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.

REFERENCES

1. Гуріна С. В. Мікроекологія кишечнику у дітей раннього віку на фоні гострого обструктивного бронхіту. Суми, 2017. 66 с.
2. Крамарьов С. О., Євтушенко В. В., Євтушенко О. М., Закордонець Л. В. Пробіотики та інфекційні хвороби. *Актуальна Інфектологія.* 2019, № 7(1). С. 1-5.
3. Старовойтова С. О., Скроцька О. І., Пенчук Ю. М., Дорошко Ю. М. Технологія пробіотиків. К.: НУХТ, 2012. 318 с.

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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

their quantity. The awareness of these issues will allow adjusting the food menu and adding the necessary products to the daily diet. In order to evaluate the nutritional value of the daily ration according to mineral composition, food and drink intakes were recorded during the week. According to electronic sources [2], the content of bioelements was calculated in the consumed food and beverages and the intake of some of d-elements per day was determined. The data are given in the Table 1.

Table 1. Assessment of the nutritional value of the daily diet by mineral composition

Bioelement	Fe	Co	Cu	Cr	Zn
Daily need for electronic links [1]	18,000	0,010	1,000	0,050	12,000
Estimated intake, mg/day	5,366	0,016	1,00	0,031	4,470
Percentage of the required level of consumption, %	29,81	157,71	100,44	61,28	37,25

According to the received data, only the level of copper consumption is in the norm. There is a significant lack of Ferrum, Chromium and Zinc ions, and Cobalt, on the other hand, is consumed in excessive amounts. Having analyzed the literary sources [1], we considered the biological role of each of these bioelements and revealed the consequences of their action on the body, caused by their lack or excess. Thus, we could make conclusions about changes in the daily menu in order to increase or reduce the consumption of necessary bioelements.

Ferrum is a vital element. It is present in all tissues; however, it is the most concentrated in erythrocytes. Ferum participates in the process of oxygen transfer, stimulates intracellular metabolic processes, increases general state of health, is a component of protoplasm and cell nuclei, supports normal functioning of the immune system.

Cobalt is the central atom of the complex compound cobalamin, which is more known as vitamin B12. Cobalt participates in the processes of hematopoiesis, contributes to the synthesis of muscle proteins and thyroid hormones, affects nitrogen assimilation and carbohydrate metabolism, improves absorption of iron, retinol, tocopherol acetate, ascorbic acid and increases the synthesis of cyanocobalamin.

Copper plays the role of a catalyst of oxidation-reduction processes in living organisms. There are known more than 50 proteins and enzymes in which copper ions have been detected. Copper plays an important role in the antioxidant defense system, takes part in reactions of assimilation of iron, group B vitamins, and ascorbic acid; it participates in the formation of elastin of blood vessels, as well as of

collagen, which forms the protein framework of the skeleton bones. Copper deficiency is almost not observed in healthy people.

Ions of trivalent chromium are quickly absorbed and, in general, have positive effect on the human body, unlike hexavalent ions of chromium, which are a recognized carcinogen. They take part in the regulation of sugar balance in the body by increasing the sensitivity of cells to insulin, as well as in the metabolic processes of carbohydrates; they provide the breakdown of fats and lower cholesterol, minimizing the risk of formation of cholesterol plaques and the development of atherosclerosis.

Zinc participates in biochemical processes. It regulates metabolism, supports reproductive function, participates in the synthesis of insulin and testosterone, has antioxidant effect, participates in the formation of bone tissue, helps to preserve normal functioning of the musculo-skeletal system, and prevents the development of rheumatism and arthritis.

Based on the analysis of literary data, we have reached the conclusion that the result of improper nutrition is rapid fatigue and weakness of the immune system. It has been determined that in order to balance the appropriate amounts of the specified d-bioelements, people need to eat more fruits, nuts, seafood, beef and legumes, as well as reduce the consumption of leafy vegetables, bread, cereals and poultry meat.

REFERENCES

1. Левітін Є. Я., Ведерникова І. О., Коваль А. О., Криськів О. С. Біоактивність неорганічних сполук: навч. посібн. для аудит. та самост. роботи студентів / за ред. проф. Є. Я. Левітіна. – Х. : НФаУ, 2017. – 83 с.
2. Омері І. Д. Фізіологічні аспекти дії кобальту та кадмію на здоров'я людини. Інституційний репозиторій Київського столичного університету імені Бориса Грінченка. URL: https://elibrary.kubg.edu.ua/id/eprint/1602/1/I_Omeri_FDKTKNZL_IPSP.pdf

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EFFECTS OF MELATONIN ON OXIDATIVE STRESS AND DIABETES-INDUCED CHANGES IN KIDNEYS

Diabetes mellitus type 2 (T2DM) is associated with various renal complications, including alterations in protein profiles and oxidative stress. Our study deals with the effects of melatonin on renal function and protein distribution in rats with experimental T2DM. Oxidative stress contributes to the formation of beta-amyloid