

Lentinus squarrosulus (Mont.) mycelium enhanced antioxidant status in rat model

ABSTRACT

Aim: *Lentinus squarrosulus* is an edible wild mushroom commonly found in Asia. This species has several interesting features such as rapid mycelial growth, and hence has the potential to be used as food, functional food, and nutraceuticals. Our previous study shows that *L. squarrosulus* contains potent antioxidant compounds in vitro. This study aims to investigate the in vivo bioavailability of *L. squarrosulus* mycelium extract and its antioxidant effect on biomarkers of antioxidant defense and oxidative stress. **Methods:** Water extract of mycelial biomass of *L. squarrosulus* was analyzed for in vivo antioxidant effects, including cupric-reducing antioxidant capacity (CUPRAC), glutathione peroxidase (GPx), xanthine oxidase (XO), advanced oxidation protein products (AOPPs), and lipid hydroperoxides (LHPs) at 0 and 28 days. GPx and XO were also analyzed in liver homogenates. Normal Sprague Dawley rats were treated with 250 and 500 mg/kg of extract for 28 days. **Results:** The serum CUPRAC level increased after treatment with both concentrations, indicating that there was sufficient bioavailability of the extract which contributed to the total antioxidant capacity. GPx activity in both serum and liver was increased and this correlated with LHP level after treatment with 250 mg/kg of extract, but XO activity was significantly decreased after treatment with 500 mg/kg of the extract. Lack of difference between AOPP levels implied that there were no significant changes in oxidative damage of protein after treatment. **Conclusion:** This study clearly showed that *L. squarrosulus* mycelium antioxidant extract contains absorbable antioxidants that enter the circulating plasma and cause a significant acute increase in plasma antioxidant capacity. Thus, the water extract of *L. squarrosulus* mycelium, which can be obtained abundantly by liquid fermentation, may serve as an antioxidant ingredient in functional foods and nutraceuticals.

Keyword: Mushroom; Mycelia; CUPRAC; GPx; AOPP; Xanthine oxidase

