

Food Chemistry

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Abstract

The effects of stearic acid addition followed by hydrothermal treatment on the functional properties of maize starch were studied. Addition of stearic acid followed by hydrothermal treatment resulted in non-gelling starch. Starch with stearic acid had significantly ($P < 0.05$) higher viscosity as compared to heat-moisture treated starch. There was no significant difference on the pasting properties of starch with stearic acid alone and in combination with annealing. Stearic acid addition followed by heat-moisture treatment significantly reduced starch susceptibility to acid hydrolysis as compared to stearic acid alone and heat-moisture treatment alone. These changes related well with the increased amylose lipid complexes and relative crystallinity observed by the DSC and XRD, suggesting that heat-moisture treatment promoted amylopectin side chain crosslinking and amylose-stearic acid complex formation. Stearic acid addition followed by hydrothermal treatment produced a 'clean label' starch that can potentially substitute chemically cross-linked and non-gelling starch in the food industry.