

8th International Medicinal Mushroom Conference, 8IMMC, organized by Autonomous University of the West – Cali, University of the Province of Caldas and National Higher Learning Service SENA,
Manizales, Colombia. (24-27 de August)

IMMUNOSTIMULATING EFFECTS OF AQUEOUS EXTRACTS FROM MYCELIUM AND FRUITING BODIES OF THE OYSTER MUSHROOM *PLEUROTUS* SP. ON IMMUNOCOMPETENT BALB/C MICE

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Abstract

The genus *Pleurotus* comprises several edible species of high nutritional value, which also possess pharmacological potential, including the immune system modulation. However, there is insufficient experimental evidence that thwart the development of bioactive-enriched formulations with therapeutical applications. This work was focused on the evaluation of *in vivo* immunomodulatory properties of mycelium and fruiting bodies aqueous extracts from *Pleurotus* sp. CCEBI-3024. The extracts were obtained through thermic treatment of mushroom biomass (Cuban patent No. 23717, 2011). The immunomodulatory activity was evaluated on male Balb/c mice administered intraperitoneally (i.p.) for seven days with mushroom extracts at a dose of 100 mg/kg compared with a saline-control group. The extracts showed immunopharmacological effects as judged by the stimulation of bone marrow haematopoiesis, the splenic cellularity and the serum protein concentrations. An increase in both total and differential leukocyte counts in peripheral blood within the values considered as normal for this animal model, as well as, in the number of peritoneal macrophages was also found in mice treated with mushroom extracts, particularly with the fruiting bodies preparation. The vascular permeability estimated by the Evans' Blue assay was enhanced in mice injected with fruiting bodies extract, thus suggesting the induction of an inflammatory reaction. The mycelial extract stimulated the cell-immune response in terms of induction of delayed-type hypersensitivity (DTH) at 48 and 72 h, presumably as the result of Th1 CD4⁺ cell activation. In sum, these findings suggest an *in vivo* immunopotentiating effect of both fruiting bodies and mycelial extracts from the oyster mushroom *Pleurotus* sp. The differences observed in some immune parameters depending on the nature of the extracts (mycelium or fruiting bodies) would be related to the particular array of both high-molecular weight compounds (i.e. polysaccharides) and low-molecular mycochemicals contained in the preparations. In view of these results, *Pleurotus* sp. extracts can be considered as candidates for developing functional foods/nutraceuticals or even pharmaceutical agents with immunomodulatory effects.

Key words: *Pleurotus*; mushrooms; immunostimulating activity.

Subject: Medicinal values and pharmacology of medicinal mushrooms

Modality: Poster presentation