Expression of organic solvent stable lipase from Staphylococcus epidermidis AT2.

ABSTRACT

An organic solvent tolerant lipase gene from Staphylococcus epidermidis AT2 was successfully cloned and expressed with pTrcHis2 in E. coli TOP10. Sequence analysis revealed an open reading frame (ORF) of 1,933 bp in length which coded for a polypeptide of 643 amino acid residues. The polypeptide comprised of a signal peptide (37 amino acids), pro-peptide and a mature protein of 390 amino acids. Expression of AT2 lipase resulted in an 18-fold increase in activity, upon the induction of 0.6 mM IPTG after a 10 h incubation period. Interestingly, this lipase was stable in various organic solvents (25% (v/v), mainly toluene, octanol, p-xylene and n-hexane). Literature shows that most of the organic solvent stable bacterial lipases were produced by Pseudomonas sp. and Bacillus sp., but very few from Staphylococcus sp. This lipase demonstrates great potential to be employed in various industrial applications.

Keyword: Staphylococcus epidermidis; Prokaryotic system; Organic solvent stable.