EFFECT OF FRYING TIME ON PROXIMATE AND ORGANOLEPTIC PROPERTIES OF BEEF FRIED WITH SHEA BUTTER OIL

[1]Oyinlola, O.O, [2]Oshinbanjo, D.O, [1]Okunlola, O.O
[1]Department of Animal Health and Production, Oyo State College of Agriculture and Technology, Igboora, Oyo state
[2]Department of Animal Production, Faculty of Agriculture, University of Jos, Jos, Plateau State.
Corresponding author: oyinlolaopeyemi77@gmail.com , Telephone: 08034278434

ABSTRACT
The effect of frying time on proximate and organoleptic properties of beef fried with Shea butter oil was investigated. The meat type was purchased from Abattoir in Igboora 45 minutes after slaughtering, chilled and transported to the meat laboratory. The meat type was cut into 3 – 4 cm length, washed with distilled water, then boiled for 30 minutes with other ingredients and later fried with Shea butter oil at different frying time of 10 minutes, 15 minutes and 20 minutes in a completely randomized design. The fried meat was subjected to proximate and organoleptic analysis. Crude protein was significantly higher in 15 minutes frying time with least at 20 minutes frying time. Although, there was no significant different in ash, ether extract and crude fibre but 20 minutes frying time had the least values. 10 minutes frying time had the highest moisture content while 20 minutes frying time had the lowest. The highest colour, juiciness and texture was recorded in 20 minutes frying time while flavor, tenderness and overall acceptability was higher in 10 minutes frying time. In conclusion, in terms of proximate analysis, 15 minutes frying time was well favored while 10 minutes frying time was well favored in organoleptic evaluation.

Keywords: Beef , Bull, Shea butter oil, Organoleptic, Proximate, distilled water

INTRODUCTION
Beef is the culinary name for a meat from cattle. Beef can be harvested from bulls, cow, heifers, or steers is acceptability as a food source varies in different parts of the world. Beef Muscle meat can be cut into roasts, short ribs or steak (Field mignon sirlion steak, hanger steak e.t.c), some cuts are processed (corned beef or beef jerky) and trimmings, usually mixed with meat from older, learner cattle, or used in sausages. The beef can be boiled, grilled and fried. The oils can be used to fry beef such as olive oil, groundnut oils, soya oil and shea butter oil.

Shea butter is the fat extracted from the nut of the African Shea tree (*Vitellaria paradox*). It is usually yellow in color when raw, with unrefined, refined and ultra-refined Shea butter being ivory or white in color. Shea butter is a triglyceride (fat) derived mainly from stearic acid or oleic acid. It is widely used in cosmetics as a moisturizer, salva or lotion. Shea butter is edible and is used in food preparation in some African countries. Occasionally, the chocolate industry uses Shea butter mixed with other oils as a substitute for cocoa butter, although the taste is noticeably different.
The aim of this study is to assess the best frying time on proximate and organoleptic analysis of fried beef using shea butter oil.

MATERIALS AND METHODS
Experimental Site
The experiment was carried at the Department of Animal Production Technology of Oyo State College of Agricultural and Technology, Igboora, Oyo – State.

Materials and Equipment
Meat type (Beef), Onion, star anise, shea butter, distilled water, charcoal, salt, maggi, garlic, Ginger, and Black pepper.

Meat Preparation

Meat type (Beef) was purchase from Igboora Abattoir 45 minutes after slaughtering, chilled and transported to the meat laboratory at Oyo State College of Agriculture and Technology Igboora. All bones were removed and the fleshy part was washed and rinsed with distilled water. Meat type was washed and cut into chunks around 3 – 4cm and put in the pot, ingredients such as Maggi, garlic, ginger, coriander, star-anise, were added and cooked for about 30 minutes. Shea butter was melted to oil and the meat was fried with the oil at different frying time of 10 minutes, 15 minutes and 20 minutes in a completely randomized design.

Taste Panel Evaluation

A taste panel was set up consisting of 20 peoples to determine the organoleptic properties of the meat (beef) fried with shea butter oil using a nine point Hedonic scale. Parameters evaluated are:
Taste, Flavor, Colour, Juiciness, Texture, Acceptability

Statistical Analysis

Data obtained was subjected to analysis of variance and the mean value showing significant difference ($p<0.05$) was separated using Duncan's multiple range test (Duncan 1995)

RESULTS

Crude protein was significantly higher in 15 minutes frying time with least at 20 minutes frying time. Although, there was no significant different in ash, ether extract and crude fibre but 20 minutes frying time had the least values. 10 minutes frying time had the highest moisture content while 20 minutes frying time had the lowest.

Table 1: the proximate composition of fried meat at different time using shea butter oil

Parameters	10 minutes frying	15 minutes frying	20 minutes frying	SEM
Crude protein	60.34b	70.09a	56.18c	2.08
Ash	2.98	3.52	2.65	0.32
Ether extract	10.28	9.96	8.9	0.36
Crude fibre	0.02	0.01	0.02	0.00
Moisture content	15.92a	10.96b	14.88b	0.81

Figure 1 shows the Organoleptic Properties of Beef fried with Shea butter. The highest colour, juiciness and texture was recorded in 20 minutes frying time while flavor, tenderness and overall acceptability was higher in 10 minutes frying time. In conclusion, in terms of proximate 15 minutes frying time was well favored while 10 minutes frying time was well favored in organoleptic evaluation.

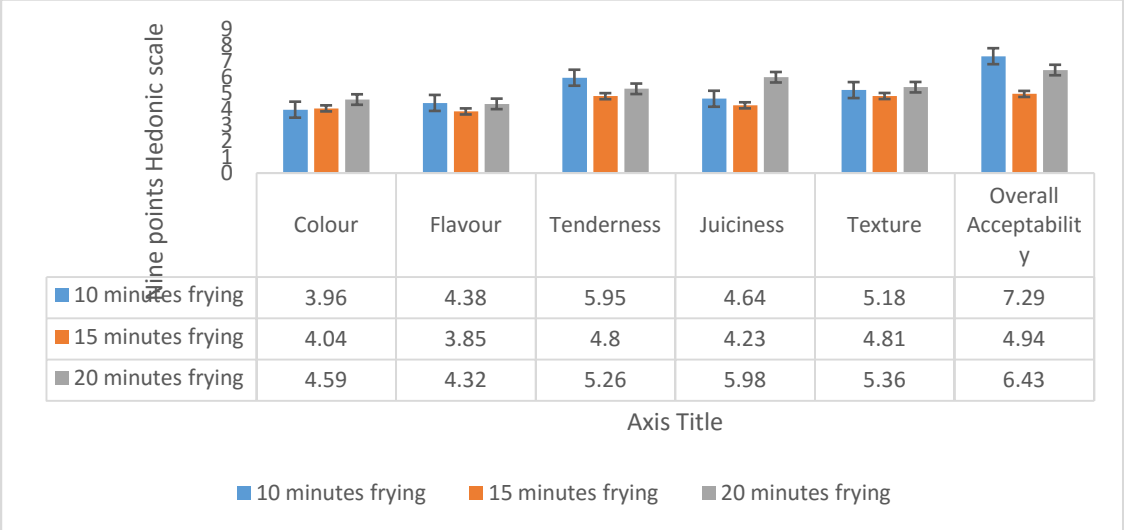


Figure 1: Sensory evaluation of fried meat at different time using shea butter oil

DISCUSSION

The Crude protein Content result obtained could be due to interaction of protein molecules (action and myosin) in meat to form actionomysin Complex and increases myofibrila Proteins which have been covered by denatured Sarcoplasmic protein. Although, there was no significant different in ash, ether extract and crude fibre but 20 minutes frying time had the least values. The result obtained for the moisture content could be as a result of frying time that affected the moisture retained in the meat (Kassama and Ngadi, 2004).

The Organoleptic Scores Showed that most of the parameters were not statistically different. The higher Colour was recorded in T_3. Swan (1993) revealed that colour intensity depends on the way the incident light is absorbed or Scattered and this is influenced by P^H. The highest juiciness score was recorded in Treatment 3. It is directly related to the intramuscular lipid and moisture intent of the meat (Cross *et al.*, 1986). Treatment 1 was more tender, tenderness is known to be the most important sensory attributes that affect meat acceptability (Quali, 1990). The highest flavour attribute was also recorded in Treatment 1 although the value was not significantly different from other treatments. Meat Flavour had taste and aroma as components (Warris, 2000).

CONCLUSION AND RECOMMENDATION

In conclusion, in terms of proximate, 15 minutes frying time was well favored while 10 minutes frying time was well favored in organoleptic evaluation. It is recommended that Shea butter oil can be used in frying meat. Further research should be carried out on the use of Shea butter oil in frying for preservation of meat.

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