

Research Title: Production of Galactomannooligosaccharide with prebiotic property from
copra meal using mananase

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ABSTRACT

Study of extraction conditions on the yield of mannan from copra meal, and the length of mannan on average. The extraction conditions for high yield of mannan was sodium hydroxide 16% (w/v), for 24 hours at the pH of 5.0. The best condition for the length of the longest average mannan was sodium hydroxide concentration 25 percent (w/v) for 30 hours at the pH of 5.0. Mannan concentration 0.5 % (w/v), at pH 8.0 was taken the highest solubility. The extraction conditions for highest yield of mannan used in further experiments.

The Response surface methodology with Box-Behnken Design was used to evaluate the optimum condition for mannan hydrolysis to produce Galactomannooligosaccharides. The pH 3-9, reaction temperature 35-75°C, the reaction time 5-25 minutes, the concentration of substrate 1- 10%, and the concentration of the β -mannanase from *Aspergillus niger* 0.6- 1.2 units. The reducing sugar as the measured response. The result showed that the optimum mannan hydrolysis condition was concentration of substrate 4 percent, pH 3 at 60°C for 25 minutes, and enzyme concentration 0.6 units enzyme that has the highest reducing sugar.

The DP of hydrolyzed mannan was among 2-6 units i.e. mannobiose, mannotriose, mannotetraose, mannopentose and mannohexose. The maximum hydrolysis by artificial human gastric juice of MOSs was 3.38%. Additionally, MOSs promoted the growth of the probiotic *Lactobacillus plantarum* which was similar to the inulin reference. The presence of MOSs as a carbon source reduce growth of the pathogens (*Escherichia coli* O157:H7 and *Staphylococcus aureus*).

Keywords : Galactomannooligosaccharide, β -mannanase, prebiotic, copra meal