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Study of the effects of Pleurotus eryngii var. eryngii on heat shock proteins and cytokines levels in a mouse model of colon carcinoma

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Medicinal mushrooms are wonderful source of nutraceuticals with a wide range of benefit for human health. The current anti-cancer therapy is not always target specific and often is associated with complications for patients. Therefore new effective and less toxic therapeutic approaches are needed. Heat shock proteins (Hsps) are highly expressed in a variety of cancer types contributing to tumor cell propagation. Here, we treated C26 colon cancer cells with a cold-water extracts of an edible mushrooms *Pleurotus eryngii var. eryngii* (Pleuery). Hsp90, 70, 60 and 27 levels were measured by western blotting and immunofluorescence analysis. Moreover, we evaluated Pleuery anticancer effect in an animal model of ectopically-implanted C26 colon carcinoma. We prepared a mixture of lyophilized Pleuery with the mice standard diet, and the animals were daily fed with ~4g of the mix, 10 days before tumor implantation and until they died to draw a survival curve. A control group of mice fed with the standard diet, was used as control. We performed immunofluorescence and western blotting analysis for Hsps in the explanted tumors. Our results, showed that the extract affected cells viability at 0.5 µg/µl after both at 24 and 48 hours of treatments. Western blotting analysis of the cells lysate showed no changes in the Hsps protein levels except for Hsp60 which levels decreased at 24h of treatment but increased after 48h. Pleuery in the diet significantly extended the median survival compared to untreated mice. Moreover, western blotting analysis and immunofluorescence of the allograft tumors showed the decrease of Hsp90, 70 and Hsp60 levels while Hsp27 levels increased. Finally, qRT-PCR showed the down-regulation of IL-1 and IL-6 expression levels while the expression levels of TNFα did not changed. These results led us to suppose the antioxidant and anti-inflammatory effects of Pleuery *in vivo*.