**Production of Lovastatin under Submerged Fermentation by *Aspergillus terreus***

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**Abstract**

Atherosclerosis induced cardiovascular disease is the major cause of death globally. Hypercholesterolemia is acclaimed as a causative factor in the progression of atherosclerosis. Lovastatin, a secondary metabolite is a potent and promising cholesterol lowering drug, isolated from fungi *Aspergillus terreus* and *Monascus ruber*. Successful production of lovastatin requires in-depth knowledge of its growth morphology and downstream processing involved. One of the crucial factors for lovastatin production is type of substrate being provided. Therefore, in this present study we investigated the utilization of various carbon and nitrogen sources by *Aspergillus terreus* ATCC10831 in submerged fermentation followed by extraction in later stage. This serve a critical role by being precursor and energy source for synthesis of lovastatin. To screen out the suitable carbon substrate, different carbon sources comprising monosaccharides, disaccharides and polysaccharides were considered. Fermentation in shake flasks was carried out for 14 days. Quantitative estimation of lovastatin was performed by HPLC with UV photodiode array detector. Slowly metabolized carbon like lactose produced very low lovastatin titer (5 mg/L) irrespective of its initial concentration. Other carbon substrates like mannose, maltose, xylose, and fructose resulted in moderate yield. Galactose was found to be the most effective in achieving highest lovastatin titer (68 mg/L) followed by sucrose (45 mg/L). Hence galactose was chosen to be final carbon source for further optimization studies. Different nitrogen sources such as yeast extract, soyabean meal, peptone and ammonium nitrate were evaluated. Yeast extract usage in production media led to highest titer of lovastatin (65.5mg/L). Purification of lovastatin was accomplished through solvent extraction method. Ethyl acetate and methanol were applied as solvent. Liquid extraction process was carried out at reduced pH (3) and elevated temperature (40⁰C). Ethyl acetate showed higher selectivity towards lovastatin than methanol owing to different affinities.

***Keywords:*** *Lovastatin, Aspergillus terreus, submerged fermentation, optimization, solvent extraction*

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