

Organic solvent tolerant proteases

ABSTRACT

The potential advantage of using organic solvents for enzymatic reactions was due to the shift of reaction equilibrium of hydrolytic enzymes towards completion of the synthetic reaction. However, the use of these solvents normally led to loss of most enzyme activities. Therefore, which were naturally stable in the presence organic solvents, were very useful for synthetic reactions. In our laboratory, several organic solvent-tolerant protease producers have been successfully isolated from benzene-toluene-xylene-ethylbenzene (BTEX) tolerant bacteria. The formulation of physical and nutritional factors affecting the enzymes production have led to the optimized production of proteases from both *Pseudomonas aeruginosa* strain K and *Bacillus cereus* 146, which were stable in organic solvents with Po/w values between 4.0 and 8.8. Due to these remarkable properties, strain K protease with a molecular size of 51.0 kDa was further purified by two purification steps and characterized. Complete nucleotide sequences from *Pseudomonas aeruginosa* strain K and *Bacillus pumilus* 115b were also obtained and analyzed to gain better understanding of its nucleotides which responsible for the enzymes biocatalytic interaction with solvent environment.

Keyword: Proteases; Organic solvent