

CHAPTER V

SUMMARY

The fatty acids of BG were founded to be fifty types of fatty acids. The highest content was linoleic acid (39.54%), followed by oleic acid (19.56%), palmitic acid (18.85%) and stearic acid (6.57%). Most of them are unsaturated fatty acids.

The complex index value (CI) were increased with increasing the concentration of BG hydrolyzed oils and reaching a plateau between 12.5%-20% of BG hydrolyzed oils concentration. The crystalline structure of native BG flour exhibited an A-type crystalline pattern and the V-amylose crystalline pattern was found in the complexed sample. The crystallinity was higher with higher hydrolyzed oils added for the complexed sample that correlated with the CI value. However, the peak temperature as determined by DSC showed that the peak temperature of all samples were not different and it indicated a type I complex (95°C-105°C). The enthalpy that referred to the amount of the complex showed a higher value with increasing the concentration of hydrolyzed oils.

For starch fraction, the rapidly digestible starch (RDS) was decreased compared with control sample (0% FFA) and decreased with increasing of the concentration of hydrolyzed oils. Slowly digestible starch (SDS) and resistant starch (RS) were increased with the higher concentration of hydrolyzed oils and higher than the control sample. Moreover, the rheology properties showed that the storage moduli value (G') was greater than the loss moduli value (G''), indicating the elastic property of BG flour complexed sample. Both G' and G'' were increased when the concentration of hydrolyzed oil was increased. This might indicate that the non-gelling behavior of starch paste was observed with added hydrolyzed oils and it is related with the complex viscosity value, tend to reduce with higher BG hydrolyzed oils concentration.

Overall, the V-amylose complex formed in BG flour reduced the RDS fraction and increase the SDS and RS fraction in BG flour. High concentration of BG hydrolyzed oil in BG flour produced the lower viscosity of the starch paste.