iberPhenol International Conference

Advances in the role of phenols in health effects and other uses

5-6 November 2020

Faculty of Pharmacy
UNIVERSITY OF COIMBRA

Coimbra, Portugal

BOOK OF ABSTRACTS

Phenolics content and Antioxidant Activity of Aqueous Extracts from Bio-residues of *Agrocybe cylindracea*

Ana Sofia Sousa[1], Sara Marçal[1], Catarina Nunes[2], Joana Barros[2], Inês Ferreira[2], Ana C. Freitas[1], Alcina M. M. B. Morais[1], João Nunes[2], Manuela Pintado[1*]

[1] Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, 4169-005 Porto, Portugal
[2] Association BLC3 – Technology and Innovation Campus, Centre Bio R&D Unit, Rua Nossa Senhora da Conceição, n2, 3405-155 Oliveira do Hospital, Portugal

*mpintado@porto.ucp.pt

Mushrooms are known as a rich source of functional and bioactive compounds. Among these, phenolic compounds as important antioxidants are included [1]. In the present work, the antioxidant potential and total phenolic compounds from bio-residues obtained from edible mushroom production were evaluated in order to develop a circular bioeconomy approach. The studied species was *Agrocybe cylindraceae*. The extraction was performed using water as the only solvent, in order to obtain a process as green as possible and with minimal costs and it can be easily scaled up at industrial level.

The aqueous extracts were obtained according to two different methods (1 and 2). In method 1, a hot extraction was performed (90°C; 1h; 500 rpms; extract 1A). In method 2, a temperature room extraction was done (extract 2A) and the resulting residue was subsequently extracted with hot water (90 °C; 1 h; 500 rpms; extract 2B). Extracts were freeze-dried and the extraction yields were determined. The content of total phenolic compounds was determined using Folin-Ciocalteu method. The antioxidant activity was also evaluated by ABTS, DPPH and ORAC assays.

The extraction yields relative to aqueous extracts 1A, 2A and 2B from *A. cylindraceae* were 39.5 ± 1.5 %, 34.4 ± 1.2 % and 11.4± 0.8 %. The total phenolic contents obtained was 13.4 ± 0.3, 12,28 ± 0.01 and 12.3 ± 0.3 mg gallic acid equivalents per g dry extract for extracts 1A, 2A and 2B, respectively, which values are again lower than values reported in literature for ethanolic extracts, as expected [2]. Regarding the antioxidant activity the results showed that the extracts of *A. cylindraceae* are a possible source of natural antioxidants. According to ABTS assay, the results were: 10 ± 1 (1A); 8.4 ± 0.1 (2A); 8.3 ± 0.9 (2B) mg ascorbic acid equivalent per g dry extract.

According to the results, these extracts could still be considered as a natural source of antioxidants. Thus, the valorisation of these bio-residues through the development of value-added "green" products is an opportunity to increase the sustainability of the mushroom production chain.

References:

[1] F. S. Reis, A. Martins, M. H. Vasconcelos, P. Morales, and I. C. F. R. Ferreira, "Functional foods based on extracts or compounds derived from mushrooms," Trends Food Sci. Technol., vol. 66, pp. 48–62, 2017.
[2] J. Petrovi, J. Glamo, D. Stojkovi, and M. Sokovi, "Nutritional value , chemical composition , antioxidant activity and enrichment of cream cheese with chestnut mushroom Agrocybe aegerita (Brig .) Sing," vol. 52, no. October, pp. 6711–6718, 2015.

Acknowledgements: The authors are grateful to FCT, Portugal and FEDER under Programme PT2020. This work is funded by the European Regional Development Fund (ERDF) through the Competitiveness and Internationalization Operational Program (POCI), within the scope of project MicoBioExtract (POCI-01-0247-FEDER- 033939). We also acknowledge scientific collaboration by National Funds of FCT through projects UID/Multi/50016/2019 and by FCT/MEC (PIDDAC) project reference IF/00588/2015.