Production of Hypocholesterolemic Agent by Monascus pilosus in Solid-Liquid Culture

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ABSTRACT

In this study, monacolin K was produced by Monascus pilosus CCRC 31527in solid-liquid culture. Several different strategies of manipulatingvariables, such as culture temperature, initial pH and volume of medium,carbon and nitrogen source, were investigated. It was found that the optimumculture temperature was between 25 oC and 30 oC. The optimum media in theculture of 25 oC were found to be pH 8.0 and 25 ml; while those in theculture of 30 oC were to be pH 5.0 and 125 ml. Furthermore, rice powder wa sconsidered to be the best carbon source in giving the maximum yield ofmonacolin K. The maximum yield was 7.178(10-3 mg/ml in the culture of 25 oC.The appropriate organic nitrogen source was changed with the culturetemperature. Among the nitrogen sources tested, yeast extract and peptonewere found to be suitable for monacolin K production in the culture of 25 oCand 30 oC, respectively. This research demonstrated that the solid-liquidculture was worth improving the yield of monacolin K. Response surface methodology was used to optimite monacolin K productionby M. pilosus CCRC 31527 in flask culture. Analysis of variance indicatedthat the interaction between operation variables (yeast extract andglycerin) in the quadratic model was only significant. The concentration ofyeast extract at the design center point was recommended to be at 0.5 g/L,while the concentration of glycerin was at 120 ml/L and the concentrationsof both rice starch and glucose were 30 g/L. For this kind of complexmedium, it would be good for monacolin K production by M. pilosus CCRC31527.

Keywords : 紅麴菌 ; 回應曲面法 ; 固液態培養 ; 膽固醇合成抑制劑

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