Suchanya Aroonsantiroj 2008: Purification and Characterization of Xylanolytic Enzyme from *Pleurotus ostreatus* DOA 10. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Assistant Professor Suttipun Keawsompong, Ph.D. 103 pages.

The optimum temperature of ß-xylosidase from *Pleurotus ostreatus* DOA 10 was 60 ˚C and optimum pH was 5.0-5.5. The enzyme was stable at 40 ˚C for 60 minutes and pH 4.0-5.5. The maximum specific activity of ß-xylosidase in liquid culture of *P. ostreatus* DOA 10, for a period of 15 days, reached 1.248 U/mg protein on day 7^{th}. When the *P. ostreatus* DOA 10 was grown on sawdust for 50 days, it showed the maximum specific activity of ß-xylosidase on day 20^{th} with specific activity of 0.055 U/mg protein, during mycelium growth phase. Induction ability of various carbon sources was determined. The result revealed that sorbose was the best inducer for ß-xylosidase. The purified xylanase Xyn1 of *P. ostreatus* DOA 10 was obtained from ultrafiltration (10 kDa cutoff), gel filtration (Sephacryl S200) and anion exchange chromatography (Q source). It was purified 243-fold at 1.92% recovery with an estimated molecular weight of 54 kDa. The Xyn1 had optimum temperature at 45 ˚C and optimum pH at 3.5-4.5. It was stable at pH 3.0-8.0 and temperature at 40 ˚C for 60 minutes. Substrate specificity test revealed that Xyn1 was highly specific to xylan from birchwood, oat spelt and larchwood but no activities were detected against CMC, avicel, locust bean gum and *p*-nitrophenyl-ß-D-xylopyranoside. The Michaelis-Menten constant (K_m) and Maximun velocity (V_{max}) of Xyn1 against xylan from birchwood and oat spelt were 0.6101 and 0.4139 mg/ml and 0.5843 and 0.5693 μg/ml/min, respectively.

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