# ABSTRACT

A thermophilic β-glucosidase gene of a eubacterium *Clostridium thermocellum* was expressed in *E.Coli* strain BL-21. The cloned enzyme was purified by heat treatment, ammonium sulfate precipitation, anion exchange chromatography followed by cation exchange chromatography using UNOsphere Q and S column. The specific activity for the purified enzyme was found to be 227964.28 U/mg and its molecular weight was determined as 51.8KDa on SDS-PAGE. The enzyme worked best at pH 6.0 and temperature of 60°C. $Mn^{+2}$, $Ca^{+2,}$ $Co^{+2}$, EDTA and $Pb^{+2}$ significantly increased the enzyme activity. $Cd^{+2}$, $Mg^{+2}$, $Zn^{+2,}$ $Cu^{+2}$, $Fe^{+2}$ on the other hand had an inhibitory effect on the activity whereas $Hg^{+2}$ drastically reduce the activity of purified enzyme. The estimated *Km* and Vmax values for p-nitrophenyl β-D-glucopyranoside were 6.94 mM and 26945 μmol/mim/mg respectively. It showed maximum activity with pNP-β-D-fucopyranoside on incubation with synthetic glucosides. Because of its maximal activity at higher temperature, this enzyme display potential as a catalytic tool for biotechnological application.