

PROPERTIES OF EXTRUDED WHITE CORN FLOUR – HIGH AMYLOSE CORN STARCH PUFFS

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ABSTRACT

This study was conducted to determine the effect of high-amylose corn starch in corn puffs on the extrusion parameters, product and textural properties and the glass transition temperature. The data was analyzed in a randomized complete block design (RCBD) in which the treatments were arranged in a 4 x 3 x 3 {high-amylose content (0, 20, 40 and 60%) x moisture content (20, 22, and 18 or 24%) x extruder screw speed (200, 300 and 400 rpm)} factorial arrangement of treatments with two replicants.

The collected results indicate that the maximum amount of expansion occurs when the screw speed and moisture content are both decreased and the high-amylose corn starch content is increased. The puff density increased and the specific volume decreased when screw speed and starch content decreased and moisture content increased. While the original puff breaking strength and hardness were only affected by the moisture content, the puffs containing more high-amylose corn starch exhibited significantly higher breaking strengths at higher water activities. The extruder responded to increases in screw speed and starch content and a decrease in moisture content with increases in temperature and specific mechanical energy. The Gordon-Taylor equation was used to predict the effect of water plasticization on the high-amylose corn puffs.