IMMUNOMODULATING EFFECTS OF HOT-WATER EXTRACT FROM Pleurotus ostreatus mycelium ON CYCLOPHOSPHAMIDE TREATED MICE

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ABSTRACT

With the view of developing new immunotherapeutic agents, there has been a recent upsurge of interest in edible mushrooms. Hot-water extract (F-I: 43.6% w/w carbohydrate and w/w protein) prepared from the mycelium of Pleurotus ostreatus was administered intraperitoneally (i.p.) at 100 mg/kg for 7 days to Balb/c mice and cyclophosphamide (CY) at 10 mg/kg was injected on the fifth day. The influence of F-I administration on the immunosuppression caused by CY was evaluated on the eighth day. CY treated mice exhibited less pronounced immunosuppression and more rapid haematopoietic recovery when administered with F-I. The i.p. injection of F-I increased bone marrow cellularity (4.1 x 10⁶ vs. 1.5 x 10⁶ per femur in saline control group, P<0.01), the white blood cell counts (7.6 x 10⁹ vs. 4.8 x 10⁹ cells/l, P<0.05) and led to a two-fold increase in the number of endogenous macroscopic colonies of hemopoietic tissue on the parietal surface of spleen (P<0.05). F-I enhanced the murine reticuloendothelial system as judged by the shorter rate of carbon clearance (4.23 vs. 6.18 min, P<0.05). F-I increased the number of peritoneal exudate cells (P<0.01) and stimulated in vivo murine macrophage phagocytic ratio (15.65% vs. 4.70%, P<0.01) and phagocytic index (1.06 vs. 0.12, P<0.05). No toxicity signs such as hepatosplenomegaly were observed in F-I treated animals. These effects suggest that F-I could enhance host-defense mechanisms in vivo.

Key words: Pleurotus ostreatus, edible mushrooms, mycelium, cyclophosphamide, macrophage, immunomodulator.