

Thesis title **Maltodextrin Production Using Cereal Malts**

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Abstract

Four kinds of cereal malts such as wheat (INIA66), corn (Glutinous-corn), glutinous-rice (GO-KHO 6) and rice (HOAM-MALI) were selected as sources of amylase to produce maltodextrin from cassava starch. The optimum conditions in single-step lab-scale were determined. The results showed that suitable conditions for each cereal malt were different. When wheat malt was used as a source of enzyme, a suitable condition was 20%(w/v) of cassava starch solution, 25.0 units of amylase in malt per gram starch, pH 5.0, temperature 85°C for a period of 30 minutes. While in case of corn, glutinous-rice and rice, the optimum condition was 5%(w/v) of cassava starch solution, 12.5 units of amylase in malt per gram starch, pH 4.0-5.0, temperature 85-90°C for a period of 20-30 minutes. The obtained maltodextrin solution was found to be cloudy when wheat malt was used as a source of enzyme and clear when the other malts were used. The products had reducing sugar of 0.30-1.98%, dextrose equivalent of 5.95-13.54% and dextrin 10 content of 77.29-95.98%(w/w).

Two-step production of maltodextrin by using wheat malt in lab-scale was performed using 25.0 units of amylase per gram starch for a period of 30 minutes in the first step and using 5.0-25.0 units of amylase per gram starch for a period of 10-30 minutes in the second step. The optimum condition in the latter step was 5.0 units of amylase per gram starch for a period of 10 minutes. The obtained maltodextrin was clear. Concentrated maltodextrin and maltodextrin powder were produced using wheat malt in 1-litre scale by single-step and two-steps processes. The results of the two processes products are nearly in the same qualities and carbohydrate compositions especially the qualities follow the standard industrial ministry issue.