

## Kinetic Studies of the Crude Xylanase Produced by *Bacillus pumilus*

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Xylanase showing better stability at alkaline pH and higher temperatures has potential applications in several industrial processes. The objective of this study is to determine the kinetic properties and stability of xylanase produced by *Bacillus pumilus*. *Bacillus pumilus* which can grow and produce xylanase above 40°C and pH 9.0 was selected for this study. The xylanase produced at pH 9.0 and 45°C was used for the kinetic studies. Crude xylanase showed zero order kinetics for 10 minutes. When the activity of crude xylanase was measured at different temperatures ranging from 40 to 95°C at pH 9.0, the optimum temperature for the activity of the crude enzyme was 60°C. The optimum pH was 9.0 for the enzyme at 60°C with 20gL<sup>-1</sup> xylan. Michaelis constant for the crude enzyme to soluble xylan was 6.66gL<sup>-1</sup> and Vmax was 2.70 UmL<sup>-1</sup> at pH 9.0 and 60°C. The enzyme was stable for at least 30 minutes at pH 9.0 and at 60°C. The half-life of xylanase, at pH 8.0, 9.0 and 10.0 and 60°C, was 10.4, 11.6 and 8.2 minutes respectively indicating that the xylanase is more stable at pH 9.0. The half-life of xylanase was 16.7, 11.6 and 7.8 minutes at 50, 60 & 70°C at pH 9.0, indicating that the xylanase is stable at 50°C. The xylanase produced by *Bacillus pumilus*, which showed high activity in alkaline pH showed highest half-life at 50°C.