

**Protective effect of antioxidant extracts from *Pleurotus Pulmonarius* (fr.)
Singer (Grey Oyster Mushroom) against human low-density lipoprotein
oxidation and human aortic endothelial cells damage**

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Abstract

This study evaluated the *in vitro* antioxidant capacities of extracts from *P. pulmonarius* via Folin-Ciocalteu, 1,1-diphenyl-2-picrylhydrazyl (DPPH) free-radical-scavenging, metal-chelating, cupric-ion-reducing antioxidant capacity (CUPRAC), and lipid-peroxidation–inhibition assays. Extract compositions were determined by phenol-sulfuric acid, Coomassie Plus (Bradford) protein, Spectroquant zinc-, copper-, and manganese-test assays, and by LC/MS/MS and GCMS. The extract and assay types are associated with antioxidants measured. A methanol-dichloromethane extract was most potent for the Folin-Ciocalteu assay (4.94 mg/ml gallic acid equivalents); water fraction exhibited the greatest DPPH radical-scavenging activity (IC₅₀, 8.0 mg/ml); hot-water extraction showed the greatest metal-chelating activity (IC₅₀, 9.5 mg/ml), aqueous extraction was most potent for CUPRAC (A₄₅₉ = 2.37; 5 mg/ml) and hexane fraction had the greatest inhibition of lipid peroxidation (IC₅₀, 2.4 mg/ml). Carbohydrate, protein, and antioxidant metal-ion compositions varied in the extracts. LC/MS/MS and GC/MS showed that the extracts contained ergothioneine, ergosterol, flavonoid, and phenolic compounds. The selected potent extracts were evaluated for inhibitory effect against oxidation of human LDL (conjugated diene (CD) and thiobarbituric acid reactive substances (TBARS) formation assays) and protective effects against hydrogen peroxide-induced cytotoxic injury in human aortic endothelial cells. CA was deemed most potent for the prevention of human low-density lipoprotein (LDL) oxidation and endothelial membrane damage. Ergothioneine might be the responsible compounds responsible for the activities as supported by previous reports. Thus, *P. pulmonarius* may be a valuable antioxidant ingredient in functional foods or nutraceuticals.