

Aqueous extracts from *Agrocybe cylindracea* and *Pleurotus ostreatus* as source of antioxidant coatings

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Agrocybe cylindracea and *Pleurotus ostreatus* mushrooms are rich in polysaccharides and phenolic compounds with antioxidant and antimicrobial properties. Therefore, these mushrooms can be a good source of natural food preservatives and edible coatings. The main goal of this study was to develop an edible film with antioxidant activity. Edible films are composed of biopolymers and may be carriers of additives with bioactive properties. This study developed an aqueous extraction process that allows the extraction of biopolymers and bioactive compounds (eg. phenolic compounds) from *Agrocybe cylindracea* and *Pleurotus ostreatus* mushrooms, with antioxidant activity, which can be used as preservative edible film.

To accomplish this, after a pre-treatment by maceration of frozen mushrooms two consecutive aqueous extractions were applied, where the first was at room temperature (A) and the second (B) was hot extraction (90°C; 5 000rpm). Extracts were lyophilized and the extraction yields were determined. Total phenolics content was determined through Folin Ciocalteu and antioxidant activity through ABTS method.

The yields of extracts A and B from *Pleurotus ostreatus* are 33.60% ± 0.39 and 15.18% ± 0.70. The yields of extracts A and B from *Agrocybe cylindracea* are 30.91% ± 0.89 and 14.77% ± 1.49, respectively. These results are in agreement with yields of *Agrocybe cylindracea* hot-water extracts reported by Tsai, Huang and Mau, 2006. Phenol content of extracts from *Agrocybe cylindracea* (extract A: 13.35 ± 0.55; extract B: 12.79 ± 0.67mg GAE per g of extract) are higher than phenol content of extracts from *Pleurotus ostreatus* (extract A: 10.28 ± 0.70; extract B: 11.52 ± 0.62mg GAE per g of extract). The ABTS radical cation-scavenging activity was also higher in extracts from *Agrocybe cylindracea* (extract A: 12.04 ± 1.26; extract B: 6.78 ± 0.44mg AE per g of extracts) than extracts from *Pleurotus ostreatus* (extract A: 6.39 ± 1.45; extract B: 5.75 ± 0.49mg AE per g of extract). Results of this study indicate that *Agrocybe cylindracea* has more antioxidant activity than *Pleurotus ostreatus*, but both mushrooms are potential sources of natural antioxidant preservatives and polysaccharides to produce bioactive edible coatings.

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References

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