ABSTRACT

HERLINA MARTA. Functional and Rheological Properties of Nixtamalized Corn Flour and Its Application on Supplementary Infant Food Production. Supervised by SUGIYONO and BAMBANG HARYANTO

This study was carried out to evaluate changes in functional and rheological properties of corn flour treated by nixtamalization and to apply the nixtamalized corn flour for supplementary infant food production. The corn was nixtamalized using lime at different concentrations (0%, 0.25% and 0.5%) and cooking times (0, 5, 10, 15, and 20 min). The lime concentration and cooking time significantly (p ≤ 0.05) affected functional and rheological properties of corn flour. Swelling volume, solubility, water absorption capacity and gel strength decreased with increasing lime concentration. Gel strength increased with cooking time up to 10 minutes and decreased with prolonged cooking time. Pasting studies showed that the peak viscosity, breakdown and setback of corn flour decreased with increasing lime concentration. Functional and rheological properties of nixtamalized corn flour were affected by Ca-starch interactions. The increasing of water absorption capacity increased swelling volume, solubility, gel strength and peak viscosity and conversely decreased wettability of corn flour. The gel strength had a positive correlation with setback. The nixtamalized supplementary infant food had macro nutritions complied with the standard. It had lower water absorption capacity and higher bulk density than non-nixtamalized supplementary infant food. The nixtamalized supplementary infant food had protein digestibility of 87.36% (db) and starch digestibility of 81.07% (db). Sensory acceptabilities of the nixtamalized supplementary infant food were not significantly different (p ≤ 0.05) from commercial supplementary infant food except smoothness, color and aroma.

Keyword: nixtamalization, corn flour, functional properties, rheological properties, supplementary infant food