ABSTRACT

The present research work is concerned with the preliminary characterization and optimization of IPTG induced expression of recombinant α-amylase from *Thermotoga* sp. in *E. coli* BL21 Codon plus. The temperature (90°C), buffer (50 mM Tris Cl), pH (8.2), substrate concentration (1%) and incubation time (10 min) were found to be optimum. Among 11 different metal ions tested, only Ca^{+2} increased the activity of recombinant enzyme by 1.04 fold so, it was Ca^{+2} dependent α-amylase. This cloned enzyme was highly thermostable as it retained 80.16% of its residual activity even after keeping at 90°C for 16 hrs. The expression of the cloned gene was high when host cells *i.e., E. coli* were kept at 42°C immediately after induction followed by incubation at 37°C for 72 hr. The maximum expression of recombinant α-amylase i.e. (11.7±0.35 U/ml/min) was obtained when *E. coli* BL21 Codon Plus cells, grown to 0.7 OD_{600}, were given induction with 1.0 mM IPTG.