



### **Fund “Nauka” Project № 22011 Resume – Competition-Based Session 2022:**

**“Evaluation of the microbial safety, physicochemical characteristics and consumer health benefits of a farmer’s white brined cow’s milk cheese”**

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Cheese occupies an important place among dairy products and has been present in the diet of Bulgarians since ancient times. The production of cheese allows concentrating the most valuable ingredients of milk – proteins and fat, and thus durable products with proven taste qualities and a healthy effect are obtained. Nowadays, there is an increased interest of Bulgarian consumers in farm products. They are preferred primarily because of the ecologically clean raw materials from which they are produced, the absence of harmful additional ingredients and their taste qualities. However, there is also the perception that the microbial safety control of these products may be understated, although their physicochemical characteristics, such as salinity, acidity, water content and others, characterize it as natural and beneficial. In this regard, the research objective of the present project is to compile a comprehensive profile of the characteristics of farm white brine cheese from cow’s milk. This profile will be based on a wide range of scientific studies in the field of evaluation of microbiological safety and physicochemical characteristics, organoleptic evaluation and investigation of the probiotic potential of the isolated lactic acid bacteria from farm cheeses. The tasks related to the described goal are similar and include a wide range of research. In order to assess the microbial safety, all necessary tests for the contamination of the cheese according to the regulations in force in Bulgaria will be carried out according to the requirements and guidelines of the European ISO standards for *Listeria monocytogenes* (ISO 11290-1), *Staphylococcus aureus* (ISO 6888-1), *Escherichia coli* (ISO 16649-2), microbes of the genus *Salmonella* (ISO 6579). An optional and correspondingly little-studied methodology for checking the contamination of products with pathogenic and conditionally pathogenic molds and yeasts will be applied, following the ISO 21527-1 standard. The organoleptic assessment of the cheese (condition of packaging and marking of the product, condition of the brine, cut surface, structure and color, etc.), as well as the physicochemical characteristics (water content, total titratable acidity, table salt content, oiliness, maturity, etc.) are regulated by one common standard (BDS 15:2010/ Amendment 1:2014), which will be followed in this research activity. Another direction of this research on farm cheeses is one of its discussed health potentials. The lactic acid microbes it contains are probiotic bacteria, which not only regulate the intestinal balance in the human body, but knowledge today shows that the wide spectrum of strains forming the diverse intestinal flora has a leading role in its immune mechanisms. In this direction, a variety of research and work methods can be implemented, and project tasks are primarily aimed at testing the survival of lactic acid microbes in the aggressive acidity of the stomach, which depends on reaching living cells to saturate the intestinal tract and exert their beneficial effects there. Their antimicrobial resistance will also

be investigated, as well as the interactions between lactic acid microbes and common clinical isolates in the clinic.

The expected results of the scientific work on the project are to obtain a complex and in-depth assessment of the qualities of farm cheese, related to their microbiology and the physicochemical characteristics of the product. This knowledge will enrich the scientific fund in the field of one of the highlights of the Bulgarian culinary traditions and will help the native farm production to optimize its production for the benefit of the health of consumers.