Novel Pravastatin-Producing Penicillium janthinellum Strain Isolated from Soil

Emine Seydametova
Faculty of Chemical and Natural Resources Engineering, Universiti Malaysia Pahang, Kuantan, Pahang State Malaysia.
Institute of Microbiology, Academy of Sciences of Uzbekistan, Tashkent, Uzbekistan.

ABSTRACT
Hyperlipidemia is a main risk factor for coronary heart disease and stroke. The lipid-lowering drug, pravastatin, is currently obtained by the microbial biotransformation of compactin (mevastatin) to pravastatin. It is clear that pharmaceutical industry has to date utilized only a very minor portion of nature's microbial arsenal for the discovery of pravastatin. Therefore, the search for microfungi which is able to produce this statin directly has gained increasing importance. In this study, a total of 33 soil fungal cultures were isolated from nine sampling sites in oil palm plantations in Malaysia and tested for their potential to produce pravastatin. The cultures were cultivated in submerged fermentation followed by screening for statin production using high-performance liquid chromatography. The best pravastatin producer was identified to species level using morphological characteristics and molecular biological approaches. From the tested cultures, 18 fungal isolates were able to produce pravastatin directly by fermentation. Among these, the isolate ESF20P was the best producer, with a yield of 15.8 mg/l pravastatin. Molecular identification of this strain showed the highest homology (98%) with Penicillium janthinellum.

KEYWORDS: Microfungi, pravastatin, screening, soil.

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