Pleurotus ostreatus, a Culinary Mushroom as a Functional Food to Treat Inflammatory Conditions

W.J.A.B.N. Jayasuriya[1], S.M. Handunnetti[2], Chandanie A. Wanigatunge[3], Gita H. Fernando[4], D. Thusitha U. Abeytunga[5], and T. Sugandhika Suresh[6]

[1]*B. Pharm. Degree Program, University of Sri Jayewardenepura, Sri Lanka;*
[2]*Institute of Biochemistry, Molecular Biology and Biotechnology, University of Colombo, Sri Lanka;*
[3,4]*Department of Pharmacology, University of Sri Jayewardenepura, Sri Lanka;*
[5]*Department of Chemistry, University of Colombo, Sri Lanka;*
[6]*Department of Biochemistry, University of Sri Jayewardenepura, Sri Lanka;*
E-mail: banukie_nirosha@yahoo.com,

Pleurotus ostreatus is a culinary-medicinal mushroom which is grown worldwide commonly known as American oyster. Various properties of *P. ostreatus* have been reported in literature such as antinociceptive, hypocholesterolaemic, antioxidant and antitumour effects. Our previous studies have reported the chronic hypoglycaemic effect of *Pleurotus*.[1] The anti-inflammatory potential of suspensions of freeze dried and powdered (SFDP) *P. ostreatus* in normal and alloxan- induced diabetic Wistar rats was investigated using the carrageenan-induced rat paw oedema model. The potency of *P. ostreatus* was compared with indomethacin. The SFDP *P. ostreatus* at doses of 125, 250, 500, 750 and 1000 mg/kg were orally administered to healthy Wistar rats. The mushroom showed significant ($p < 0.05$) reduction of paw oedema at doses of 250 – 1000 mg/kg which was comparable to that of indomethacin. Maximum inhibitory activity was demonstrated at the dose of 750 mg/kg (92 % inhibition). The SFDP *P. ostreatus* at doses of 500 and 1000 mg/kg showed long lasting activity at both early and late phases of carrageenan-induced rat paw oedema in diabetic rats. Hence, the mushroom exerted protective effects on the inflammatory pathologies in rats with diabetes. The possible mechanisms by which *P. ostreatus* mediates the anti-inflammatory activity were antihistamine activity, inhibition of cell migration to the site of inflammation, membrane stabilizing activity and inhibition of nitric oxide production. Promising anti-inflammatory activity of *P. ostreatus* warrants its application as a functional food during inflammatory conditions. This mushroom will be beneficial as a source of anti-inflammatory agents in the pharmaceutical industry.

Reference:

1. Jayasuriya WJABN, Suresh TS, Abeytunga DTU, Fernando GH and Wanigatunga CA. Oral hypoglycaemic activity of culinary- medicinal mushrooms *Pleurotus ostreatus* and *P. cystidiosus* (Higher Basidiomycetes) in normal and alloxan-induced diabetic Wistar rats. *Int J Med Mushr.* 14(4), 347-355, (2012).