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Rekayasa gen fruktansukrase versi terpenggal dari plasmid rekombinan pembawa gen ftf lengkap dengan menggunakan teknik polymerase chain reaction = Engineering of truncated fructansucrase gene from recombinant plasmid carrying full-length ftf gene by using polymerase chain reaction technique

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Abstrak

Sebagian besar bakteri asam laktat (BAL) menghasilkan eksopolisakarida (biopolimer fruktan) yang mempunyai banyak manfaat dalam industri makanan, kosmetik, kesehatan dan farmasi. Sintesis biopolimer ini melibatkan peran enzim fruktansukrase atau fruktosiltransferase (ftf). Rekayasa genetika dapat dilakukan untuk mendapatkan biopolimer yang berkriteria unggul, yaitu biopolimer inulin yang mempunyai derajat polimerisasi tinggi. Weissella confusa galur MBFCNC-2(1) telah menjadi sumber gen fruktansukrase yang dikloning lengkap di inang E. coli BL21 StarTM.

Tujuan penelitian ini adalah untuk mendapatkan klon versi terpenggal dari gen fruktansukrase karena klon gen lengkap dilaporkan mempunyai masalah dalam ekspresinya. Sebagai template untuk kloning digunakan plasmid dari E. coli BL21 StarTM rekombinan, plasmid rekombinan pO_ftfNS pembawa gen lengkap, dan DNA genomik. PCR dilakukan menggunakan primer FTFdel_Fw dan FTFdel_Rv. Hasil PCR disekuensing dan dianalisis menggunakan BLAST. Sebagai hasil, gen fruktansukrase versi terpenggal didapatkan dari plasmid rekombinan pO_ftfNS pembawa gen ftf lengkap.
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Most of Lactic Acid Bacteria (LAB) produce exopolysaccharide (fructan biopolymer) that has many advantages in food, cosmetic, health, and pharmacy industries. Synthesis of this biopolymer involves the role of fructansucrase enzyme of fructosyltransferase (ftf). Genetic engineering could be done to obtain biopolymer with excellence characteristcs, that is inulin with high degree of polymerization. Weisella confusa strain MBFCNC-2(1) has been used as a source of fructansucrase gene which is full-length clonned at E. coli BL21 StarTM.

The aim of this study was to obtain truncated gene of fructansucrase because fulllength clone has problem on its expression. The PCR template used in this study were plasmid of Recombinant E coli BL21 StarTM, recombinant plasmid pO_ftfNS carrying full-length gene, and genomic DNA. PCR was carried out by FTFdel_Fw and FTFdel_Rv primer. The PCR product was sequenced and analyzed by using BLAST. Result revealed that truncated fructansucrase gene was obtained from plasmid recombinant pO_ftfNS carrying full-length gene.