Cloning and expression of dextransucrase from *Leuconostoc citreum* ABK-1

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Abstract: Dextransucrase is an enzyme in the glycoside hydrolase 70 family that can catalyze sucrose to fructose and glucose. The glucose can be transferred into acceptor saccharides to synthesis dextran in a transglycosylation reaction. Dextransucrase gene was newly discovered in *Leuconostoc citreum* ABK-1. We preliminarily annotated the gene and found that *Lcdexm* was 99.50% identical to the dextransucrase gene in *Leuconostoc citreum* DS. This work aimed to clone and express the dextransucrase from *Leuconostoc citreum* ABK-1. In this report, we successfully cloned the dextransucrase gene of *Leuconostoc citreum* ABK-1, *Lcdexm*. The *Lcdexm*, 4,398 base pairs, was subcloned into pET21b. The recombinant plasmid was then transformed into *Escherichia coli* BL* for protein expression. The computed size of the *Lc*DEXM enzyme was performed on ExPASy and the result showed that its size was 168 kDa with a pI of 5.15. The optimization of protein expression was observed at 20°C for 6 hours after induced with 0.5 mM IPTG. SDS PAGE analysis was used to investigate the expression of the *Lc*DEXM enzyme. We found that the enzyme was an intracellular expression. To additional confirm the protein expression, western blot analysis was performed. The signal of the anti-6×histidine antibody against 6×histidine tagged *Lc*DEXM enzyme was detected.

Keywords: *Leuconostoc citreum* ABK-1; detransucrase; molecular cloning; protein expression

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