Khampheng Phothichitto 2006: Isolation and Characterization of Mannanase Producing Microorganism. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Assistant Professor Suttipun Keawsompong, Ph.D. 82 pages. ISBN 974-16-2631-2

Mannan is used in many industries and known to be the major polysaccharides of legume seeds, coconut meal, tubers of konjac and softwood hemicellulose. In this thesis, bacteria and fungi producing mannanase isolated from twenty-three soil samples were studied. 19 bacteria and 4 fungi showing mannanase production were isolated. The isolate NT 6.7 showed the highest mannanase activity of 0.306 units/ml. Its culture supernatant displayed broad inhibition activity against pathogens growth; Salmonella serovar Eteritidis S003 and Escherichia coli E010, and could promote growth of probiotic Lactobacillus reuteri AC5. This strain was identified as Bacillus circulans by using method of morphological, physiological, biochemical (API 50 CBH, 99.5% identity) and 16S rDNA sequence (99% identity) tests. The optimum condition for mannanase production from Bacillus circulans NT 6.7 was pH 6.0, temperature at 45 °C and using locust bean gum as carbon source. Optimum pH and temperature of mannanase from Bacillus circulans NT 6.7 were 6-9 and 50 °C and this enzyme was highly stable at 40-50 °C. The results suggested mannanase produced from B. circulans NT 6.7 had interesting properties which could be applied in prebiotic preparation.

Thesis Advisor's signature

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