

## Effects of Varying Fermentation Periods on the Chemical Composition of African Yam Bean (*Sphenostylis stenocarpa*) and Acha (*Digitaria exilis*) Flour Blends and Sensory Properties of Their Products

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**Abstract :** The study evaluated the effects of varying fermentation periods on the nutrients and anti-nutrients composition of African yam bean (*Sphenostylis stenocarpa*) and acha (*Digitaria exilis*) flour blends and sensory properties of their products. The African yam bean seeds and acha grains were fermented for 24 hrs, 48 and 72 hrs, dried (sun drying) and milled into fine flour. The fermented flours were used in a ratio of 70:30 (Protein basis) to formulate composite flour for meat pie and biscuits production. Both the fermented and unfermented flours and products were analyzed for chemical composition using the standard method. The data were statistically analyzed using SPSS version 15 to determine the mean and standard deviation. The 24, 48, and 72 hrs fermentation periods increased protein (22.81, 26.15 and 24.00% respectively). The carbohydrate, ash and moisture contents of the flours were also increased as a result of fermentation (68.01-76.83, 2.26-4.88, and 8.36-13.00% respectively). The 48 hrs fermented flour blends had the highest increase in ash relative to the control (4.88%). Fermentation increased zinc, iron, magnesium and phosphorus content of the flours. Treatment drastically reduced the anti-nutrient (oxalate, saponin, tannin, phytate, and hemagglutinin) levels of the flours. Both meat pie and biscuits had increased protein relative to the control (27.36-34.28% and 23.66-25.09%). However, the protein content of the meat pie increased more than that of the biscuits. Zinc, Iron, Magnesium and phosphorus levels increased in both meat pie and biscuits. Organoleptic attributes of the products (meat pie and biscuits) were slightly lower than the control except those of the 72 hrs fermented flours.

**Keywords :** fermentation, African yam bean, acha, biscuits, meat-pie

**Conference Title :** ICFSN 2015 : International Conference on Food Security and Nutrition

**Conference Location :** Boston, United States

**Conference Dates :** April 20-21, 2015