Characterization of a Novel Membrane Bound Xylanase from Bacillus thermoamylovorans MG73

Keywords: xylanase, Bacillus thermoamylovorans, membrane bound, zymogram bound thermostable xylanase, as the first Gram positive membrane bound xylanase ever reported.

In this thesis, a novel thermostable xylanase was isolated from a xylan-utilizing bacterial strain Bacillus thermoamylovorans MG73. The xylanase was purified and characterized. Unlike other bacillus strain that secrete the xylanase out to the living environment, the xylanase found in this thesis is a membrane-bound xylanase. In order to understand the approximate molecular weight of the xylanase, zymogram analysis was applied and the molecular weight of this novel xylanase was found to be around 60 Kda. To further characterize the novel xylanase, this thesis also tried to determine the influences of temperature, pH, thermostability and ions concentration on the enzyme activity. The results showed that the enzyme retained its activity at temperatures up to 100°C and displayed optimal activity at pH 10. Metal ions, such as Ca2+ and Ni2+, however, higher ion concentrations will reduce the xylanase activity. In conclusion, this thesis revealed a novel membrane bound thermostable xylanase. This enzyme has potential applications in the industrial production of xylanase.

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M. and Sreeramulu, K. 2012. Production of alkaliphilic, halotolerant, thermostable cellulase free xylanase by Bacillus halodurans PPKS-2 using


Xylanase and beta-glucanase supplementation improve conjugated bile acid fraction in intestinal contents and increase villus size of small intestine


antioxidant activity from wheat flour arabinoxylan. European Journal of Nutrition, 42, 55-60. 20. Liu, B., Zhang, N., Zhao, C., Lin, B., Xie, L. and


Xylanases, xylanase families and extremophilic xylanases. FEMS Microbiol Rev, 29, 3-23. 11. Combet-Blanc, Y., Ollivier, B., Streicher, C., Patel, 


REFERENCES