

## **Nutritional composition, physiochemical analysis, sensory properties and economics of raw and roasted "niri" (*Citrullus vulgaris*) chaff extended beef sausages**

### **ABSTRACT**

There are increasing incidences of obesity, cardiovascular and other dietary related diseases as a result of the crave for ready-to-eat and processed foods. These foods lack adequate dietary fiber which contributes to these diseases. This study investigated the effects of "niri" chaffs (raw and roasted) as an extender on the nutritional, physiochemical, sensory and economics of beef sausages. All treatments were randomly assigned to minced beef by a completely randomized design. Raw and roasted "niri" chaffs were incorporated at 0, 5, 15 and 25% to minced beef. The Association of Official Analytical Chemist and the British Standard Institutes procedures were used to determine the proximate and sensory characteristics of the beef sausages, respectively. The results revealed significant ( $p < 0.05$ ) differences in some of the parameters determined. Raw and roasted "niri" chaffs extended beef sausages (extended products) generally had an improved ( $p < 0.05$ ) effect on fat (1.5-3.28%), ash (1.31-2.19%) and carbohydrate (2.06-20.81%) contents as compared to control. A decline ( $p < 0.05$ ) was observed in moisture content of beef sausages (62.34-21.52%) by the treatment of raw and roasted "niri" chaffs as compared to control. The protein contents of RaC 5% and RaC 15% (5% and 15% raw "niri" chaff beef sausages, respectively) were better ( $p < 0.05$ ) than the rests of the products. Extended products exhibited significantly ( $p < 0.05$ ) high calcium, iron and magnesium than control products; while potassium and zinc contents of beef sausages were improved by the treatment of 5% raw "niri" chaff than the control. pH values of products were in the range of 5.76-6.00. Raw chaffs extended products had higher grilling loss (5.4-25%) than roasted products (4-13.95%). Lipid peroxidation values showed that all "niri" chaffs extended products had exceedingly high ( $p < 0.05$ ) values than the control within the storage period with raw products being the most affected. The formulation cost saw an average cost reduction of Gh₵ (Ghanaian Cedi) 2.25 using raw and roasted "niri" chaffs for the sausages. This study reveals that raw and roasted "niri" chaffs have the potential for use as an extender in beef sausages.