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

Pleurotus ostreatus and *Pleurotus eryngii* as a source of phenolic compounds

Sara Marçal[1], Pedro Vale[1], Ana Sofia Sousa[1], Catarina Nunes[2], Joana Barros[2], Inês Ferreira[2], 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

The intake of phenolic compounds from food products and supplements has been associated to prevention of degenerative diseases, mainly due to their antioxidant activity. The phenolic compounds can be found in plant foods and mushrooms. The main goal of this study was to quantify the total phenolic compounds of aqueous extracts from two mushrooms species, *Pleurotus ostreatus* and *Pleurotus eryngii,* and evaluate their antioxidant activity.

The aqueous extracts from *P. ostreatus* and *P. eryngii* were obtained through two extraction methods (M1 and M2). In M1, a hot extraction was performed (extract M1) (90 °C, 500 rpm, 1 h). In M2, a room temperature extraction (extract M2A), followed by a hot extraction (extract M2B) (90 °C, 500 rpm, 1 h) of extract M2A residue, was done. Extracts M1, M2A, and M2B obtained from each mushroom species were lyophilized, and the extraction yields were determined. Total phenolics content was quantified through Folin Ciocalteu method. The results were expressed as gallic acid equivalents (GAEs). In its turn, the antioxidant activity was determined through ABTS and ORAC methods. The results of the two methods were expressed as ascorbic acid equivalents (AAEs) and trolox equivalents (TEs), respectively. The cytotoxicity (PrestoBlue) and mutagenicity (Ames) of all extracts also were evaluated.

The extraction yield of extracts M1, M2A and M2B from *P. ostreatus* were 41.33% ± 4.29, 33.60% ± 0.39 and 15.18% ± 0.70, respectively. In its turn, the extraction yield of extracts M1, M2A, and M2B from *P. eryngii* were 46.03 ± 2.18, 44.46 ± 3.96, 12.58 ± 0.94. All extracts from both mushroom species were good sources of phenolic compounds. The extracts M1, M2A and M2B from *P. ostreatus* had 15.80 ± 1.54, 16.57 ± 0.26 and 16.65 ± 1.01 mg GAEs / g dry extract, while extracts M1, M2A and M2B from *P. eryngii* had 9.06 ± 0.63, 7.90 ± 0.46, 9.25 ± 0.28 mg GAEs / g dry extract. Antioxidant activity was observed in all extracts. The antioxidant activity of extracts from *P. ostreatus* (M1: 5.78 ± 0.31; M2A: 6.33 ± 0.83; M2B: 4.39 ± 1.12 mg AAEs / g dry extract) was higher than antioxidant activity of extracts from *P. eryngii* (M1: 5.48 ± 0.03; M2A: 2.23 ± 0.15; M2B: 3.87 ± 0.39 mg AAEs / g dry extract). No extract showed any genotoxic or cytotoxic effect.

The results of this study indicate that aqueous extracts from *P. ostreatus* and *P. eryngii* are a source of phenolic compounds. Possibly, these extracts have the potential to be used in the development of food products and nutraceuticals enriched in phenolic compounds associated to other relevant properties ascribed to these mushrooms.

Acknowledgments: This work was supported by Ministry of Agriculture and Rural Development and co-financed by the European Agricultural Fund for Rural Development (EAFRD), through the partnership agreement Portugal 2020 – PDR, under the project PDR2020-101-031470: Micocoating - Valorização dos recursos florestais e micológicos para otimização de revestimentos. This work is a result of the project Trasnfere Empreende, supported by Norte Portugal Regional Operational Programme (NORTE 2020), under the PORTUGAL 2020 Partnership Agreement, through the European Regional Development Fund (ERDF). We would also like to thank the scientific collaboration under the FCT project UID/Multi/50016/2019.