

Antioxidant Activity Evaluation of Fermentation Distillation Residues

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Nature offers an unlimited variety of molecules with incredible biological activities, such as antioxidants among others, that are valuable for the maintenance of a good health by reducing the damage caused by oxidation [1,2]. This purpose allied to the richness of some wastes and by-products make distillation residues from industrial fermentation (FDRs) potential sources to obtain bioactive compounds. Accordingly the study for both its valorization and integration into a circular economy context was the aim of this work [3,4]. FDRs are known to be rich in several compounds such as phytosterols, triterpenes or fatty alcohols with potential biological activities [3,4]. Thus, two FDRs, from fermentation using sugarcane juice (FDR_SC) or very high polarity sugar (FDR_VHP) and respective extracts obtained by winterization with different solvents (ethanol (EtOH), acetone (AcO) and dichloromethane (DCM)) were used and the evaluation of its antioxidant activity were performed by DPPH, ABTS and ORAC assays. Inhibition percentage, IC₅₀, TEAC and ORAC Value parameters were determined. The results revealed great antioxidant potential for the studied FDRs, in particular for FDR_SC that had the best performance in most of the measured parameters. Also, the differences on solvents polarity used for the FDRs winterization had an important role in the antioxidant capacity results, which could be related to the selectivity to isolate different compounds.

REFERENCES

- [1] Khaire et al. *Materials Science for Energy Technologies*, **2021**, *4*, 54-68. <https://doi.org/10.1016/j.mset.2020.12.004>
- [2] Thao, N.T. and Tuan, H.Q., *7 Recovering Bioactive Compounds from Cane Sugar Wastes*, 1st Edition, John Wiley & Sons Ltd., **2017**, 157-171.
- [3] Teixeira et al. *Pharmaceuticals* **2021**, *14*, 583. <https://doi.org/10.3390/ph14060583>
- [4] Teixeira et al. *Foods* **2021**, *10*, 1125. <https://doi.org/10.3390/foods10051125>