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TECHNOLOGY OF PROBIOTICS PRODUCTION

Probiotics is a term for living microorganisms that if consumed in adequate quantities, are beneficial to human health. The term "probiotics" includes probiotic medicines, probiotic foods (dietary and food supplements) and genetically modified probiotics. Since 2001, according to the recommendations of the World Health Organization, when using probiotics, the genus and family name of the strain with the definition of its genotypic and phenotypic characteristics, as well as data on the mechanism of action obtained in vitro, justification of clinical efficacy based on the results of studies in the human population, should be indicated. Besides, the aspects of antibacterial resistance, metabolic activity, side effects, toxin-producing and hemolytic activity, and lack of invasiveness in animal testing should be determined.

Today, we know the mechanisms of action of probiotics that protect the human body from infectious diseases. Among them: strengthening the epithelial barrier, inhibition of adhesion of pathogenic microorganisms, competitive inhibition of growth of pathogenic microorganisms, production of antibacterial substances and modulation of the immune response.

According to the classification established in 1996, drugs that normalize intestinal microflora are divided into 4 generations: I – classical monocomponent preparations containing one strain of bacteria; II – self-limiting antagonists; III – combined preparations that consist of several strains of bacteria or include additives that enhance their effect; IV – live bacteria that are immobilized on the preparation, the representatives of normal flora.

A prerequisite for the development of technology and production of probiotics is to maintain their stability over a long period of time. Bacterial drugs containing live microorganisms are the least stable, as their activity can be reduced by cell death. Microorganisms, due to their low level of biological organization, remain viable even when completely dehydrated, in which case metabolic processes in the cells only slow down or stop. To prolong the viability of bacteria, it is advisable to perform freeze-drying, which is done at low temperature and deep vacuum (low oxygen concentration). Dry biological products are sealed under vacuum or in an inert gas stream due to their hygroscopicity.

Factors affecting the survival of microorganisms in dry probiotic preparations during storage include the regulated residual moisture concentration, the presence of protective substances, and storage of dry medications in an oxygen-free atmosphere.

To protect probiotics from the acidic environment of the stomach, acid-resistant coatings are applied to tablet and capsule forms or bacteria are immobilized on a sorbent.

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NUTRITIONAL AND BIOLOGICAL VALUE OF D-ELEMENTS

As is known, d-bioelements make up approximately 3% of the human mass. They play an important role in the proper functioning of the body and in maintaining a person's mental health. Both a lack and an excess of d-bioelements in the human body lead to negative consequences.

In this study, an assessment of the nutritional value of the daily diet has been carried out; an analysis of literary sources has been performed in order to determine the biological role of some d-elements, as well as their content in food products, the symptoms of their excessive amount and shortage, and daily requirements for