

INVESTIGATION ON THE FACTORS AFFECTING THE ACTIVITY OF XYLANASE FROM BACILLUS PUMILUS

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In this study, the influences of physical conditions and some additives on the activity of crude xylanase produced by *Bacillus pumilus* were determined. Crude xylanase showed zero order kinetics for 4 min and gave highest xylanase activity [301.5 (\pm 0.26) U/mL-1] at 55 °C and pH 8.4. Michaelis constant of the crude enzyme to soluble Birchwood xylan was 7.1 g/L and Vmax value was 1666 μ mol/mL-1 at 55 °C and pH 8.4. Sugars such as glucose, fructose, xylose, arabinose and sucrose inhibited the activity of the xylanase. Among these sugars hexoses such as glucose and fructose highly inhibited the xylanase activity than the pentoses such as xylose and arabinose. CaCl₂ enhanced the (387.9 U/mL-1) xylanase activity than MnCl₂ [322.1(\pm 0.26) U/mL-1], while ZnCl₂ [211.8(\pm 1.5) U/mL-1], MgCl₂ [297.3(\pm 1.4) U/mL-1] and HgCl₂ [16.8(\pm 1.6) U/mL-1] inhibited the xylanase activity. The activity of xylanase was enhanced by CaCl₂ and MnCl₂ by 1.29 and 1.07 folds respectively when compared to the control which had no metal ions. Based on this study the xylanase from *B. pumilus* has potential use in industrial applications to remove hemicelluloses, as it can function in the alkaline pH, above 55°C, and less affected by the metal ions which are commonly present in water.

Keywords: Metal ions, pH, Sugars, Temperature, Xylanase.

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