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Genome shuffling of mangrove endophytic *Aspergillus luchuensis* MERV10 for improving the cholesterol-lowering agent lovastatin under solid state fermentation

Hind AA Al-Zahrani, Mervat Morsy Abbas Ahmed El-Gendy and Ahmed Mohamed Ahmed El-BondLly
University of Jeddah, Saudi Arabia

In the screening of marine mangrove derived fungi for lovastatin productivity, endophytic *Aspergillus luchuensis* MERV10 exhibited the highest lovastatin productivity (9.5 mg/Eds) in solid state fermentation (SSF) using rice bran. *Aspergillus luchuensis* MERV10 was used as the parental strain in which to induce genetic variability after application of different mixtures as well as doses of mutagens followed by three successive rounds of genome shuffling. Four potent mutants, UN6, UN28, NE11, and NE23, with lovastatin productivity equal to 2.0-, 2.11-, 4.95-, and 2.11-fold higher than the parental strain, respectively, were applied for three rounds of genome shuffling as the initial mutants. Four hereditarily stable recombinants (F3/3, F3/7, F3/9, and F3/13) were obtained with lovastatin productivity equal to 10.8, 57.0, 49.7, and 11.0 mg/gds, respectively. Recombinant strain F3/7 yielded 57.0 mg/gels of lovastatin, which is 6-fold and 2.85-fold higher, respectively, than the initial parental strain and the highest mutants UN28 and NE23. It was therefore selected for the optimization of lovastatin production through improvement of SSF parameters. Lovastatin productivity was increased 32-fold through strain improvement method included mutations and three successive rounds of genome shuffling followed by optimizing SSF factors.

Biography

Hind AA Al-Zahrani is currently working as a Research Scientist at University of Jeddah, Saudi Arabia.

hend.alzahrani.1@gmail.com

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