Isolation and Screening of Lovastatin production using fungal isolate from soil samples under solid state fermentation

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ABSTRACT

Lovastatin, also known as Monocolin K, is a kind of fungal metabolite. these are classified as natural, synthetic or semi synthetic derivatives of natural statins. Lovastatin is a natural statin that serves as a competitive inhibitor of 3-hydroxy-3-methylglutaryl co-enzyme A reductase (HMG-CoA), a cholesterollevel limiting enzyme that is effective in the treatment of hypercholesterolemia in different mammalian organisms, including humans.Lovastatin is produced mainly by submerged fermentation, a few works are carried out on fermentation in the solid state (SSF). Lovastatin is a compound that accumulates mainly in mycelia and is intracellular. It provides an opportunity to utilise agro-industrial residues for the manufacture of value added products. In the current research, the production of lovastatin was evaluated in 42 different fungal strains isolated from different fields and marine soils, out of which 27 fungal strains showed potential for lovastatin production. Of all the isolates G5 Strain exhibited highest zone of inhibition (22mm). Among all the substrates taken like (coconut cake, rice bran, wheat husk, soya bean powder and ground nut shell), Coconut oil cake is proved to be potential substrate producing a Maximum yield of 6.5 (mg/g). Different parameters were optimized using solid state fermentation (SSF) include Incubation time (7days), Moisture content (60% v/w), Inoculum volume (50% v/w), pH (5.0) and Temperature (30°C). The maximum lovastatin yield of 10.69mg/g was obtained at optimum conditions.

Keywords: Lovastatin, Fungal (G5) strain, Solid state fermentation, HMG CoA Reductase A. Optimization.



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