ABSTRACT:

The aim of this research was to enhance the production of a thermostable xylanase cloned from *Caldicellulosiruptor krontskyenesis* in a mesophilic host *E. coli* employing various cultivation and induction strategies. Enzyme production was enhanced by 3 folds, from an initial value of 7.69 U/ml/min ($p \leq 0.05$) to 23.97 U/ml/min ($p \leq 0.05$) after optimization of process parameters. Heat shock at 42°C for 1 hr was given before induction with 0.5mM IPTG in ZYBM9 medium of pH 7. Maximum enzyme production was achieved extracellularly, after 72 hrs of incubation. Incubation temperature of 37°C, agitation of 150 rpm and inoculum size of 1.5% were also found to be best among the parameters used. These results were confirmed by the application of fermentation kinetics. Maximum product yield co-efficient (dp/dx) i.e. 23.97 U/ml/mg ($p \leq 0.05$) and specific product co-efficient i.e. 20.06 U/ml/hr ($p \leq 0.05$) was obtained.