Proceedings of the 13th ISTRC Symposium, 2007
pp. 482 – 488

The role of sweetpotato root and starch characteristics on thermally processed products

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Abstract. The significance of processing sweetpotato (SP) was investigated by assessing the characteristics of three new sweetpotato varieties (Tanzania, New Kawogo and Naspot 5) and a UK commercial (Jewel) variety. The characteristics of the roots (dry matter, sugar and amylase contents) and their respective starches (gelatinisation and pasting temperature parameters) were analysed. Tanzania and Naspot 5 SP root pulp had comparable dry matter (37.0-37.8%), reducing sugar (0.5%) content and alpha amylase activity (2.60-2.66 $mg.g^{-1}.min^{-1}$) as opposed to New Kawogo. Jewel variety had the lowest dry matter (19.0%), highest reducing sugar content (2.6%) and alpha amylase activity (7.78 $mg.g^{-1}.min^{-1}$). Variation in SP root characteristics might indicate post harvest changes or due to variety differences. The same ranking order of the starch varieties was followed for gelatinisation and pasting temperature parameters, with Naspot 5 having the highest, followed by Tanzania, New Kawogo and Jewel starches. Jewel and New Kawogo similarly showed comparable onset temperatures of gelatinisation and pasting that differed from Naspot 5 and Tanzania. Naspot 5 (15.6 J/g) and Tanzania (15.2 J/g) starches exhibited higher enthalpy of gelatinisation than Jewel (13.2 J/g) and New Kawogo (12.4 J/g), indicating that they may require high energy to disrupt their crystalline granule order. Jewel SP processed products are likely to have inferior sensory properties. Individual starch characteristics did vary but may be used to select sweetpotato varieties for specific products.