SEA BUCKTHORN JUICE AS A FUNCTIONAL INGREDIENT IN DEPROTEINIZED WHEY-BASED BEVERAGES

Adriana DABIJA [1*], ORCID: 0000-0002-1877-9142
Ancuta CHETRARIU [1], ORCID: 0000-0001-5594-8665
Mircea OROIAN [1], ORCID: 0000-0001-5141-9969
Ionuţ AVRĂMIA [1], ORCID: 0000-0003-3409-6269
Irina DIANU [2], ORCID: 0000-0001-8632-8987
Artur MACARI [2], ORCID: 0000-0003-4163-3771
Iuliana SANDU [3], ORCID: 0000-0003-1266-3154
Ramona Elena HUBER [1], ORCID: 0009-0008-7961-8685

[1] *Faculty of Food Engineering, Stefan cel Mare University of Suceava, Suceava, Romania*
[2] *Nutrition, Technical University of Moldova, Republic of Moldova*
[3] *Nicolae Testemițanu State University of Medicine and Pharmacy*

*Corresponding author: Adriana Dabija, adriana.dabija@fia.usv.ro

Introduction. Growing consumer interest in functional foods and the sustainable valorisation of food industry by-products has stimulated the development of novel products with enhanced nutritional value. Deproteinized whey represents a promising raw material due to its lactose, vitamin, and mineral content, while sea buckthorn is a rich source of bioactive compounds, particularly vitamin C, carotenoids, and polyphenols.

Materials and Methods. This study aimed to evaluate the effect of sea buckthorn juice addition on the physicochemical and sensory properties of a deproteinized whey-based beverage. Several formulations containing different proportions of deproteinized whey and sea buckthorn juice were developed and analysed.

Results and Discussion. The results showed that the addition of sea buckthorn juice significantly affected the physicochemical and sensory characteristics of the beverages. Increasing the proportion of sea buckthorn juice led to a decrease in pH and an increase in titratable acidity, reflecting the contribution of organic acids naturally present in the fruit. Higher levels of sea buckthorn juice also increased dry matter content and turbidity, indicating an enrichment of the beverages with nutrients and bioactive compounds. Colorimetric analysis revealed a progressive intensification of the characteristic colour of the beverages with increasing sea buckthorn juice quantity, mainly due to the high carotenoid content of the fruit, thereby enhancing the visual appeal of the product. Sensory evaluation indicated that all tested formulations were generally well accepted. However, the formulation containing 70% deproteinized whey and 30% sea buckthorn juice with honey achieved the highest scores for taste, aroma, overall appearance, and overall acceptability, providing the most favourable balance between sensory quality and functional characteristics. Overall, the findings demonstrate that sea buckthorn juice can be successfully incorporated into deproteinized whey-based beverages to obtain nutritionally valuable and sensorially acceptable functional products.

Conclusions. The proposed formulation offers a promising approach for the simultaneous valorisation of dairy by-products and sea buckthorn, supporting the development of innovative beverages aligned with current consumer demand for health-oriented and sustainable food products.

Keywords: *bioactive compounds, sustainable food products, valorisation*

Acknowledgments. This work was supported by a grant of the Ministry of Education and Research, CCCDI-UEFISCDI, project number PN-IV-PCB-RO-MD-2024-0214, within PNCD IV. This work was supported by a grant of the CNFIS-FDI-2025-F-0603 /USV VIP 2025.