

Thesis Title	Study on the production and properties of xylanolytic enzymes from <i>Bacillus circulans</i> B6
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#### Abstract

*Bacillus circulans* B6 produces extracellular xylanolytic enzymes such as xylanases (at least 16 types),  $\beta$ -xylosidase, arabinofuranosidase and acetyl esterase and cellulolytic enzymes such as carboxymethyl cellulases (at least 9 types), and avicelase when grown in xylan medium. The induction of xylanolytic and cellulolytic enzymes by various carbon sources indicated that  $\beta$ -xylosidase was induced by xylose and xylan. Arabinose and xylan were inducers of arabinofuranosidase. Some of xylanases and carboxymethyl cellulase were constitutive enzymes and some were inducible enzymes. Whereas acetyl esterase was constitutive enzymes. The enzymes bound to insoluble xylan and cellulose were two xylanases (27 and 44 kDa) and one carboxymethyl cellulase (195 kDa). The 27 kDa xylanase bound only to insoluble xylan. The 44 kDa xylanase and 195 kDa carboxymethyl cellulase bound to both insoluble xylan and cellulose. The end products from xylan digestion were  $x_2$  to  $x_6$  and larger xylo-oligosaccharides suggested endoxylanase activities. Crude enzyme from *Bacillus circulans* B6 hydrolyzed xylan completely to xylose as the end product

Keywords: *Bacillus circulans* B6/ xylanolytic enzymes/ cellulolytic enzymes/ induction / binding