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**FERMENTED MILK DRINK WITH SYNBIOTIC ACTION
FOR FUNCTIONAL NUTRITION**

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The most important task of modern food technology is to create functional food products that support and improve human vital functions and increase the body's overall resistance to aggressive environmental conditions. In functional nutrition, special attention is paid to products that help optimize the microecological status of the human body, because it is the normobiocenosis that is the key to immunobiological stability and, potentially, health in general.

The increased interest of consumers in fermented dairy products is due to their high nutritional value and known health benefits, as they positively affect the intestinal microflora, contributing to good health. Fermented milk products, created using lactic acid and bifidobacteria, are considered the basis of functional human nutrition. They contribute to the prevention of a number of diseases, and the positive effect of their consumption is due to the presence of probiotics and prebiotics. Such products are characterized by high digestibility. They are especially useful for the elderly and those with gastrointestinal diseases [1].

Milk fermented with probiotic microorganisms acquires positive characteristics for human health not only as a result of partial proteolysis, reduced antigenicity of milk proteins, improved digestion, and reduced lactose concentration in milk, but also due to the accumulation of a large

number of probiotic microorganisms and their waste products, which adjust the composition of the intestinal microflora, improve the secretory and enzymatic activity of the digestive tract, and the absorption of vitamins, minerals, and other micronutrients, which normalize biochemical, behavioral reactions, and physiological functions of humans. Probiotic fermented milk products, when used systematically in adequate quantities, have the ability to enhance the immune response, optimize the intestinal microflora, reduce the level of enzymes in the colon that contribute to the formation of carcinogens and mutagens, have an antimicrobial effect on intestinal pathogens, exhibit a pronounced therapeutic and prophylactic effect in peptic ulcer disease, reduce the level of serum cholesterol, and prevent or slow down the development of dental diseases caused by the influence of putrefactive bacteria [2].

The subject of the study was mixtures fermented with bacterial starter for probiotic products LATPB T (*Bifidobacterium bifidum*, *Bifidobacterium longum*, *Bifidobacterium infantis*) produced by LLC "Lactin" ECOCOM, Bulgaria. Sterilized cow's milk with a mass fraction of fat of 2.5 %, as well as lactulose syrup "Duphalac" produced by SOLVAY PHARMA (Netherlands), was used as raw materials.

Lactulose is one of the most well-known bifidobacteria growth stimulants. It is a disaccharide composed of fructose and galactose molecules; it is a synthetic structural isomer of milk sugar, lactose. It can be used alone or in combination with bifidobacteria preparations to prolong their action. Lactulose's effectiveness is due to the fact that it is not broken down in the stomach and small intestine, as the enzymes necessary for this process are absent. Upon reaching the large intestine, lactulose increases the acidity of the microflora, inhibiting the growth of putrefactive bacteria. Consequently, the formation of ammonia, which is toxic to the mucous membrane, is reduced [3]. The need for lactulose increases in various intestinal disorders, to stimulate and improve liver function, gastrointestinal disorders, elevated cholesterol levels, and metabolic disorders.

Fermented milk products enriched with lactulose activate the vital activity of bifidobacteria and suppress harmful bacteria, reduce the content of toxic metabolites and harmful enzymes, promote the absorption of minerals, primarily calcium, and strengthen bones, and inhibit the formation of secondary bile acids.

When using probiotic microorganisms and the prebiotic lactulose in a fermented milk drink, the mechanism of synbiotic action is realized. It consists in the fact that probiotics (bifidobacteria) produce enzymes such as hydrolases that break down prebiotics, and the energy obtained in this way is used by bifidobacteria for growth and reproduction. In addition, this process produces organic acids that reduce the acidity of the environment and thereby prevent the development of pathogenic microorganisms that do not have enzymes for processing prebiotics. The latter stimulate and activate metabolic reactions of beneficial representatives of the human microflora.

Pre-activated starter culture was added to the prepared milk in an amount of 5 % by weight of the sample, as well as 1 % lactulose syrup. Fermentation was carried out for 24 hours under optimal conditions for the development of the starter culture microflora, i.e. at a temperature of $37\pm 3^{\circ}\text{C}$. During the fermentation process, the increase in active and titrated acidity was monitored. It was found that at the time of fermentation, the value of active acidity was 6.43 units, after 24 hours of storage of the fermented product at a temperature of $4\pm 2^{\circ}\text{C}$, this indicator decreased to 3.96, and after 7 days – to 3.92 pH units. For the control sample, to which lactulose syrup was not added, the active acidity differed slightly and was 3.88 units after 7 days. The titrated acidity changed significantly during the first day of storage of the fermented product and was equal to 102°T for the sample with lactulose and 106°T for the control sample. Over the next 6 days of storage, the titrated acidity increased very slowly and reached 114°T for the synbiotic mixture and 118°T for the control sample. Therefore, the addition of lactulose syrup caused the acidity of the enriched fermented milk drink to increase somewhat more slowly than the control. The organoleptic properties of the fermented milk drink samples were evaluated and compared. It was found that the sample, to which 1 % of "Duphalac" syrup was added, had the following characteristics: white

color, uniform, pleasant sour milk aroma, without foreign odors and flavors, pleasant taste, slightly sweetish, thick, uniform consistency, which is characteristic of sour milk drinks.

It was found that when using the starter culture for probiotic drinks LATPB T in an amount of 5 % and lactulose syrup "Duphalac" in an amount of 1 % by weight of raw materials the optimal duration of the fermentation process is 7.5 hours, during which time the titrated acidity of the drink reaches 90°T. The resulting drink has high organoleptic and consumer qualities.

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