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**Development of Orange Fleshed Sweet Potato and Bambara Groundnut-Based Snacks for School Children I Tanzania**

**ABSTRACT**

Development of snacks using locally under-utilized crops such as orange fleshed sweet potatoes (OFSP) and Bambara groundnut is a crucial food-based approach to alleviate under-nutrition among primary school children. This study aimed to develop an acceptable, shelf stable, nutrient dense snack utilizing OFSP and Bambara groundnut. One hundred percent OFSP, 100% Bambara groundnut and composite snacks consisting of different levels of OFSP flour substitution were prepared and assessed for proximate composition, mineral and pro-vitamin A content, sensory properties, consumer acceptability and shelf life stability. The effect of extrusion on nutritional quality of the snacks was also assessed. The results showed that there were significant differences ( $p < 0.05$ ) in proximate composition between the developed snacks. Protein contents ranged from  $4.08 \pm 0.26$  g/100g DM in 100% OFSP snacks to  $15.03 \pm 0.34$  g/100g DM in 100% Bambara groundnut while pro-vitamin A ranged from  $0.54 \pm 0.05$  mg/100g DM in 100% Bambara groundnut to  $17.33 \pm 0.48$  mg/100g DM in 100% OFSP. Vitamin A retention after extrusion ranged between 59.08% for 100% Bambara groundnut snacks to 86.50% for 20% OFSP snacks. Substituting Bambara groundnut for OFSP in the formulation increased magnesium, phosphorous, potassium and iron content, but decreased calcium and sodium content for composite snacks. OFSP based snacks had higher mean acceptability scores (6.62 – 7.0) than the 100% Bambara groundnuts based snack (5.88) with orange color and sweetness being the drivers for consumer liking of the snacks. Predicted shelf life for snacks at room temperature ranged between 118 – 150 days. OFSP snacks that were substituted with up to 40% Bambara groundnut had enhanced product nutritional quality, better retention of sensory properties and higher acceptability by consumers due primarily to their color and sweetness.