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Cloning and Expression of an Oligo-1,6-glucosidase Gene from *Arthrobacter globiformis* I42 and Biochemical Characterization of the Recombinant Enzyme

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The gene encoding an oligo-1,6-glucosidase was cloned in terms of walking downstream from the glucodextranase gene of the chromosomal DNA of *Arthrobacter globiformis* I42. An open reading frame consisted of 1731 base pairs that encoded a mature protein of 577 amino acids (*M*r, 63,000) was found. Transformed *Escherichia coli* cells carrying the 1.7-kb fragment overproduced the oligo-1,6-glucosidase under control of the T7 promoter of a pET system. Kinetic analyses of the recombinant protein gave K_m 1.76 mM and k_0 697 s^{-1} for *p*-nitrophenyl α-D-glucopyranoside and K_m 24.1 mM and k_0 41 s^{-1} for isomaltose. Its deduced amino acid sequence showed 54% similarity to two amino acid sequences of *Bacillus cereus* oligo-1,6-glucosidase and *Bacillus* sp. α-glucosidase. The oligo-1,6-glucosidase has four conserved regions shared with α-amylases. The gene cluster consisted of the glucodextranase and oligo-1,6-glucosidase genes, suggesting that both genes could participate in the degradation for utilization of dextran in the bacterium.

Key words: oligo-1,6-glucosidase, *Arthrobacter globiformis*, dextran

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