

## Isolation and Identification of Xylanase Producing Bacterial Strain and Kinetic Properties of Xylanase Produced

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**Abstract:** This study focuses on the isolation and identification of xylanase producing bacteria, and characterization of xylanase which is produced by the selected isolate. Bacterial strains were isolated from corncob decaying soil and the highest xylanase producing isolate (CSI) was selected. Strain CSI produced highest xylanase activity [ $328.0(\pm 0.7)\text{U mL}^{-1}$ ] in 32 h while growth showed lag phase up to 8 h and log phase up to 16h at pH 8.5 and 45°C. The isolate was identified as *Bacillus pumilus* based on biochemical characterization and 16S rDNA amplification. Crude xylanase showed zero order kinetics for 4min and gave highest activity [ $301.5(\pm 0.26)\text{U mL}^{-1}$ ] at 55°C and pH 8.4. Michaelis constant of the crude enzyme to soluble Birchwood xylan was  $7.1\text{g L}^{-1}$  and  $V_{\text{max}}$  value was  $1666\ \mu\text{mol mL}^{-1}$  at 55°C and pH 8.4. In the absence of additives, at 30min the xylanase retained 5 ( $\pm 0.92$ )% of its initial activity at 60°C and pH 8.4 while at 55°C and pH 8.4, it retained 38 ( $\pm 1.0$ )% of its initial activity. *B. pumilus* xylanase produced xylotriose as the final hydrolysed product of Birchwood xylan. Based on the results, the isolate selected and identified as *B. pumilus*, produced xylanase which may be useful in industrial applications to remove hemicelluloses.

**Keywords:** Identification, Isolates, Kinetic Properties, Stability, Xylanase