

Production of (Fermented) Ogiri-Okpei from locust beans (*Parkia biglobosa*)

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ABSTRACT

500g of locust bean were sorted, washed and boiled for 5 hours cooled and dehaulled. The dehaulled locust bean was washed and boiled again for 30 minutes. It was allowed to cool and was wrapped in Ugba leaves. The wrap was incubated for 6 days at room temperature to ferment. The fermented bean was mashed with mortar and pestle and was moulded into small ball shapes. It was further sun dried to minimize the activities of microorganism. The product was used for Egwusi soups.

The 10-man sensory panelist were used of evaluate the appearance colour, aroma, taste and overall acceptability of the different soup samples using a 9 point hedonic scale in which 1- dislike extremely and 9 like extremely. The result showed that the soup sample DCF was preferred most with the score 7 (moderately) based on the overall acceptability.

Keywords: *Locust bean, Fermented, Ogiri-Okpe, Microorganism, Sensory, Ugba leaves.*

INTRODUCTION

“Ogiri-Okpei” is a popular fermented condiment used by people in the Eastern part of Nigeria, Nsukka in Enugu State precisely. The production is based on microbial fermentation process. The origin of “Ogiri-Okpei” can be traced to the Igbo. However, different localities have different raw materials for its production. Its color is dull cream ash, brown or black. Its production initially was based only on one source ie castor seeds but people later discovered some other seeds, which can be as good as castor oil seed. Such seeds include locust bean seed, soya bean seed, melon seeds, fluted pumpkin seeds among others (Asiedu, 1989; Achi *et al.*, 1992; Akoma *et al.*, 2001 and 2002 and Nwakalor, 2016). It adds flavor and taste to soups such that its taste in the soup makes it highly delicious, appetizing and sumptuous. The flavor may be slight or strong depending on the quantity added or the extent of the proteolytic activities. It serves the same purpose as maggi cubes and other flavor enhancers. Locust bean seed (*Parkia biglobosa*) in savanna of the Sudanian region is a grain legume found growing in Savanna areas in Africa. It is fermented and added to soups, stew etc as condiments to enhance their flavor and nutritional value. The most important attribute of *P. biglobosa* is that its leaves remain green throughout the dry season (Gernah *et al.*, 2005 and 2007; Mehta *et al.*, 2012 and Sarkar and Nout, 2015). In Nigeria, fermented locust bean in Yoruba is called “iru”, in hausa “Dawadava” while in Igbo land is called Ogiri-igala”. It is referred to as “Kinida” in Sierra Leone and “Kpalugu” in Ghana. Soups and stews prepared with fermented locust bean (Ogiri-Okpei) are preferred in some regions in Africa because they have better taste and aroma (Musa *et al.*, 2005 and Nkama and Gbenyi, 2001). The seeds and pulp of locust bean have been successfully used as pig foods in Northern part of Nigeria and as a condiment is many African diets (Akoma *et al.*, 2001 and 2002 and Gloria *et al.*, 2011).

Boiled and fermented seeds of locust bean contain 35% protein 29% Lipids, 16% carbohydrates and have good organoleptic properties and a positive effect on intestinal flora. The seeds are good source of protein, fat & calcium but contain a non-toxic oil of variable composition (Gloria, 2011). Several species of bacteria were involved in the fermentation of locust bean seed. These include five (5) *Bacillus* *sps.* specially, *Bacillus subtilis*, *Bacillus licheniformis*, *B. megaterium*, *Staphylococcus epidermidis* and *micrococcus* *sps.* were found to be active organisms during this fermentation process. *Lactobacillus* *sps.* were present in low numbers towards the end of the fermentation (Achi, 1992). The Bark is also used as a mouth washes and contains saponins that clean teeth, vapor inhalant for toothache or for ear complaints. The pulp is supposedly a water purifier but possible sweetens and disguises taste of foul water (AOAC, 1995). The roasted locust beans are used as coffee substitute know as “Sudan Coffee” (Akoma *et al.*, 2002). It also plays a role in all major rituals, including those associated with birth, baptism, circumcision, marriage and death. It can also be preserved by salting and refrigeration.

MATERIALS AND METHODS

The locust bean seed and iodized salt were purchased at EKE market Awka, Anambra state. The weighing balance, mortar, pestle, Tap water, stove and pot were obtained from the food processing lab, Food Technology department, Federal Polytechnic OKO, Anambra state Nigeria. The Ugba wrapping leaves was obtained from one of the bushes behind the department.

500 gms of locust bean were cleaned by sorting, washed and boiled in fresh tap water for 5 hours. The water was drained off and by pouring cold clean water on the hot beans, the locust beans were cooled to a temperature tolerable for further handling. The locust bean seed was dehaulled. The dehaulled seed were washed and boiled again for 30 mins. The boiled beans was allowed to cool and then wrapped in ugba leaves and was sun dried for 6 days during which the wrap was turned from side to side for the content to receive adequate heat on the 7th day the dried dehaulled locust bean were mashed/grounded using a sterilized mortar and pestle. The grinding was done to as much smoothness as possible. Salt was added after grinding for taste and to improve the flavor. The grinded locust bean was mould into small round shapes and dried under the sun properly.

Preparation of Egusi Soup

Egusi soup was prepared with appropriate quantity of meat and fish boiled in fire. Palm oil and other ingredients *e.g.* peppers, crayfish, salt *etc.* were added. The sliced ukazi leaves was washed and allowed to drain the grinded egusi was dissolved and added into the boiling pot of soup. It was allowed to boil for some minutes till the egusi was properly cooked. The drained ukazi leaves was added into the soup and salt was added for taste.

The soup was then divided into two equal parts. Ogiri- Okpei was added to one pot, while 2 cubes of magi star was added to the second pot. They were allowed to heat differently for few minutes given room for formulation of the spices added to the 2 pots of soups. The soups were finally removed from the fire and served in codes for the sensory panelist to evaluate.

Sensory Evaluation

This was carried out in a well ventilated place. A 10-man sensory panel were used. Each panelist was given a questionnaire prepared for the purpose and the sample to be tested is presented to the panelist to test for the attribute color, Aroma, taste and over all

acceptability of the soup samples. Using Nine – Point hedonic scale in which 1 represent dislike extremely. The AOB was used as control (soup without Ogiri Okpei) The result of the sensory evaluation of the soup samples are presented in Table1.

Table 1
Sensory evaluation of the Soup

Samples	Colour/ Appearance	Aroma	Taste	Overall Acceptability
AOB	7.1	5.6	5.5	6.6
DCF	7.4	7.2	6.8	7.6

Code samples

AOB – Soup seasoned with 2 cubes of magi star (used as control)

DCF – Soup seasoned with reasonable quantity of Ogiri-Okpei.

RESULTS AND DISCUSSION

The Sensory parameters

- (i) Appearance/ Colour: The appearance/colour of a food product are a good parameter for measuring its quality because consumers “eat with their eyes”. There the color of Ogiri-Okpei was dark-brown unlike the color of magi star which is pure brown. The color of Ogiri-Okpei in the soup was preferred by the panelist because of its attractiveness as it scored 7.4 (Like moderately).
- (ii) Aroma: The aroma of a food product is generally perceived only when food product is put in the mouth and chewed and also during the point of swallowing. The aroma of Ogiri-Okpei in the soup, perceived by the panelist scored 7.2 (Like moderately) its smell is usually too strong and putrefactive which makes it prominent amongst other African spices as worked previously by Nkama and Gbenyi, 2001; Musa *et al.*, 2005; Mehta, *et al.*, 2012; Gloria *et al.*, 2011; Sarkar and Nout, 2015 and Nwakalor, 2016
- (iii) Taste: This is a response of the mouth and the tongue to the stimulns of the chemical components of the foods in the taste buds of the tongue which is the major sense organ of taste. Here, the Ogiri-Okpei in the soup which made it taste sumptuous and delicious scored 6.8 (like slightly).
- (iv) Overall Acceptability: This overall acceptability scored 7.6 (like moderately) which is similar to Akoma *et al.*, 2001 and 2002. Therefore, the sensory panelist on the average, preferred the soup sample DCF (Soup with Ogiri-Okpei) based on overall score of the sensory parameters.

CONCLUSION

Okpei was successfully produced using locust beans as a raw material for Ogiri-Okpei production because of its higher nutritional contents.

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