

A new thermostable and organic solvent-tolerant lipase from *Aneurinibacillus thermoaerophilus* strain HZ

ABSTRACT

A thermostable and organic solvent-tolerant lipase produced by *Aneurinibacillus thermoaerophilus* strain HZ was purified and characterised. The lipase was purified to apparent homogeneity with two steps: anion exchange chromatography on Q-Sepharose and gel filtration on Sephadex-G75. A final specific activity of 43.5 U/mg was obtained with an overall recovery of 19.7% and 15.6 purification fold. The molecular mass of the HZ lipase was estimated to be 50 kDa. The optimum pH for the activity of the purified HZ lipase was 7.0. The stability showed a broad range of pH values between pH 4.0 and 9.0 at 30°C. The purified HZ lipase exhibited an optimum temperature of 65°C with a half-life of 3 h and 10 min at 65°C. The activity of the purified HZ lipase was stimulated in the presence of Ca²⁺. Organic solvents such as dimethyl sulfoxide (DMSO), methanol, n-tetradecane and n-hexadecane enhanced the lipase activity. Studies on the effect of oil showed that the lipase preferred natural oil, such as sunflower oil, over synthetic substrates.

Keyword: *Aneurinibacillus thermoaerophilus* strain HZ; Thermostable lipase; Organic solvent tolerant; Purification; Characterisation