Aurica CHIRSANOVA
Dr., assoc. prof., Technical University of Moldova
https://orcid.org/0000-0002-1172-9900
E-mail: aurica.chirsanova@toap.utm.md
Alina BOIŞTEAN
Dr., assoc. prof., Technical University of Moldova
https://orcid.org/0000-0002-5374-5853
E-mail: alina.boistean@toap.utm.md

β-glucans from wine yeast sediments: evaluation of their behavior in systems with a gelling role

β-glucani din sedimentele de drojdie de vin: Evaluarea comportamentului lor în sistemele cu rol de gelificare

Wine yeast sediments represent a promising secondary raw material for the recovery of functional bioingredients with potential applications in food systems. This study examined *β*-glucan extraction from three wine yeast sediments using two methods and assessed their behavior in gelling systems. Six *β*-glucan samples were obtained and comparatively evaluated for physicochemical and functional properties. The first extraction method provided higher *β*-glucan yields, with values of 7.42%, 6.88%, and 2.84% for the analyzed samples, while the second method resulted in substantially lower yields. However, after hydration and sonication, *β*-glucans obtained by the second method showed a more advanced dissolution in

water and formed suspensions with a slightly gelled and viscous consistency, suggesting improved functional behavior in structuring aqueous systems. Microscopic analysis revealed predominantly spherical microparticles; samples from the first method generally showed particle diameters of 2–5 μm, whereas those from the second method exhibited finer and less pronounced particles, indicating more complete dispersion. Granulometric analysis confirmed a relatively narrow particle size range, with the main distribution of microparticles between 4 and 7 μm in the suspensions analyzed. Emulsion trials showed limited macroscopic stability, as phase separation occurred during storage, but granulometric monitoring suggested that the dispersed microparticle fraction remained relatively stable over time. Overall, the results show that β-glucans isolated from wine yeast sediments by oxidative-alkaline extraction possess functional properties that support their potential use in gelling and structuring systems, indicating an innovative avenue for the valorization of winemaking by-products.

*** Acknowledgments:** The research was supported by the Project 25.80013.5107.03RE "Sustainable valorization of residual yeasts from winemaking: exploring multifunctional bioingredients for innovative applications", implemented at the Technical University of Moldova.