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.
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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.

Student's signature

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