

Nutritional value of fortified cassava flour prepared from modified cassava flour and fermented protein hydrolysates

ABSTRACT

Nutritional properties of fortified cassava flour produced from co-processing of modified cassava flour with fermented protein hydrolysates were studied. Proximate, cyanide content, swelling power, solubility dextrose equivalent and viscosity of native, modified and fortified cassava flour samples were determined. The results revealed that the moisture contents of the three samples showed significant difference from native to modified and fortified flour with values between $10.35 \% \pm 0.01 \%$ to $6.30 \% \pm 0.08 \%$ and $3.92 \% \pm 0.10 \%$. The protein contents ($1.14 \% \pm 0.02 \%$ to $2.19 \% \pm 0.06 \%$ and $11.26 \% \pm 0.07 \%$) showed significant increase with increasing level of protein hydrolysates, ash ($2.07 \% \pm 0.04 \%$ to $1.33 \% \pm 0.01 \%$ and $1.45 \% \pm 0.05 \%$) and crude fiber ($1.97 \% \pm 0.04 \%$ to $1.50 \% \pm 0.08 \%$ and $1.55 \% \pm 0.05 \%$) showed no significant increase with increasing level of protein hydrolysates, while the crude fat, ash and fibre reduced with increase in protein hydrolysates. The cyanide (HCN) content decreased along with time of incubation with sample of fortified flour having the lowest value of HCN ($2.93 \text{ mg} \cdot \text{kg}^{-1} \pm 1.20 \text{ mg} \cdot \text{kg}^{-1}$). Meanwhile dextrose equivalent ($2.00 \% \pm 0.00 \%$ to $2.50 \% \pm 0.00 \%$ and $3.25 \% \pm 0.35 \%$) showed significant increase with increasing of protein hydrolysates, solubility ($85.60 \% \pm 1.12 \%$ to $79.36 \% \pm 2.12 \%$ and $79.79 \% \pm 6.59 \%$), and swelling power ($4.20 \% \pm 0.88 \%$ to $2.44 \% \pm 0.20 \%$ and $2.45 \% \pm 0.01 \%$) showed no significant increase with increasing level of protein hydrolysates. Somehow, viscosity ($387.00 \text{ cp} \pm 50.91 \text{ cp}$ to $302.25 \text{ cp} \pm 56.21 \text{ cp}$ and $242.00 \text{ cp} \pm 21.21 \text{ cp}$) showed significant increase with increasing level of protein hydrolysates. Observation by SEM indicated that modified starch granules was depolymerized by enzymatic hydrolysis lead to cause change and degrade exterior surface of the granules within corrosion via pores of small granules which makes it easy for penetration of enzyme into the granules.