Intrastrain Comparison of the Chemical Composition and Antioxidant Activity of an Edible Mushroom, Pleurotus giganteus, and Its Potent Neuritogenic Properties

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Abstract

Two strains of Pleurotus giganteus (commercial and wild) were tested for their ability to induce neurite outgrowth in rat pheochromocytoma (PC12) and mouse neuroblastoma 2a (N2a) cells. Treatment with the mushroom extracts resulted in neuronal differentiation and neuronal elongation, but not nerve growth factor (NGF) production. Linoleic acid (4.5-5.0%, w/w) which is a major fatty acid present in the ethanolic extract promoted NGF biosynthesis when augmented with low concentration of NGF (5 ng/mL). The two strains of mushroom were found to be high in protein (154-192 g kg⁻¹), total polysaccharides, phenolics, and flavonoids as well as vitamins B1, B2, and B3. The total phenolics present in the mushroom extracts were positively correlated to the antioxidant activity (free radical scavenging, ferric reducing power, and lipid peroxidation inhibition). To conclude, P. giganteus could potentially be used in well-balanced diet and as a source of dietary antioxidant to promote neuronal health.

Keywords

Keywords Plus: IN-VITRO ANTI-OXIDANT, NEURITE OUTGROWTH; AMINO-ACID; CULTIVATED MUSHROOMS; MEDICINAL MUSHROOMS; WILD MUSHROOMS; FATTY-ACIDS; SAJAR CAJU; OSTREATUS; EXTRACT

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