TECHNOLOGICAL POTENTIAL OF PLANT PROTEINS AS NATURAL EMULSIFIERS FOR FOOD EMULSIONS

Irina DIANU [1*], ORCID: 0000-0001-8632-8987
Maryna MARDAR [2], ORCID: 0000-0003-0831-500X
Artur MACARI [1], ORCID: 0000-0003-4163-3771
Alexei BAERLE [1], ORCID: 0000-0001-6392-9579
Natalia NETREBA [1], ORCID: 0000-0003-4200-1303
Tatiana CUȘMENCO [1], ORCID: 0000-0001-6628-0752

[1] *Department of Food Technology, Technical University of Moldova, Chisinau, Republic of Moldova*
[2] *Department of Marketing, Entrepreneurship and Trade, Odesa National University of Technology*

*Corresponding author: Irina Dianu, irina.dianu@doctorat.utm.md

Introduction. Pea proteins represent functional ingredients with potential for use in food emulsion systems due to their hydration and emulsifying properties. These properties are influenced by the extraction method, which may induce changes in protein structure, solubility, and interfacial behavior. The aim of this study was to evaluate the technological properties of pea proteins obtained using different extraction methods and to assess their potential for use in emulsion systems [1, 2].

Materials and Methods. Three pea protein samples obtained by wet extraction, dry extraction, and microorganism-assisted extraction were analyzed. The technological properties were evaluated by determining water-holding capacity, oil-holding capacity, emulsifying activity (EA), emulsion stability (ES), and approximate density. All determinations were performed in triplicate, and the results were expressed as mean ± standard deviation.

Results and Discussion. The extraction method influenced the functional properties of the pea proteins. The highest water-holding capacity was recorded for the protein obtained by wet extraction (2.62 ± 0.04 g H_2O/g sample), whereas the highest oil-holding capacity was observed for the protein obtained by dry extraction (1.77 ± 0.09 g oil/g sample). Emulsifying activity was highest for the protein obtained by microorganism-assisted extraction (60.33 ± 0.73%), while the highest emulsion stability was recorded for the protein obtained by dry extraction (59.87 ± 0.23%), followed by that obtained by wet extraction (58.37%). The results demonstrate functional differences among the protein samples associated with the extraction method and indicate the favorable potential of pea proteins for use in emulsion systems.

Conclusions. Pea proteins exhibited favorable technological properties for use as functional ingredients in emulsion systems. The protein obtained by wet extraction demonstrated a balanced functional profile, characterized by high water-holding capacity, good emulsifying activity, and high emulsion stability, indicating promising potential as a natural emulsifier.

Keywords: *emulsion stability, extraction, functional properties, pea protein, water-holding capacity*

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