

Kinetic studies of the purified 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 purified xylanase obtained from *Bacillus pumilus*. *Bacillus pumilus* which can grow and produce xylanase above 40 °C and pH 9.0 was selected for this study. The purified xylanase was used for the kinetic studies. Purified xylanase showed zero order kinetics for 10 minutes. When the activity of purified xylanase was measured at different temperatures ranging from 40 to 95°C at pH 9.0, the optimum temperature for the activity of the purified enzyme was 60°C. The optimum pH was 9.0 for the enzyme at 60°C with 20 gL⁻¹ xylan. Michaelis constant for the purified enzyme to soluble xylan was 2.34 gL⁻¹ and Vmax was 2.80 U mL⁻¹ 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 purified xylanase was 18.82, 21.03 and 15.30 minutes at pH 8.0, 9.0 and 10.0 and 60 °C indicating xylanase is more stable in pH 9.0. The half-life of xylanase was 48.64, 25.57 and 16.25 minutes at 50, 60 and 70 °C and pH 9.0, indicating that the xylanase is stable at 50 °C. The purified xylanase obtained from *Bacillus pumilus*, which showed high activity in alkaline pH (9.0 -12.0) showed highest half-life at 50 °C.

Key words: *Bacillus pumilus*, Half life, Kinetic properties, Michaelis constant, Vmax.