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Production and properties of xylanase from thermophilic *Bacillus pumilus*

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The thermophilic, xylanolytic bacterium was isolated from corncob decaying soil. The results of 16s rDNA sequence comparisons indicated that the isolate was closely related to *Bacillus pumilus*, exhibiting 99 % sequence similarity. Studies on the xylanase characterization from liquid culture with Birch wood xylan revealed that the enzyme produced highest xylanase activity [328.0 (±0.7) UmL^{-1}] at 45° C and pH 8.5. Crude xylanase from *B. pumilus* showed zero order kinetics for 4 min at an optimum temperature of 55° C, pH of 8.4 and at this optimum condition xylanase from *Bacillus pumilus* exhibited highest activities of 301.5 (±0.26) UmL^{-1}. Michaelis constant of the crude enzyme to soluble Birchwood xylan was 7.1 gL^{-1} and the Vmax value was 1666 $\mu molmL^{-1}$ at 55 °C and pH 8.4. In the absence of additives at 30 min the xylanase retained 5 (±0.92) % of its initial activity at 60° C and pH 8.4 while at 55° C and pH 8.4, it retained 38 (±1.0)% of its initial activity. At pH 8.0 and 9.0, decrease of about 54.4 and 79.4 % of its initial activity was observed respectively. Therefore xylanase produced by *B.pumilus* may be useful in industrial applications to remove hemicelluloses.

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