

Isolation and characterization of a chitinolytic enzyme producing microorganism, *Paenibacillus chitinolyticus* JK7 from Iran

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Abstract

Chitinases are glycosyl hydrolases, which catalyze the degradation of chitin. These enzymes are capable of hydrolyzing chitin to its oligomers and monomer, N-acetyl-β-D-glucosamine. Fifty different chitin-degrading microorganisms were isolated in this study. One of these strains with high ability to produce chitinase was selected and identified as *Paenibacillus chitinolyticus* by morphological and biochemical properties along with 16S rDNA partial gene sequence analysis. This strain was able to produce high levels of extracellular chitinase in media containing chitin as sole carbon source. The chitinolytic activity of culture supernatant was maximal after 24 h of culture. The enzyme showed optimal activity at 37°C and a double optimum pH at pH 9 and 7. Chitooligosaccharides were the predominant products throughout the enzymatic hydrolysis of colloidal chitin, indicating that the enzyme was an endochitinase. This enzyme with these properties could be useful for waste treatment, chitooligosaccharides production and other relevant applications. © 2008 Academic Journals Inc.

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