

APR -09

Assessment of Chemical Composition of *Tsire* from Retail Outlets in Hadejia Metropolis, Jigawa State

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Abstract

The research was conducted at the Department of Animal Health and Production, Binyaminu Usman Polytechnic, Hadejia Jigawa State. A total of 3 sticks of raw meat and *Tsire* were bought at three different locations, namely: - Dubantu (T1), Gagulmari (T2) and Matsaro (T3). Samples were collected three times on weekly basis. The experiment was laid in a Completely Randomized Design. The samples were immediately taken to Animal science Laboratory of Bayero University, Kano for Chemical Composition. Results showed that raw meat samples differed significantly ($p < 0.05$) between treatments in moisture and ether extract. There was significant ($p < 0.05$) difference between treatments in all the parameters measured from *Tsire* samples. It is recommended that further researches on the assessment, composition and microbial load of *Tsire* from retail meat outlets in Hadejia Metropolitan should be carried out.

Keywords: Meat product, *tsire*, microbial load

Introduction

Meat plays an important role in human diet by contributing both macro and micro nutrients that are required for growth and good health maintenance. The rate of increase in per capital consumption of meat was found to be very high in developed countries when compared with undeveloped nations (Anjaneyulu *et al.*, 2007). Meat is high in nutrients, but very prone to spoilage and to prevent this from occurring, value addition to meat is essential (Anna *et al.*, 2005). This involves processing and preservation of meat so as to prolong its shelf-life and improve its acceptability (Eyas-Ahmed *et al.*, 2006). Processing aids in producing varieties and convenient meat products in order to meet various lifestyle requirements while preservation extends the shelf-life of meat and meat products (Sharma and Kondaiah, 2005). The need for effective, cheap and simple preservative technique cannot be ignored and one of such is intermediate moisture meat product known as *Tsire* (Omojola, 2008).

The study is aimed to assess the chemical composition of *Tsire* from retail outlets in Hadejia Metropolis, Jigawa State.

Materials and Methods

The research was conducted at Hadejia Local Government Area of Jigawa State, Nigeria. Hadejia is one of the oldest Local Government Area of Jigawa State. It was created since 1975 from the then Kano State of the Northern Nigeria. Hadejia emirate comprises of Hadejia, Mallam-Modori, Kafin-Hausa, Bimiwa, Guri, Kiri-Kasamma, Kaugama and Auyo Local Government Areas. It is about 6,880 square kilometer and located in the Sudan savannah zone of Nigeria.

Hadejia town is the capital of Hadejia Emirate and is located at the central part of the emirate which lies between 10° 02'28" 14" E Longitude and 12° 27'12.49" N Latitude. The area is covered by deposit of silt, sand and clay soils. The soil formation give the area the great influence on agricultural development which is covered by palatable grasses, shrubs and legumes which give a quality land for good grazing of livestock. It has an annual rainfall ranging from 700-800mm which is accompanied by heavy wind. The temperature ranges from 31 to 40°C. It has two seasons in the year comprising of 6-8 months of dry season and the raining season lasts for about four months.

Tsire is prepared basically from boneless meat of animals muscles. Lean meat was cut into pieces and sliced with a sharp knife. The meat pieces are stacked on iron or wooden sticks and spiced with peanut cake, vegetable oil, salt, red pepper, ground ginger, ground garlic, chunked fresh tomatoes and minced fresh onions depending on the quality of the suya meat to be prepared Samuel and Ifeanyi (2015). The staked meat was allowed to roast around a glowing charcoal fire (Figure 1).

Tsire was purchased from three randomly selected spots in Hadejia metropolis (Dubantu-T1, Gagulmari-T2, and Matsaro-T3) Jigawa state. Raw meat and *Tsire* samples were collected on weekly (market days) basis for three weeks, with effect from 5th to 19th March, 2017.

The *Tsire* samples were packaged in sterile ziploc bag for chemical analysis at Animal Science Laboratory, Bayero University, Kano. The chemical composition analysis was carried out as described by AOAC (2007).

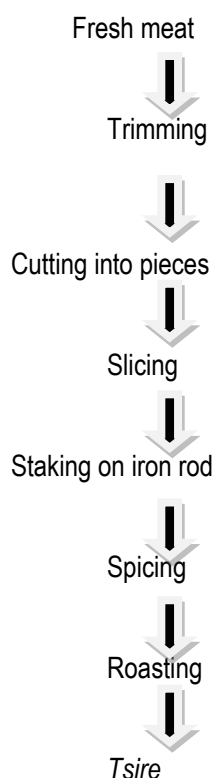


Fig.1: *Tsire* preparation

Results and Discussion

The result of chemical composition of raw meat is shown in table 1. The values of ash, moisture, crude protein and ether extract ranged from 0.90 to 0.97%, 7.32 to 9.24%, 10.00 to 11.67% and 0.84 to 2.05%, respectively. In all the parameters measured, T3 has the highest values of moisture (9.24%), crude protein (11.67%) and ether extract (2.05%). There was significant difference ($p < 0.05$) between treatments in moisture and ether extract. Table 2 showed the result of the chemical composition of *Tsire* sold at Hadejia Local Government Area. Result showed that the values of ash, moisture, crude protein and ether extract ranged from 1.32 to 2.93%, 13.11 to 11.53%, 18.00 to 19.67% and 2.00 to 3.00%, respectively. There were significant ($p < 0.05$) differences between treatments in all the parameters measured. T3 has the highest values of ash (2.93%), crude protein (19.67%) and ether extract (3.00%).

Table 1. Chemical composition of raw meat

Parameter (%)	Location			
	T1	T2	T3	SE
Ash	0.90 ^b	0.97 ^a	0.97 ^a	0.04
Moisture	7.32 ^c	8.27 ^b	9.24 ^a	0.16
Crude protein	10.00 ^b	11.00 ^b	11.67 ^a	0.27
Ether extract	0.84 ^a	1.04 ^c	2.05 ^b	0.03

^{abc} Means with different superscripts along the same row are significantly different ($p < 0.05$)

T1= Dubantu, T2=Gagulmari and T3= Matsaro

Table 2. Chemical composition of *Tsire*

Parameter (%)	Location			
	T1	T2	T3	SE
Ash	1.13 ^c	2.13 ^b	2.93 ^a	0.05
Moisture	13.11 ^b	14.28 ^a	11.53 ^c	0.23
Crude protein	18.00 ^c	18.67 ^b	19.67 ^a	0.38
Ether extract	2.00 ^b	3.00 ^a	3.00 ^a	0.32

^{abc} Means with different superscripts along the same row are significantly different ($p < 0.05$); T1= Dubantu, T2= Gagulmari and T3= Matsaro

Crude protein value of raw meat obtained in the current study was similar to that (14.83 ± 3.17) reported by Muhammad and Umar (2010), the same authors reported $2.86 \pm 0.21\%$ for ether extract of raw meat, which is similar to that found in this study. The range for percentage of ether extract recorded on raw meat indicated low marbling content and this relate inversely to ash content. The recorded moisture range for raw meat obtained in the present study did not remarkably vary from the finding of Ogbonna *et al.* (2012), but was lower than 3.14% obtained by Edema *et al.* (2008). Heat application during the preparation of *Tsire*, it could reduce the moisture contents of the products and consequently lead to the reduction of contaminating organisms. Crude protein value of *Tsire* was higher than that of raw meat due to the addition of groundnut cake and other condiments that may be rich in protein.

Protein content is a measure of nutritional contribution of meat. The values of crude protein reported in this study agrees with the work of Folorunso *et al.* (2014) who documented crude protein range between $17.91 \pm 0.11\%$ to $18.95 \pm 0.97\%$. The higher ash content of *Tsire* compared to the raw meat may possibly be due to the addition of salt and other condiments. Ash content is the measure of mineral constituents and changes very little during processing (Muhammad, and Umar, 2010). The range for ash contents of *Tsire* obtained in the present study were similar to the value of 1.79% reported by Abdulahi *et al.* (2006) for *kilishi* preparation in Zaria, and slightly lower than 3.20% reported by Sheard *et al.* (1998) for ash content of retail brand of sausages, restructured steaks and burger. The reason for the slightly increase may be due to difference in processing, location and use of different meat products.

Conclusion and Recommendation

Parameters measured in raw meat indicated that T3 has the highest values of moisture, crude protein and ether extract. There were significant differences between treatments in all the parameters measured in *Tsire*. Further researches on the assessment of mineral composition and microbial load of *Tsire* from retail meat outlets should be carried out.

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