Antioxidant, Antiinflammatory, and Antitumor Activities of Pleurotus sajor-caju (Fr.) Sing.

Nayana Jose, T. A. Ajith, and K. K. Janardhanan
Anala Cancer Research Centre, Amala Nagar, Thiruvananthapuram, Kerala, India

Attempts have been made in many parts of the world to explore the use of mushrooms and their metabolites for the treatment of a variety of human ailments. Pleurotus species enjoy worldwide distribution and now rank second among the cultivated mushrooms of the world. Pleurotus sajor-caju (Fr.) Sing. is a commercially cultivated edible oyster mushroom.

Antioxidant, antiinflammatory, and antiinflammatory activities of the methanol extract of P. sajor-caju were evaluated. In vitro superoxide radical scavenging activity was determined by the reductive action of nitroblue tetrazolium (NBT) by superoxide radical generated from the photoreduction of riboflavin. Hydroxyl radical scavenging activity was assayed by estimating the thiobarbituric acid reacting substance (TBARS) produced as a result of degradation of deoxyribose by the hydroxyl radical generated from a Fe²⁺-ascorbate-EDTA- aqueous H₂O₂ system. Inhibition of lipid peroxidation was determined by estimating the TBARS formed by lipid peroxidation induced by Fe²⁺-ascorbate system in rat liver homogenate. Catechin was used as standard reference in the assays for hydroxyl radical scavenging and lipid peroxidation inhibiting activities. Antitumor activity was tested on a solid tumor model induced by Ehrlich’s ascites carcinoma (EAC) cell line in mice. Antiinflammatory activity was determined using carrageenan-induced acute and formalin-induced chronic inflammatory models in mice.

The methanol extract of P. sajor-caju showed significant hydroxyl radical scavenging and lipid peroxidation inhibiting activities; the concentrations required for 50% inhibition (IC₅₀) were 476.7 and 960.0 μg/ml, respectively. However, the extract did not show superoxide radical scavenging activity. The administration of the extract caused significant regression of solid tumor at concentrations of 250, 500, and 1000 mg/kg body weight. The extract was also significantly effective in reducing paw edema induced by carrageenan and formalin at concentrations of 500 and 1000 mg/kg body weight. In both, antitumor and antiinflammatory models, the activity of the extract was comparable to the standard reference drugs, cisplatin and diclofenac, respectively. The results thus suggest the therapeutic use of P. sajor-caju.