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FUNDAMENTALS OF STUDYING THE EFFECT OF BIOLOGICALLY ACTIVE SUBSTANCES ON THE PROPERTIES OF LIVING ORGANISMS

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Annotation

The solution to the problem of rationalization of nutrition has led to the development of drugs that make it possible to compensate for the deficiency of certain nutrients, as well as have a weak regulatory effect on various organs and systems of the body. These drugs are called biologically active additives (BAAs).

Keywords

Rationalization of nutrition, amino acids, fatty acids, vitamins, minerals, plastic energy

One of the main factors determining the normal vital activity of the organism, its functioning and health is nutrition. Research conducted in the late 19th and early 20th centuries laid the foundation for modern ideas about human needs for nutrients. The main essential nutrients were discovered: amino acids, fatty acids, vitamins and minerals.

Until now, the theory of balanced nutrition, developed at the beginning of the 20th century and based on a balanced approach to assessing food and diet, remains relevant. The main content of this theory is that nutrition is the process of maintaining and balancing the chemical composition of the body. Rational balanced nutrition implies the optimal ratio of various food components, which ensures a normal level of vital activity with optimal consumption of plastic energy and regulatory substances in the body. To maintain adaptive potential, a number of macro- and microcomponents of food products (proteins, vitamins, small biologically active compounds) are necessary, which must be supplied with food. It is unacceptable to exclude one of the main components (proteins, lipids or carbohydrates) from the diet for a long time.

Thanks to the theory of balanced nutrition, diets have been created for various groups of the population, taking into account the age and physical activity of a person, in order to eliminate many diseases associated with a deficiency of certain food components. These requirements indicate the level of daily nutrient intake

sufficient to meet the physiological needs of at least 97.5% of the population, taking into account age, gender, physiological state and physical activity. At the same time, regular epidemiological studies conducted in different countries, including Uzbekistan, have revealed significant deviations in the diet, which are characterized by:

- protein deficiency;
- excessive consumption of fats, especially of animal origin;
- deficiency of polyunsaturated fatty acids;
- vitamin deficiency;
- deficiency of macro- and microelements;
- deficiency of dietary fiber.

The role of these substances for the functioning of the body is incomparable. At the same time, their sufficient supply requires a significant increase in food consumption. And this, taking into account the sedentary lifestyle of people in modern urbanized society, increases the risk of obesity, arterial hypertension, coronary heart disease, diabetes and other "diseases of civilization". As is known, irrational, not only deficient, but also excessive or unbalanced in terms of the composition and ratio of substances, nutrition can lead to disruption of metabolic processes in the body and the development of diseases. No matter how we try to make our body function properly, full health can be achieved only if it contains a certain amount and ratio of substances necessary for all processes. At the same time, of the main factors determining the level of health, such as heredity, environmental conditions, nutrition, stress, we, of course, can only influence the composition of nutrition.

The solution to the problem of rationalizing nutrition has led to the development of drugs that make it possible to compensate for the deficiency of certain nutrients, as well as have a weak regulatory effect on various organs and systems of the body. These drugs are called biologically active additives (BAAs).

It should be noted that since ancient times, people have always enriched their food, absorbing new natural resources, introducing plant and animal products into their diet. At the same time, people began to notice that some components of food can affect their health, have a stimulating, calming or healing effect. In Egypt, China, Tibet, India and other Eastern countries, even before the new era, very harmonious systems of treating various diseases with the help of plant, animal and mineral preparations were formed. Food additives are obtained from plant, animal and mineral raw materials, and they also use enzymatic and bacterial preparations that have a regulatory effect on the microflora of the gastrointestinal tract.

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All food additives are divided into two large groups: nutraceuticals and parapharmaceuticals.

Nutraceuticals are substances that are used primarily to correct the chemical composition of human nutrition, mainly with nutritional value. Their role is to optimize the nutrition of a particular person, to compensate for the deficiency or deficiency of important food components, to increase the body's non-specific resistance to the effects of adverse factors, to change the metabolism and immunomodulatory effects. The main purpose of using nutraceuticals is to improve people's nutrition, strengthen their health and prevent a number of diseases.

Parapharmaceuticals are a class of substances that are closer to medicines on a natural basis than food and allow them to have a targeted effect on the work of certain organs and systems within physiological limits. If nutraceuticals can be used by patients both on the recommendation of a doctor and in most cases, then parapharmaceuticals should be prescribed by a specialist. Their appointment requires additional knowledge from the doctor, primarily in the field of phytopharmacology. Parapharmaceuticals are natural products containing alkaloids, glycosides, bioflavonoids, organic acids, essential oils, and other substances. Their role is to regulate the functional activity of the body, nervous activity, microbiocenosis of the gastrointestinal tract, and have an adaptogenic effect.

At the same time, the division of dietary supplements into nutraceuticals and parapharmaceuticals is somewhat arbitrary, since both of them optimize the chemical composition of human food to varying degrees and maintain its functional activity [1].

The use of food supplements is justified for the following purposes:

- rationalization of nutrition for each specific person, taking into account his physiological needs and energy expenditure;
- reduction of the calorie content of the diet;
- increase of the body's nonspecific resistance;
- targeted changes in metabolism - binding and excretion of toxic and foreign substances into the body;
- increase of the body's immune defenses;
- normalization of the intestinal microflora.

Basically, biologically active supplements are used by healthy people, in rare cases - before the disease, they can also be used in the event of a disease, but only as an adjunct to the main therapy. However, their uncontrolled and prolonged use can lead to negative consequences.

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In recent years, biologically active additives have been shown to make a significant contribution to the prevention of the occurrence and development of various diseases.

In cardiology, BFM (vitamins, vitamin-like substances, macro- and microelements, amino acids, PUFA, etc.) have shown high efficiency in complex therapy and prevention, providing a clinically significant cardioprotective effect, increasing myocardial contractility, normalizing the lipid spectrum of blood plasma, correcting microcirculation disorders, restoring rhythm. Many biologically active substances, as shown by many years of clinical experience conducted in our country and abroad, are no less effective than a number of pharmaceutical agents traditionally used in the treatment of systemic atherosclerosis, cardiomyopathies, myocardial dystrophies. The so-called "mitochondrial diseases" that lead to profound heart dysfunction can only be treated with coenzyme Q10 and L-carnitine.

In pulmonology, biologically active substances are, as a rule, auxiliary agents that increase the effectiveness of the use of antibiotics and level out side effects in the form of dysbacteriosis. Many specialists actively use eubiotics, proteolytic enzymes, which are parapharmaceuticals with expectorant, anti-inflammatory, bronchodilator, mucolytic effects, in the complex treatment and prevention of acute and chronic nonspecific diseases of the lungs and bronchi. Recently, in a number of clinics, drugs for the treatment of bronchial asthma and chronic obstructive bronchitis have been successfully used, including plants with steroid-like effects, as well as a number of dietary supplements containing omega-3PUFA and magnesium.

In gastroenterology, biologically active substances are successfully used in combination with pharmaceutical drugs for the treatment of ulcerative lesions of the gastrointestinal tract, secondary prevention, constipation, dysbacteriosis, enzymatic insufficiency, biliary dyskinesia, malabsorption syndrome. It is worth noting the high effectiveness of a number of biologically active substances in the treatment of chronic hepatitis as a means of non-surgical treatment of gallstones, as well as a means of restoring and maintaining liver function after acute hepatitis. Considering the numerous side effects and sometimes direct toxic effects of many basic pharmaceutical agents in rheumatology, the addition of BFM as a safe means for chondroprotection (glucosamine and chondroitin sulfate), reducing the severity of the inflammatory process (omega-3PUFA, proteolytic enzymes, plants - devil's claw, hydrangea, yucca), immunomodulation (preparations from echinacea plants, cat's claw, algae spirulina, ant tree bark), for effective remineralization (horsetail, kelp, oats) is increasingly being used. The side effects of immunosuppressants and

corticosteroids can also be reduced by combining them with a number of dietary supplements.

In neurological practice, BFMs, first of all, restore the optimal micronutrient composition of the central and peripheral nervous system (neurotropic vitamins, amino acids, phospholipids), and secondly, restore impaired functions with the help of tonics (Eleutherococcus, ginseng, aralia, Chinese lemongrass) and sedatives (valerian). Clinical experiences on the use of BFMs for the treatment of intracranial hypertension, asthenic syndrome, dyscirculatory encephalopathy, and to delay the development of senile dementia are of wide interest.

In endocrinology, BFMs are effectively used in monotherapy for overweight patients, in complex therapy of both types of diabetes, for the prevention and treatment of endemic goiter, hypothyroidism. Regular use of biologically active substances from the group of nutraceuticals, as many years of scientific research have shown, is an effective method of preventing many diseases of the endocrine system.

In recent years, interesting results have been achieved in the use of BFM in the complex treatment of diseases of the urinary tract, chronic inflammatory diseases of the male and female reproductive systems, infertility, secondary immunodeficiency, primary and secondary prevention of cancer and to increase the tolerance of specific treatment.

The state of the disease, or the so-called "pre-disease", many functional disorders of the functioning of organs and systems, the consequences of environmental disasters and prolonged exposure to occupational hazards can be successfully corrected only with the use of dietary supplement complexes. Biologically active additives are used in the case of illness only as an adjunct to the main therapy. They are an important element in strengthening health, preventing and treating many diseases. They can be used by healthy people to normalize the diet in cases of deficiency of certain macro- and microelements, as well as in cases of functional impairment of certain organs and systems within physiological limits.

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