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Expression and Characterization of the *Rahnella aquatilis* Levansucrase in *E. coli*

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Previously we reported the cloning and sequencing of a levansucrase gene, *lscR*, from *Rahnella aquatilis* ATCC 15552. A genetically modified levansucrase, which contained His-affinity tag in its C-terminal, was constructed by PCR reaction using two synthetic primers. The recombinant *E. coli* for the production of levansucrase was prepared by transforming *E. coli* BL21 (DE3) with the expression vector pET-LSU. The levansucrase activity was mostly observed in the cell-free extract, and was purified by a one-step affinity chromatography. The level of levan formation was examined by changing the concentration of the enzyme and sucrose. The optimum pH for levan production was pH 6.0 and the optimum temperature was 30oC, respectively. The enzyme is able to hydrolyze sucrose and to synthesize levan. Therefore, the polymerase activity and hydrolase activity of levansucrase was compared at various pHs and temperatures.