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Novel maltooligosaccharide from biosynthesis**Thornthan Sawangwan**

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This research focuses mainly on synthesis of maltooligosaccharide (MOS) by using biocatalytic method. Two commercial cyclodextrin glucosyltransferases (CGTase), Toruzyme[®], AMANO, and whole cell of glucosyltransferase (GTase) obtained from a culture of *Escherichia coli* with *Thermotoga maritime*_GTase strain (Tm_GTase) are used for MOS synthesis. Before start to synthesis experiment, all biocatalyst are determined of protein concentration by using Bradford technique. The reaction mixtures for MOS synthesis are comprised with soluble starch as a donor, maltose and glucose as acceptor in different ratios (1:0, 4:1, 1.5:1, 1:1, 1:1.5, 1:4 and 0:1 w/w) in 10 mM sodium citrate buffer pH 5.5+0.15 mM CaCl₂ compared with the reaction in distilled water (pH 6.3) at 60°C and 85°C incubation temperature. After the appropriate incubation times, the product mixtures are stopped for the reactions by adding 0.4 N NaOH, centrifuged at 13, 200 rpm for 15 minutes then analyzed by High Performance Liquid Chromatography (HPLC); HPX-87H column and ion chromatography (Dionex); Carbopac PA10 column. The considering formation of MOS products from 3 different biocatalytic processes are short chain MOS; maltotetraose (G4) and maltotriose (G3) as shown in the chromatograms of HPLC and Dionex determination. From the results, the noticeable synthesis of MOS products are in the condition of maltose as an acceptor in 10 mM sodium citrate buffer pH 5.5+0.15 mM CaCl₂ using Toruzyme[®] and AMANO at 85°C incubation temperature. These conditions show higher MOS yield compare with using Tm_GTase strain as biocatalyst. In conclusion, CGTase from Toruzyme[®] and AMANO can use for synthesis MOS products (especially maltotetraose and maltotriose) which have more interest for food industries in order to apply for functional food as prebiotic compounds.

Biography

Thornthan Sawangwan has her expertise in biosynthesis and application of microbial and bioactive compound to functional food. Her research idea of interest is mainly on prebiotic compound synthesized by bioconversion from economical substrate and agroindustry residue. Her laboratory skills are Microbiology, Enzymology, Chromatography and Spectrophotometry techniques. She has experience of many years in Research and Teaching in Ramkhamhaeng University, Bangkok, Thailand.

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