

Hypolipidemic and Antioxidant Effects of Mycelial Polysaccharides from *Calocybe indica* in Hyperlipidemic Rats Induced by High-Fat Diet

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Abstract : The aim of this study was to investigate the protective effect of *Hypsizygus ulmarius* polysaccharides (HUP) on reducing oxidative stress, cognitive impairment and neurotoxicity in D-galactose induced aging mice. Mice were subcutaneously injected with D-galactose (150 mg/kg per day) for 6 weeks and were administered HUP simultaneously. Aged mice receiving vitamin E (100 mg/kg) served as positive control. Chronic administration of D-galactose significantly impaired cognitive performance oxidative defence and mitochondrial enzymes activities as compared to control group. The results showed that HUP (200 and 400 mg/kg) treatment significantly improved the learning and memory ability in Morris water maze test. Biochemical examination revealed that HUP significantly increased the decreased activities of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione reductase (GR), glutathione-S-transferase (GST), mitochondrial enzymes-NADH dehydrogenase, malate dehydrogenase (MDH), isocitrate dehydrogenase (ICDH), Na⁺K⁺, Ca²⁺, Mg²⁺+ATPase activities, elevated the lowered total anti-oxidation capability (TAOC), glutathione (GSH), vitamin C and decreased the raised acetylcholinesterase (AChE) activities, malondialdehyde (MDA), hydroperoxide (HPO), protein carbonyls (PCO), advanced oxidation protein products (AOPP) levels in brain of aging mice induced by D-gal in a dose-dependent manner. In conclusion, present study highlights the potential role of HUP against D-galactose induced cognitive impairment, biochemical and mitochondrial dysfunction in mice. In vitro studies on the effect of HUP on scavenging DPPH, ABTS, DMPD, OH radicals, reducing power, B-carotene bleaching and lipid peroxidation inhibition confirmed the free radical scavenging and antioxidant activity of HUP. The results suggest that HUP possesses anti-aging efficacy and may have potential in treatment of neurodegenerative diseases.

Keywords : aging, antioxidants, mushroom, neurotoxicity

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