Molecular investigation of a gene encoding organic solvent-tolerant alkaline protease from Pseudomonas aeruginosa strain K

ABSTRACT

A gene encoding an organic solvent-stable protease was amplified from Pseudomonas aeruginosa strain K by polymerase chain reaction using consensus primers based on multiple sequence alignment of alkaline and metalloprotease genes from Pseudomonas species. The gene, which consisted of 1440 bp nucleotides and deduced 479 amino acid residues, was successfully expressed in pGEX-4T-1 expression system in the presence of 1.0 mM IPTG, after an incubation of 6 h at 37 degrees C. Under these conditions, the recombinant strain K protease was, subsequently, released into the periplasm of E. coli BL21 (DE3) with an optimum proteolytic activity detected at 1.0112 U/ml. To date, this is the first reported expression of alkaline protease (aprA) with such remarkable property in Escherichia coli.

Keyword: Pseudomonas aeruginosa strain K; Organic solvent-tolerant protease gene; aprA; Expression