ABSTRACT

Xylose isomerase (XI; EC 5.3.1.5), often known as glucose isomerase (GI), catalyses the reversible conversion of D-Xylose to D-Xylulose *in vivo* as well as causes the reversible isomerization of D-Fructose to D-Glucose *in vitro*. Xylose isomerase was produced from locally isolated *Thermus aquaticus* strain. *Thermus aquaticus* produced 43.19 (U/ml/min) units of xylose isomerase under normal conditions when 1% xylose was used as carbon source in the medium. Optimum enzyme activity was 80.01 (U/ml/min) as detected when the medium containing 3% xylose as a carbon source, 0.3% NaCl, 0.1% yeast extract and in the presence of 0.5mM (Co^{2+}) at pH 7.0 and temperature was 70°C. Intracellular xylose isomerase was purified using ammonium sulphate precipitation after optimization. By using SDS-PAGE molecular weight of intracellular xylose isomerase was determined that is approximately 49kDa. The purified Xylose isomerase enzyme optimally act at 80°C. The purified enzyme retains 82% and 65% of its activity after incubation at 50°C and 60°C, respectively for 4h. The xylose isomerase was optimally active at pH-7.0 and for 30 mins at pH 6.5 to 7.5, the enzyme retains 90-95% of its activity. The highest increase in XI activity was seen with 0.5mM (Co^{2+}), compared to the other metal ions examined.