

DEVELOPMENT OF COMPOSITION AND TECHNOLOGY OF NEW FUNCTIONAL FOODS - KOUMISS, THANE, AYRAN

Soloviova A. V., Zhukova Y. A., Strelnikov L. S., Kaluzhnaya O. S.

National University of Pharmacy, Kharkiv, Ukraine

biotech_ukrfa@mail.ru

Introduction. Scientifically proved that the most part of so-called civilization diseases, like cardiovascular, diabetes, allergies, anemia, metabolic disorders can be adjusted with special products with physiological effect - antioxidant, immunomodulating and regulatory action. Accordingly, food fortification technology by essential ingredients became so important.

Nowadays, one of the most popular group of functional food are dairy products. Everyone, who leads a healthy lifestyle knows about the benefits of dairy products. The growth of consumer interest in dairy products has been caused by bringing their positive effects on human body. For our region traditional dairy products are kefir, yogurt, fermented baked milk, sour cream. Because of the relevance of a healthy diet on the market the non-traditional for our regions dairy products on the basis of traditional cow's milk and on the basis of other types of raw mil have appeared. To new products for our market include ayran, than, koumiss and so on.

Koumiss is produced by fermenting milk with lactic acid bacteria and yeast, which synthesize vitamins C and B, alcohol, carbon dioxide, to make koumiss refreshing sparkling beverage.

Ayran is made from cow's milk with the water and salt. Sometimes goat or sheep milk are used instead of cow milk. Ayran is prduced with *Lactobacillus bulgaricus* and *Streptococcus thermophilus* leaven. Typically ayran contains 94% of water, 1.2-1.5% of fats, 1.7% of proteins and 0.75% of the lactic acid.

Than is the dairy beverage, which is prepared with cow's or goat's milk and yeast for lactic fermentation, with an addition of salted water. The than benefit is caused by the presence of vitamins and minerals. It contains live microorganisms and have a positive effect on the stomach and intestines. It destroys unhealthy microorganisms and help with dysbiosis treatment. Moreover, this beverage improves the digestive tract and effective for constipation.

Koumiss has a strong antimicrobial activity due to the presence of antibiotic substances, produced by microorganisms during fermentation. It has a great nutritional value and can stimulate biological processes in the organism. Alcohol, carbon dioxide and lactic acid presense is activiting gastric glands and improves digestion. Antibiotic substances in koumiss increasing the organism's resistance to infection, lactic acid bacteria making a favorable intestinal microflora and depress

putrefaction which leads to the poisoning of organism. The koumiss treatment improves appetite, gastric acid secretion and absorption of food, increases the protein and fat digestibility, gained weight.

Today koumiss production technology realized with different raw of materials. Production of koumiss with mare's milk restricted by horse-breeding areas. In some regions koumiss is not producing due to the lack of raw materials, but necessity exists.

Results and discussion. The intention of this work was developing the technology and composition of functional dairy beverage koumiss type, based on traditional for our region the raw materials and its therapeutic effects researching, specifically antimicrobial activity.

The objects of studying were laboratory samples of functional dairy beverage koumiss type, which were made according to our technology with relevant to our region ingredients: pasteurized skimmed cow's milk - the main raw milk, milk powder - proteins enriching component, dry bakery yeast - as the source of alcohol microflora, biokefir or kefir fungus - as the source of lactic acid microorganisms, honey - as carbohydrate substrate for yeast and the component, which enriched the product with healing properties.

To estimate the efficiency of fermentation process, were determined the number of yeast cells and titrated acidity. The total number of yeast cells counted in the Goryaeva chamber using an optical microscope. Titrated acidity were determined in accordance with GOST 3624-92.

The qualitative composition of the samples (the presence of lactic acid bacteria and yeast) were performed by differential diagnostic method Gram staining. The quantitative products composition (number of lactic acid bacteria and yeast cells) were performed by serial dilutions and inoculation on a solid substratum (Koch cup method).

Antimicrobial properties were studied by modified method of co-culturing with the test-strains of bacteria *Escherichia coli* ATCC 25922 and *Staphylococcus aureus* ATCC 25923, which were previously grown for 24 h with the temperature (37 ± 1) °C.

Conclusions. This research allowed to choose the components and their optimal ratio in the product composition (20% of the leaven, the ratio of lactic acid and yeast flora in the leaven is 2:1). Was chosen the most rational method of fermentation - fermentation separately. Research have shown high quantum of lactic acid and yeast flora in the product with its rational ratio and high antimicrobial effect against *E. coli* and *S. Aureus*. It shows potential therapeutic effect of the product and allows to recommend it as the microflora recovery remedy for human with infectious and inflammatory diseases of the gastrointestinal tract.