GreenChem-26

ABSTRACTS E-BOOK

7th International Conference on Green Chemistry and Sustainable Engineering



Gran Canaria,
Canary Islands, Spain

22–24 July 2026

Organized by

Sciknowledge™
European Education Scientific Conferences

ABSTRACTS BOOK

GREENCHEM-26

7th International Congress on
Green Chemistry and Sutainable Engineering

Gran Canaria, Canary Islands, Spain

22-24 July 2026

Organized by Sciknowledge Education

www.greenchem-europe.eu

ISBN: 978-84-09-89343-0

Edited by **Sciknowledge Education**



Publication Information

Item	Details
Conference	7th International Conference on Green Chemistry and Sustainable Engineering (GreenCHEM-26)
Dates	22-24 July 2026
Venue	Gran Canaria, Canary Islands, Spain
Organizer	Sciknowledge Education
Website	https://greenchem-europe.eu/
ISBN	978-84-09-89343-0

Disclaimer

The abstracts included in this volume were submitted by the corresponding authors for presentation at GreenCHEM-26. The content, data, results, figures, references and scientific claims remain the sole responsibility of the authors. The Organizing Committee has performed editorial formatting and minor language corrections where necessary, without altering the scientific meaning of the contributions.

Recommended citation

Author(s). Title of the abstract. In: Abstracts Book of the 7th International Conference on Green Chemistry and Sustainable Engineering (GreenCHEM-26), Gran Canaria, Canary Islands, Spain, 22-24 July 2026, p. XX.

Towards targeted valorization of wine lees: comparative assessment of white and red wine by-products

D. Tomić [(1)], A. Marić [(1)*], B. Đermanović [(1)], D. Dragojlović [(1)], T. Sedlar [(1)], T. Đorđević [(2)], B. Šarić [(1)]

[(1)] *Institute of Food Technology, University of Novi Sad, Bulevar cara Lazara 1, Serbia.*
[(2)] *Faculty of Technology, University of Novi Sad, Bulevar cara Lazara 1, Serbia.*

1. Introduction – Wine lees are a heterogeneous by-product generated during wine production as a sedimentary residue formed after fermentation, storage, clarification, filtration, and centrifugation processes. They account for a significant proportion of winery waste, with global production exceeding one million tonnes annually [1].
Wine lees contain varying proportions of proteins, phenolic compounds, and other bioactive constituents, which may determine their suitability for different valorisation pathways [2]. Despite increasing interest in the circular utilisation of winery by-products, wine lees are often treated as a single waste stream, while compositional differences between white and red wine lees remain insufficiently explored.
Therefore, this study aimed to comparatively assess the protein and phenolic potential of white and red wine lees obtained from the autochthonous grape varieties Grašac and Probus, respectively, and to evaluate their suitability for targeted valorisation approaches based on their compositional characteristics.
2. Experimental – Wine lees were characterised in terms of protein content, amino acid composition, phenolic composition, and antioxidant activity. DPPH, ABTS, and FRAP assays were used to evaluate antioxidant activity. The results were comparatively analysed to assess the suitability of each wine lees type for targeted valorisation.
3. Results and Discussion – The compositional analysis revealed pronounced differences between white and red wine lees. White wine lees contained approximately 35% more protein than red wine lees and exhibited a more favourable amino acid profile, including higher levels of most essential amino acids and a greater essential-to-non-essential amino acid ratio. These characteristics indicate the potential of white wine lees as a source of protein-rich ingredients for food and biotechnological applications.
In contrast, red wine lees exhibited a markedly richer phenolic profile. Total phenolic content was more than four times higher, while flavonoid content was more than six times higher than that of white wine lees. Moreover, monomeric and polymeric anthocyanins were detected exclusively in red wine lees. The enhanced abundance of bioactive compounds was reflected in their antioxidant properties. Red wine lees demonstrated stronger radical scavenging activity in both DPPH and ABTS assays, as indicated by considerably lower IC_{50} values, and exhibited more than fourfold higher ferric reducing antioxidant power.
Overall, the results demonstrate a clear compositional divergence between white and red wine lees, highlighting the influence of grape variety and winemaking practices on the nutritional and functional properties of these by-products.
4. Conclusions – White and red wine lees should not be regarded as a uniform by-product stream, as their distinct compositional profiles favour different valorisation pathways. White wine lees showed greater potential for the development of protein-rich ingredients, while red wine lees emerged as a promising source of phenolic compounds and natural antioxidants. Adopting composition-driven valorisation strategies may enhance resource efficiency, maximise the recovery of valuable compounds, and promote more sustainable utilisation of winery by-products.
5. Acknowledgments – This research was funded by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Contract No. 451-03-33/2026-03/200222) and by the Provincial Secretariat for Higher Education and Scientific Research (Contract No. 003863453 2025 09418 003 000 000 001 04 004).
6. References
[1] A. Chetrariu, A. Dabija, L. Caisin, V. Agapii, I. Avrămia, "Sustainable Valorization of Wine Lees: From Waste to Value-Added Products", *Appl. Sci.*, **15**, (2025), 3648.
[2] A. Chioru, A. Chirsanova, A. Dabija, I. Avrămia, A. Boiştean, A. Chetrariu, "Extraction Methods and Characterization of β-Glucans from Yeast Lees of Wines Produced Using Different Technologies", *Foods*, **13**, (2024), 3982.
[2] A. Chioru, A. Chirsanova, A. Dabija, I. Avrămia, A. Boiştean, A. Chetrariu, "Extraction Methods and Characterization of β-Glucans from Yeast Lees of Wines Produced Using Different Technologies", Foods, 13, (2024), 3982.