Abstract

In this study, β-lactamase gene of *Thermotoga naphthophila* RKU-10 was cloned and expressed into *E. coli* BL21 (DE3). pET21a (+) was used as cloning and expression vector. An ORF of 741 bp from β-lactamase gene was used for amplification. Amplification was carried out at annealing temperature of 58°C. Following amplification, double restricted amplified gene ligated with double restricted pET21a (+) was transformed into E. coli BL21 (DE3). After successful transformation, further expression was studied followed by 0.5mM IPTG induction. The recombinant β-lactamase was partially purified by using heat treatment method. The molecular mass of protein was estimated to be almost 28 kDa by SDS-PAGE analysis. B-lactamase was found to be substrate specific. The maximum activity was found at 80°C on pH of 8.0. β-lactamase was found to be stable in pH ranging from 5-9. The results found from current study made novel thermophilic β-lactamase of *Thermotoga naphthophila* as an important applicant for industrial uses.