

**Напря́м 2. ХАРЧОВІ ІНГРЕДІЄНТИ:
ФОКУС НА ФУНКЦІОНАЛЬНІСТЬ І НАТУРАЛЬНІСТЬ**

**FUNCTIONAL SOFT ICE CREAM USING BEET PECTIN
CONCENTRATE AND PROBIOTIC**

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In recent years, the quality and quantity of food consumed have undergone significant changes. Nutritionists from around the world argue that the growth of chronic human diseases is directly related to the deterioration of the environmental situation and the changed chemical composition of food products. Among the variety of environmental factors that negatively affect the human body, heavy metals occupy a leading place. In this regard, functional food products, the ingredients of which are able to absorb and remove toxic metal ions, pesticides, and radionuclides from the human body, are increasingly in demand. Some natural hydrocolloids are potential absorbents of heavy metals, in particular, pectin and sodium alginate. Pectins are used as accessible and common biosorbents for binding heavy metals and radionuclides from wastewater.

Beet pectin concentrate (BPC) contains low esterified pectin. Its thickening and gelling abilities make it possible to form the required structural and mechanical characteristics of a frozen dessert. In addition, these concentrates do not have a pronounced specific taste or smell, and, therefore, will not affect the taste properties of the final product. In this regard, the use of BPC, which contains low-esterified pectin, in the technology of functional dairy products is relevant.

The aim of the study is to develop a technology for functional soft ice cream using BPC and microorganisms. This will expand the range of dairy products enriched with functional ingredients.

During experiments, the introduction of more than 10.0% beet pectin concentrate regular clotting of milk proteins, prescription texture of the mixture was characterized by heterogeneity, there was a slight delamination of the aqueous phase; the ice cream had a slightly flaky texture.

The full-scale implementation of this study requires additional experimental studies and technological developments in production conditions. In the future, studies will be carried out on the effect of BPC on the cryoscopic temperatures of prescription mixtures and the amount of frozen water, the dispersion of the fat and air phases of ice cream, depending on technological factors. Taking into account the qualitative and quantitative results of the research, it was found that an increase in the BPC leads to an increase in the density (from 1070 kg/m³ to 1140 kg/m³) and viscosity (from 320 mPa s to 380 mPa s) of prescription mixtures. This in turn affects the overrun and melt resistance of the ice cream. A technological scheme for the production of soft ice cream using BPC and microorganisms has been developed. The technology of soft ice cream using BPC will expand the range of dairy products enriched with functional ingredients. The quality indicators of soft ice cream of various fat content (ice cream - 14.0%, cream - 11.6%) with the addition of BPC and microorganisms *Bifidobacterium* and *Lactobacillus* were studied. The obtained research results indicate the significant potential of pectin concentrate as a prescription component in the composition of functional dairy products.

Soft ice cream is characterized by high nutritional value (the mass fraction of protein is 2.6-3.2%, milk fat – 11.0-13.9%, sucrose – 11.2-11.7%, antioxidants – 5.6-6.4 mg/100 g), contains water-soluble vitamins and pectin (0.5 – 1.0%), which is a natural enterosorbent.

Soft ice cream technology using beet pectin concentrate will expand the range of dairy products enriched with functional ingredients.

The development of soft technology using beet pectin concentrate allows expanding the range of food products enriched with functional ingredients. The introduction of microorganisms improves the physiological functionality of the product, in particular, improves the functioning of the gastrointestinal tract.

Technology of soft ice cream using beet pectin concentrate as a functional component has been developed. As an additional component of the probiotic action, microorganisms *Bifidobacterium*, *Lactobacillus* were introduced in an amount of 0.1%. The regularities of the influence of beet pectin concentrate on the density and viscosity of prescription mixtures, overrun and resistance to melting of soft ice cream have been established.

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