



SENSORY PROPERTIES OF *DAMBUN NAMA*, FRIED AND PEPPER MEAT PRODUCTS PROCESSED FROM ISA BROWN LAYER CHICKENS

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ABSTRACT

This study was conducted to evaluate the sensory properties of Isa brown Chicken Meat. Isa brown Layers were slaughtered, dressed and cut into pieces. The Meat was boiled and subjected to three processing methods namely *Dambun Nama*, Fried Meat and Pepper Meat using locally sourced ingredients and spices. A sample size thirty (30) staff and students of Abubakar Tafawa Balewa University, Bauchi were served the three meat products. Data were collected using a 9-point Hedonic scale on palatability, juiciness, tenderness, flavor, color, texture and acceptability. Results revealed that the best ($P < 0.05$) palatability value of 8.77 was obtained on the pepper meat, where as other parameters were not significantly affected by the different processing method. It was concluded that the three products were suitably and generally acceptable to the taste panelists, however, for long storage and long-distance travelers, *Dumbun Nama* is recommended due to its better shelf life.

Keywords: Sensory, Meat, Layer, Chicken

INTRODUCTION

In Nigeria poultry contributes to the total requirement of protein among consumers. Meat makes a valuable contribution to the diet in developing countries because of its nutritional importance, as a source of protein, having high biological value, an excellent source of many nutrients, especially protein, fats, vitamin A, vitamin B, and essential and non-essential amino acid needed to build, maintain and repair body tissues (Bala, 2014). Meat deterioration begins soon after the meat has been slaughtered due to chemical changes, enzymatic action and the action or presence of micro-organism (bacteria, fungi) which may result in the oxidative rancidity, discoloration, mouldiness, off flavour, sliminess etc. (Gurunathan *et al.*, 2015). The major source of these deteriorative changes is the micro-organism and these render the meat unacceptable and unfit for human consumptions. Meat is a nutritious, protein-rich food which is highly perishable and has a short shelf-life unless preserved. Shelf life and maintenance of meat quality are influenced by a number of interrelated factors including holding temperature, which can result in detrimental changes in quality attributes of meat (Ojewola & Onwuka, 2001). Measure of meat qualities includes such indices such as flavour, tenderness, palatability, aroma, colour and juiciness are the major and most appreciated characteristic in meat being consumed. Such effect may lead to spoilage of meat or reduce the quality of the meat produce. (Christensen, *et al.*, 2011). Organoleptic analyses (sensory evaluation) is unequivocally assigning in the scientific methods. It is one of the oldest means of quality control, but in principle is an essential part of the mandatory assessment of food quality, while also examining the deeper study of the interdependence between physiological and psychological phenomena in the very process of perception of sensory qualities. Many authors note that the sensory analysis, allowing manufacturers to identify, understand and respond to consumer preferences more effectively (Hocquette, *et al.*, 2010). Over the years, meat products like duck meat have been reported to be uniquely tasty and nutritious (Kalla, *et al.*, 2005). It been appreciated for



this qualities especially when food was in short supply, while Guinea fowl is a promising genetic resource for evolving a low input-grain saving poultry alternative for production in the developing world in which the meat is similar to other poultry meat like chicken, duck, turkey among others. (Keskin *et al.*, 2012). The local or village chicken are the commonly known domesticated fowls, found scavenging around the vicinities of rural communities in developing countries. The village chicken production has been ridiculed because of the low biological productivity (egg/meat) relative to the commercial production. (K' Opondo, 2011). Turkey occupies an important position next to chicken, duck, guinea fowl and quails in contributing the most evolving section, which is playing an important role in augmenting the economic and nutritional status of varied population. They are reared for meat only and its meat is the leanest among others domestic avians species (Ahemen & Zahradeen 2010).

The main objection to consumption of locally processed meat products lies with the poor sanitary conditions associated with their production and handling processes. It has been reported that the high micro-flora count commonly observed in meat products is indicative of poor hygiene and handling practices (Kalla *et al.*, 2005; Zahraddeen *et al.*, 2015). However, it is suggested that the interval between processing and delivery to market be reduced, as this would limit the time for microbial multiplication. Ojewola and Onwuka (2001) stated that consumers are becoming increasingly prepared to pay for improved and better quality product from the meat industry. K'Opondo (2011) observed that methods of preserving meat include the use of high temperature (canning), low temperature (freezing), drying (sun-drying, smoking, use of radiation and chemical preservatives). These worker also reported that drying reduces the moisture content to a level that prevents the growth of microorganisms especially fungi and bacteria. Kalla, *et al.*, (2005) reported that all handling and storage methods are therefore primarily concerned with minimizing microbial contamination and retarding microbial growth and activities. Manny, (2007) suggested that all meat samples meant for consumption should be adequately heat-treated to enhance processing and preservation/storage. Meat products that are properly handled through good sanitation, maintenance of a clean production environment and heat treatment are prerequisites for extended shelf-life, reduced microbial load and improved acceptability. The study was therefore carried out to evaluate the sensory properties of *dambun nama*, *fried and pepper meat* products processed from Isa brown layer chicken among taste panellists.

MATERIALS AND METHODS

The study was conducted at the Department of Animal Production, Faculty of Agric and Agricultural Technology, Abubakar Tafawa Balewa University, Bauchi. Six (6) Isa brown layers chicken were obtain from Abubakar Tafawa Balewa University Farm. And were slaughtered. The samples were preserved under cold storage and immediately transported for onward processing/production into various varieties of *dambun nama*, *fried and pepper meat*. Isa brown layers chicken (chicken) was sourced to produce the various *dambun nama*, *fried and pepper meat*. Zahraddeen *et al.* (2015) produced the guidelines for a successful fattening of livestock to produce good carcass quality. *Dambun nama*, *fried and pepper meat* was prepared from meat of these Isa brown layer chickens. Meat of Isa brown layers chicken was cut into pieces of approximately 4 cm by 2.5 cm dimensions and washed with water, mixed with spices and ingredients, boiled for about 90 minutes and pounded into shreds using a mortar and pestle. This was then shallow fried using groundnut oil in a stainless-steel pot to obtain *dambun nama*, which is usually brownish in colour. Carcass of layer chicken was cut into 30 pieces, cooked for 90 minutes, soaked in edible oil with a minimal soaking amount and then deep-fried at 160 to 225deg. C for 3 to 6min. The minimal soaking amount of the chicken in



edible oil is the degree to which the chicken is submerged in the edible oil. also, meat of Isa brown layer chickens was cut into 30 pieces and washed with water, mixed with spices and ingredients, boiled for about 90 minutes and was steam with pepper sauce to obtain pepper meat, which is usually brownish in colour. The data for this study were collected from one experiment conducted. *Dambun nama*, fried and pepper meat products were processed from Isa brown layers chicken to give a total of 3 products, which were subjected to sensory evaluation for their acceptance, as depicted. Sensory judges (both staff and postgraduate students only) familiar with quality attributes of meat products were constituted for evaluation, as per the methods described by Bube (2003). A questionnaire was designed and administered in Abubakar Tafawa Balewa University school farm, to collate information on consumers’ preferences to *Dambun nama*, fried and pepper meat in relation to other local meat products. The instrument was designed in such a way to capture information on respondents’ preferences. Out of the 30 questionnaires distributed and were successfully retrieved and analysed for the study. The data generated from the study were subjected to means with significant differences were separated using Duncan’s Multiple Range Test (DMRT).

RESULTS AND DISCUSSION

Sensory Evaluation of *Dambun Nama*, fried and pepper meat Processed from Various Isa brown layer chickens is presented in Table 1.

Table 1: Sensory evaluation of *Dambun Nama*, Fried and Pepper Meat product from Isa Brown Layer Chicken

Meat Products					
Parameter	<i>Danbum Nama</i>	Fried Meat	Pepper Meat	SEM	LOS
Palatability	8.53 ^b	8.30 ^b	8.77 ^a	0.02	*
Tenderness	8.27	7.83	8.00	0.03	NS
Juiciness	8.40	8.20	8.10	0.02	NS
Flavour	8.07	8.37	8.20	0.03	NS
Texture	7.97	7.93	8.03	0.03	NS
Colour	8.30	8.33	8.30	0.02	NS
Acceptability	8.37	8.47	8.50	0.02	NS

Means bearing different superscripts differ significantly (*P< 0.05)

The result of sensory quality of *dambun nama*, fried and pepper meat processed from Isa brown layer chickens. Showed that pepper meat was significantly (P< 0.05) more preferred and palatable by the respondents than *dambun nama* and fried meat. Also, the results showed that tenderness, juiciness, flavor, texture, color and acceptability were not affected by the different processing method of Isa brown chicken meat. The mean panel ranting for tenderness, flavor, texture and other parameters showed no significant difference. This observation was similar to the report of Akinwumi *et al.* (2013). The results also agree with report of Eke *et al.* (2013) using various animals’ species and fund no significant difference in sensory parameters.

CONCLUSION AND RECOMMENDATION

Based on the results obtained in this study, pepper meat of Isa brown chicken had the best (*P< 0.05) palatability ranting of the taste panellists. Generally, the three processing methods were suitably for the processing chicken meat. However, for long distant travellers, *Danbum Nama* meat is recommended due to its better shelf life.



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