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Abstract
Termitomyces eurhizus is a symbiotic fungus found in tropical Africa and Asia. Termites cultivate this fungus in their nest as food. This rare mushroom is extremely tasty and its fruit bodies so far can not culture successfully.

In this study, the optimum growth conditions of T. eurhizus are at 30℃ in pH6, and the carbon and nitrogen sources are fructose 2.5% and peptone 1%. The extracts of fruit bodies and the culture shacking in flask were carried out and the biological activities analyzed, inclusive of polysaccharides product, antibiotic activity, antioxidant activity and the inhibition of antitumor cells.

The results indicated that the optimum carbon and nitrogen sources of T. eurhizus to produce exopolysaccharides up to 1.66 mg/ml are sucrose 2.5% and peptone 1% at 17th day after fermentation. The highest concentration of polysaccharides is extracted from mycelia of T. eurhizus up to 0.3 mg/ml.

The antibiotic activity showed that the culture fermentation, methanolic and ethanolic extracts from dry fruit bodies, as well as mycelia (50mg/ml) could inhibit the sporulation of Fusarium moniliforme and Penicillium citrium.

The antitumor cells activity showed that methanolic and ethanolic extracts from fruit bodies and mycelia (5mg/ml) are higher than 50％ against fibrosarcoma cell (HT-1080).

The antioxidant activity showed that the extraction from fruit bodies of T. eurhizus with hot methanol (10mg/ml) has scavenging effects 96% analyzed by 1,1-diphenyl-2-picryl hydrazyl radical (DPPH) method. The reduction activity of the extraction from fruit bodies of T. eurhizus with hot methanol (10mg/ml) is 2.8 at 700 nm absorbance.
Advisory Committee Chee-Jen Chen - advisor

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