

MUSHROOMS AS AN EXCITING AND INNOVATIVE SOURCE OF NATURAL ANTIOXIDANTS: THE CASE OF THE OYSTER BASIDIOMYCETE *PLEUROTUS OSTREATUS*

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Mushrooms packed with a wide array of bioactive components are excellent antioxidants and anti-inflammatory agents which may help to prevent the occurrence and aid the treatment of chronic diseases. *Pleurotus* species, like many edible and medicinal mushrooms, are a good source of antitumor/immunostimulating and antioxidant effector molecules with preventive and/or therapeutic potential. Hitherto, research has tended to focus on its dietary value; however, there is relatively little information pertaining to their antioxidant activity and their possible use to inhibit oxidative stress. Herein, the antioxidant potential of hot-water extracts from both mycelium (Myc-E) and fruiting bodies (FB-E) of the oyster mushroom *Pleurotus ostreatus* was investigated. At the concentration of 10 mg/mL, the extracts showed the most potent scavenging effects for DPPH radical (96.05% and 90.35% for Myc-E and FB-E, respectively), ABTS radical (55% and 80% for Myc-E and FB-E, respectively) and inhibition of lipid peroxidation (47.2% and 51.2% for Myc-E and FB-E, respectively). Moreover, the mushroom extracts at a maximum concentration of 5 mg/mL manifested reducing power of 1.105 and 0.438 for Myc-E and FB-E, respectively. These results suggest that not only *Pleurotus* fruiting bodies, but also its mycelium may be useful in the prevention of diseases mediated by reactive oxygen species. Taking into account that *Pleurotus* fruiting bodies-derived preparations are currently being considering for their approval as dietary supplement by the Cuban regulatory authorities, we additionally evaluated the cytoprotective properties of FB-E. FB-E showed a protective effect against the hydrogen peroxide (H₂O₂) oxidative damage in erythrocyte membrane, reflected in the levels of catalase enzymatic activities compared with the H₂O₂ group (22.95 AU/g Hb in FB-E vs. 102.6 AU/g Hb in the H₂O₂ group). These findings could be related to the presence of bioactive metabolites, such as phenolic compounds, flavonoids and ascorbic acid, identified in the preparations. In contrast to synthetic antioxidants, used in mg levels in foods, *Pleurotus* powder or extracts could be used in gram levels as functional foods or nutraceuticals, thus providing health protection to help humans reduce oxidative damage daily. In sum, the present study suggests that hot-water extracts from *P. ostreatus* in view of their antioxidant and cytoprotective properties, could serve as potential innovative food bioingredient, as novel dietary supplements or even as pharmaceutical agents of industrial relevance.