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Research article

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The effect of oak wood crude extract on the antioxidant nature of Lentinula edodes fungi

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Abstract

Aim and Background: Lentinula edodes (Shiitake) mushroom have a significant pharmacological importance due to the presence of secondary metabolites with a miraculous effect on cancer treatment. The aim of this study was optimizing the production of antioxidant compounds by selecting the appropriate growth medium and investigating the affecting factors on the production of secondary metabolites.

Material and methods: The bank of fungal cells was prepared in a solid medium and then the samples were transferred to the liquid medium. Alcoholic extract of the samples was prepared. For antioxidant activity, two methods were used: 1- DPPH assay to investigate the capability of removing free radicals and 2- FRAP assay to investigate the ability of ferric ion reduction. Polysaccharide and phenol levels were measured using phenol-sulfuric acid and Folin-Ciocalteu methods, respectively. The cytotoxicity of the extract was measured by MTT assay.

Results: Optimization of antioxidant properties of Shiitake was done by introducing oak extract-enriched medium and the scavenging activity of DPPH radical and reduction potential for ferric ion increased by 5.24 and 1.9 times, respectively. Also, it has showed an appropriatecytotoxicity (IC_{50} value of 8 μg/ml) on the MCF-7 cell line.

Conclusion: The results represented that oak wood crude extract could be used in Shiitake growth medium as an appropriate elicitation of increasing antioxidant activity.

Keywords: Secondary Metabolite, Antioxidant, *Lentinula edodes*

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