Extraction and Preparation of Prebiotic from Oil Palm Polysaccharide for Application in Functional Product

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Prebiotic are non-digestible polysaccharides, one of potent functional food, which can specifically enhance growth of beneficial bacteria in the host gastrointestinal systems. There are several sources of novel prebiotics that has not been discovered, but can be potentially applied in functional foods. This research focused on utilizing polysaccharides extracted from fruitless oil palm trunks (older than 20 years old) as a new, effective, and inexpensive source of prebiotics. Proximate compositions of oil palm extract in term of protein, lipid, ash, carbohydrate, and fiber were 0.31%, 8.04%, 0.06%, 91.59%, and 0.64%, respectively. The oil palm polysaccharide was not hydrolyzed by either HCl buffer pH 1 for 4 h or human pancreatic α-amylase (1 U/mL at 37 °C for 6 h). The in vitro microbial cultivation showed that selected probiotics, Lactobacillus paracasei TISTR 2389 and L. casei TISTR 2389, could utilize oil palm starch as a sole carbon source and the number of cells count increased by 0.94 and 0.85 Log CFU/mL, respectively. These results showed that the oil palm polysaccharide could potentially use as a prebiotic for promoting the growth of probiotic bacteria and it can be applied in the dairy products in the future.