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INFLUENCE OF THE CARBON SOURCE IN THE ANTIOXIDANT POTENTIAL OF LEUCOPAXILLUS GIGANTEUS MYCELIUM

Lillian Barros¹, Paula Baptista¹, Isabel C.F.R. Ferreira¹

1. Montain Research Centre, Campus de Sta. Apolónia, apartado 1172, 5301-855 Bragança, Portugal

Reactive oxygen species (ROS) such as hydroxyl and superoxide radicals produced by sunlight, ultraviolet, chemical reactions, and metabolic processes have a wide variety of pathological effects on cellular processes. There are many diseases such as heart disease, cancer, arthritis, and the aging process itself, in which free radicals are implicated. To combat these free radicals the body needs antioxidants. Mushrooms have become attractive as a functional food and as source for the development of drugs and nutraceuticals, namely for antioxidant compounds. In addition to dried mushrooms, alternative or substitute mushroom products are mycelia of this mushroom, mainly prepared from submerged culture. This mycelium could also be used as food and food-flavouring material, or in the formulation of nutraceuticals and functional foods.

In this study, we evaluated the influence of four different carbon sources (glucose, sucrose, fructose and manitol) in the production and antioxidant activity of *Leucopaxillus giganteus* (Sowerby) Singer mycelium, a Basidiomycete fungus belonging to the order Agaricales, and family Tricholomataceae. The mycelium growth was followed along the time (15, 30, 45 and 60 days) and the antioxidant activity was evaluated for each carbon source and for each growth time, using several assays. We studied the DPPH (2,2-diphenyl-1-picrylhydrazyl) free radical scavenging capacity and reducing power of the extracts, and also the inhibition of oxidative hemolysis in erythrocytes induced by AAPH (2,2'-azobis(2-amidinopropane)dihydrochloride), which has been extensively studied as model for the peroxidative damage in biomembrane. The presence of different antioxidants in the mycelium extracts that can hinder the extent of β -carotene-bleaching by neutralizing the linoleate-free radical and other free radicals formed in the system was also tested. Significantly negative linear regressions were established between the total phenols and flavonoids content and antioxidant activity. The aldohexose glucose proved to be the most appropriate carbon source to increase antioxidant activity, presenting the corresponding mycelium highest phenols content and lower EC₅₀ values for free-radicals scavenging effects.

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