

DEVELOPMENT OF EXTRUDED SNACK USING CORN FLOUR, SOYBEAN FLOUR AND CASSAVA STARCH

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The extruded snack was developed using four different combinations of soybean flour, corn flour, and cassava starch (20:70:10, 15:65:20, 10:60:30, and 5:55:40 (w/w)). Initially, the main ingredients were mixed and fed into the extruder at barrel temperatures of 70°C, 130°C, and 150°C consecutively. The extrudate was oil fried at 110±3°C for 2-3 min. The best formulation was selected from a sensory evaluation with 30 untrained panellists. The selected extrudate was flavoured with three different salt levels (20, 40, 60 g kg⁻¹) and three different chilli powder levels (10, 20, 30 g kg⁻¹) and best combination was selected from a sensory evaluation. Then 10 g of sugar per kg was added to the selected product. The proximate composition, pH, energy, and colour were determined of the final product. Shelf life was evaluated in terms of microbial stability at 7, 14, 21, and 28 days under ambient storage conditions (28±1°C, RH 70±2%). Results revealed that the formulation with 40% of cassava starch was the best and the preferable salt:chilli:sugar ratio was 40:30:10 g kg⁻¹. The moisture content, crude protein, crude fibre, crude fat, ash content, carbohydrate, pH, and energy of the final product were, 1.98±0.15%, 2.31±0.01%, 9.82±0.07%, 33.78±0.16%, 0.97±0.06%, 52.01±0.29%, 7.00±0.08, and 445±1.76 kcal 100g⁻¹ respectively. The reported, L*, a*, b* colour values of the best product were 51.20±3.70, 17.83±0.59, and 40.00±1.80, respectively. The microbial stability in terms of aerobic plate count of the final product (2×10³ cfu g⁻¹) was at a safe level at all storage period. In conclusion, extruded snacks can be developed with better organoleptic quality by incorporating cassava starch up to 40% (w/w) as a cost-effective ingredient while reducing the soybean and corn flour levels.

Keywords: Extruder, Formulation, Organoleptic quality, Sensory analysis