

## ABSTRACT

The DNA of *Anaerocellum thermophilum* was amplified by using endo-1,4- $\beta$ -xylanase specific primers and the product of 1014bp was visualized on the gel. The gene was cloned in pTZ57R/T vector with *E. coli* DH5 $\alpha$  as a host strain. The positive clones were selected through colony PCR method. The gene was sub-cloned in pET28a(+) expression vector with *E. coli* BL21 Codon plus as a host strain. The expression was checked on SDS-PAGE and the band with molecular weight of 40kDa was observed on the gel. The activity of enzyme was measured against 2% beechwood xylan substrate but the enzyme gives no activity with this substrate. The activity of enzyme was observed against CMC, pNP- $\beta$ -D-xylopyranoside, pNP- $\beta$ -D-glucopyranoside and pNP- $\beta$ -D-galactopyranoside substrates. The enzyme was active towards pNP- $\beta$ -D-galactopyranoside substrate and the activity of enzyme was found to be 7570  $\mu$ mol/mL/min and specific activity was 1051.3 U/mg. Hence the enzyme was  $\beta$ -galactosidase which was different from the reported enzyme endo-1,4- $\beta$ -xylanase in NCBI.