深層培養桑黃火木層孔菌(*Phellinus igniarius*)生成菌絲體及胞外多醣體最適化條件之研究

羅國晏 阮進惠 顏文義 閻立平*

東海大學食品科學系

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摘 要

本研究以能生成具生物活性胞外多醣體之桑黃火木層孔菌(*Phellinus igniarius* PI)爲試驗菌種，搖瓶培養（30 ℃/150 rpm/7 days）於含50ml基礎培養基（葡萄糖10 g/l，蛋白腺5 g/l，KH_2PO_4 3 g/l，$MgSO_4 \cdot 7H_2O$ 1 g/l及起始pH 5.6）之250 ml三角錐瓶中，再以單因子變動試驗探討改變基礎培養基組成（如碳源、氮源、生長因子、碳氮比及起始pH等）對桑黃火木層孔菌生成菌絲體及胞外多醣體產量之影響。結果顯示以修飾培養基（葡萄糖10 g/l，酵母萃取物10 g/l，玉米浸液3 g/l，KH_2PO_4 3 g/l，$MgSO_4 \cdot 7H_2O$ 1 g/l，碳氮比＝1.0及起始pH 5.4）進行搖瓶培養後，其最高菌絲體產量（9.39 g/l）及胞外多醣體產量（1.93 g/l）分別可增加爲基礎培養基產量之2.4及10.1倍。

關鍵詞：桑黃火木層孔菌(*P. igniarius*)、菌絲體、胞外多醣體、深層培養*通

Optimization of Submerged Culturing Condition for Production of Mycelial Biomass and Exopolysaccharide by *Phellinus igniarius*

Kuo-Yen Lo, Jin-Hwei Rwan, Wen-Yi Yen, and Lipyng Yan*

Department of Food Science, Tunghai University, Taichung 407, Taiwan, R.O.C.

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Abstract

Phellinus igniarius, a bioactive exoploysaccharide (EPS)-producing medicinal mushroom, was cultured in a 250 ml shake-flask containing 50 ml of basal medium (glucose 10 g/l, peptone 5 g/l, KH_2PO_4 3 g/l, and $MgSO_4 \cdot 7H_2O$ 1 g/l , initial pH 5.6) and incubated at 30 ℃/150 rpm for 7 days. The effect of submerged culturing condition (i.e. carbon and nitrogen sources, growth factors, C/N ratio, and initial pH) on mycelial biomass and EPS production was investigated using one-factor analysis method. The maximum production of both mycelial biomass and EPS could be obtained by adopting a modified medium containing glucose 10 g/l, yeast extract 10 g/l, corn steep liquor 3 g/l, C/N ratio=1.0, and initial pH 5.4. Under this optimized culturing condition, mycelial biomass (9.39 g/l) and EPS (1.93 g/l) increased 2.4 and 10.1 times, respectively, as compared with those of the basal medium.

Key words：*Phellinus igniarius*,
mycelial biomass, exopolysaccharide,
submerged culture.