human body. The classification, components, sources of food fiber. It has been established that a deficiency of dietary fiber in food leads to the risk of certain diseases.

Keywords: nutrition, dietary fiber, dietary fiber, carbohydrates, vitamins, minerals

INTRODUCTION

In the last decade, the problem of filling the lack of coarse plant foods in the human diet has become especially acute. The theory of adequate nutrition has scientifically substantiated the vital role of ballast substances or dietary fiber in metabolic processes.

Nutrition cannot be considered correct without their optimal content in the diet in the amount of 25-30 g per day. It has been established that dietary fiber deficiency in food is a risk factor for diseases such as colon cancer, irritable bowel syndrome, hypomelic dyskinesia of the colon with constipation syndrome, diverticulosis, appendicitis, hernia, esophageal hiatus, cholelithiasis, diabetes mellitus, obesity, atherosclerosis, coronary heart disease, hyperlipoproteinemia, varicose veins and thrombosis of the veins of the lower extremities.

OBJECT AND METHODS OF RESEARCH

Dietary fibers, synonyms of which are indigestible carbohydrates, fiber, ballast substances, represent a large group of nutrients, the sources of which are plant products: cereals, fruits and vegetables.

Dietary fiber is a biological term, since it combines substances of various chemical nature. Dietary fibers include alcohols, dietary, vegetable, coarse, raw fibers, ballast substances, a complex of biopolymers, including polysaccharides (cellulose, hemicellulose, pectin substances, gums, mucus), which do not break down in the small intestine, but undergo bacterial fermentation in the large intestine, as well as lignin and related protein substances that form the cell walls of plants.

The most important components of food fibers are cellulose, hemicellulose, pectin, gums, mucus, lignin.

A special place in the rational nutrition of a person is given to indigestible carbohydrates, i.e. structural polysaccharides of plant origin. This component of a balanced diet is represented not only by fiber, cellulose, hemicellulose, but also by lignin, pectin and other substances. Polysaccharides belong to a large class of complex carbohydrates.

THE RESULTS OF THE STUDY AND ITS DISCUSSION

According to the sources of dietary fiber content in plant raw materials, they are divided into traditional sources of raw materials for the food industry (cereals, vegetables, fruits, berries)

and non-traditional sources of raw materials (herbs, algae, wood). The dietary fiber complex, in addition to biopolymers (lignin, cellulose, pectin, hemicelluloses), includes accompanying substances (starch, lipids, protein, mineral and tannins, etc.), the amount and ratio of which in the feedstock and isolated dietary fiber preparations is different, which affects their properties. Depending on this, it differs:

- initial vegetable raw materials containing up to 30% dietary fiber (by-products of grain processing, fruit pomace, cleaning, extracts, herbs, a number of vegetables, etc.);
- semi-concentrates of dietary fiber, including 30-60% of fibers (grain bran, etc.);
- dietary fiber concentrates containing 60–90% of these components (dietary fiber concentrates of tomato pomace, grapevine, wheat bran, etc.);
- dietary fiber isolates containing more than 90% of dietary fibers (lignin, cellolignin, cellulose, holocellulose of various raw materials and other highly purified products).

Dietary fibers are also divided into two large classes - insoluble and soluble, which differ significantly in their physicochemical and physiological effects in the body.

In the digestive tract, insoluble dietary fiber does not change, and soluble dietary fiber can undergo partial destruction under the influence of intestinal microflora. The insoluble fraction of dietary fiber is necessary for the normal functioning of the large intestine.

Soluble dietary fiber is a gelling substance that, together with cellulose, participates in the formation of plant cell membranes. Soluble dietary fibers are resistant to the action of digestive enzymes, but they still undergo modification in the intestine; this occurs with the participation of enzymes of the intestinal microflora that can cause a change in the polymer structure of soluble dietary fibers through fermentation with the formation of short-chain fatty acids (acetates, propionates, butyrates), which in the liver and peripheral tissues, can affect the content of glucose and free fatty acids.

Dietary fibers of plant origin play an important role by reducing the absorption and, in some cases, increasing the excretion of radionuclides from the body.

However, there is no consensus on the effect of dietary fiber on the absorption of vitamins and minerals. Studies in this direction are few and concern only some vitamins and minerals. Information about the effect of dietary fiber on mineral metabolism is also contradictory, along with indications of a decrease in absorption in the small intestine of Ca, Mg, Fe, Zn, etc., there is evidence of the absence of such an effect.

CONCLUSION

Thus, dietary fiber has a number of properties that are favorable for the body, and therefore the use of diets enriched with them is appropriate. A group of soluble dietary fibers deserves special attention, in particular carrageenan and gum arabic, the use of which is important in the treatment and prevention of hyperlipidemia, diabetes mellitus, and diseases of the gastrointestinal tract.

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