

Development of Technology and Comprehensive Quality Assessment of Functional Structured Dairy Curd Products Enriched with Fruit and Vegetable Cryopowders

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Abstract

Modern trends in the food industry and preventive medicine prioritize the development of products with enhanced biological value, improved organoleptic characteristics, and functional properties. Structured dairy products enriched with fruit, berry, and vegetable cryopowders represent a significant area of interest within this context as potential components of dietary therapy. The objective of this study is to develop recipes and technological regimes for the production of structured dairy products using natural cryopowders obtained via freeze-drying. The research focuses on integrating these ingredients to enhance nutritional value while preserving natural vitamins, minerals, antioxidants, and bioactive compounds. The study involves the assessment of quality indicators to confirm safety, stability, and organoleptic properties, alongside the establishment of technological regimes to ensure process reproducibility and standardization. The results demonstrate that the addition of cryopowders improves the taste, color, and aroma of the final products without the need for artificial additives. Due to the high content of bioavailable micronutrients, the developed products are recommended for inclusion in therapeutic and preventive diets to support metabolic processes and prevent alimentary-dependent diseases. The scientific novelty of the work lies in the successful development of formulations that enrich the product with biologically active substances. Furthermore, the parameters ensuring structural stability and quality were justified, and a technological instruction adapted for the use of cryopowders in a dairy base was compiled. In conclusion, this research solves a critical scientific and practical task by creating a new generation of functional dairy products that meet the requirements of healthy nutrition, clinical dietetics, and modern technological standards, providing a regulatory basis for industrial scaling and increasing the competitiveness of domestic production.

Keywords

Functional Dairy Products, Healthy Nutrition, Fruit and Vegetable Cryopowders, Quality Assessment, Food Technology, Rheological Properties