

## AWARENESS OF THE HEALTH BENEFITS AND ACCEPTABILITY OF *OGIRI* MADE FROM MELON AND SOYBEANS

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### ABSTRACT

*Ogiri* is a condiment traditionally prepared from melon. Melon seed is ground into paste and the paste is wrapped in small portions with leaves and left in a warm place until the characteristic aroma of the condiment is developed. This study investigated the awareness and acceptability of *ogiri* made from melon and soybeans in Ondo West Local Government Area of Ondo State. The study employed descriptive survey and experimental design. It was carried out on thirty (30) panelist purposively selected in Adeyemi College of Education, Ondo and sixty (60) randomly selected respondents in six (6) wards in Ondo West Local Government Area of Ondo State. Melon and soybean were obtained from the market, fermented and prepared into *ogiri*. The *ogiri* made from melon seed and that made from soybean were used to prepare dishes and served to thirty panelists in Adeyemi College of Education, Ondo. A questionnaire was structured and administered to the 60 respondents to determine their level of awareness of the nutritional contents of *ogiri* made from melon seed and that made from soybeans. Responses from the questionnaire were analyzed using descriptive and inferential statistics. The responses of the panelist revealed that *ogiri* from the two seeds were acceptable and there was no significant difference in their acceptability. Findings also revealed that respondents were aware of the nutritional and health benefits of *ogiri* made from melon seed and that made from soybean. The nutritional contents and acceptability of *ogiri* made from melon seed and that made from soybean were similar. *Ogiri* made from soybean was as acceptable in Ondo West Local Government Area as *ogiri* made from melon seed. Respondent were aware of the health benefits of *ogiri* made from melon seed and that made from soybeans. It was recommended that soybeans should be used in the production of *ogiri* in order to reduce the burden placed on melon seed, encourage the utilization of soybean in

the local government area, increase food security and reduce malnutrition especially among vulnerable groups.

**Keywords:** *Ogiri, soybean, melon seed, condiment.*

## INTRODUCTION

*Ogiri* is typically prepared from melon through fermentation process. It is used as a seasoning/condiment. There are many varieties of melon but *Citrullus lanatus* is used in the production of *ogiri*. Melon seeds are readily available in South-West Nigeria. The methods employed in the manufacture of fermented condiments differ from one region to another because these processes are based on traditional systems. In the case of *ogiri*, dehulled melon seeds are boiled for 2 - 3 hours. The seeds are ground into a paste. Ash from burnt palm bunch is added which imparts a grey colour to the paste. The paste is wrapped in small portions with leaves and left in a warm place until the characteristic aroma of the condiment is developed. It is further sun dried for 7 days on straw mats. Handling of *ogiri* before, during and after fermentation is crucial since a lot of off-flavour/aroma emanates. The use of chance fermentation coupled with unhygienic practices make the fermentation difficult to control and this result in the contamination of the product with pathogens or other microorganisms capable of producing toxins or odourous compounds that can cause off-flavours (Achi, 2005).

Melon (*egusi*) seeds are small and flat. One of the ends is rounded while the other is tap-ended. Melon belongs to the family of water melon. They grow in gourds which are mainly cultivated for their seeds as the flesh is neither sweet nor edible. They are also in varieties, the common one *Citrullus lanatus* (bara) is used in the production of *ogiri*, (Abiodun & Adeleke, 2010). Others identified are *Cucumeropsis manii* (Naudin) *ito*, *Colocynthis vulgaris* (Shard) *sewere*, *Cucumis sativus*, *Leganaria siceraria*, *Cucumeropsis edulis* (hook) and *Citrullus colocynthis* L (David & Aderibigbe, 2010). Melon is used as a common component of daily meals in West Africa. As an oilseed, of course, of natural origin, it is not out of place that different researchers may have results of its oil composition that differ slightly (Abbah, Sanni & Ejembi, 2014). The differences may be due to various factors acting independently or in synergy and could include, but not limited to the quality of the stock planted, the nature of the farmland, climatic conditions, processing techniques and analytical methods.

Interestingly, one thing that has been reported in unison is that melon oil predominantly contain unsaturated fatty acids (Bankole, Osho, Joda & Enikuomehin, 2005; Oluba, Ogunlowo, Ojeh, Adebisi, Eidangbe & Isiosio, 2008; Oguntola, 2010; Oluba, Eidangbe, Ojeh & Idonije, 2011). Melon seeds (*Citrullus vulgaris*) have been reported to contain 3.3% moisture, 15.5% crude fibre, 10.3% crude protein 8.2% carbohydrate and 52 % (Omafuvbe, Falade, Osuntogun & Adewusi, 2004; Okpalla, Ubajekwe, Agu & Iheukwumere, 2012). Oluba *et al.* (2008) reported that the percentage composition by weight of the oil is: lauric, 0.21%; myristic, 0.78%; palmitic, 13.45%; stearic 13.71%; oleic, 14.50%; linoleic, 56.94% and linolenic, 0.46%. This composition amounts to about 72% by weight unsaturated fatty acids, with 57.4% of it being polyunsaturated fatty acids (PUFA). Polyunsaturated fatty acids (PUFAs) are essential fatty acid, meaning the body cannot manufacture them and as such, they must be provided in the diet. The seeds have preservative properties in that, the posterior end when slightly and carefully open with the help of the incisors, can be placed at appropriate points on a fresh corpse as an effective embalmment procedure by some herbalists among the Igbos of Southern Nigeria (Odibo, Nwabunnia, Ezekweghi & Uzoeghe, 2012).

Very few have been done to produce *ogiri* from other seeds other than melon. Ogueke, Okoli, Owuamanam, Ikechukwu and Iwouno (2013) produced *ogiri* from fluted pumpkin seeds and found out that they are rich in protein and serve as flavouring. Like other legumes, soybeans are rich in nutrients. However, the macronutrient profile of soybeans differs in some important ways from most other legumes. Soybeans are higher in both protein and fat than other beans and are relatively low in carbohydrates (United Soybean Board, 2015). Besides the very high protein content, soybeans contain a lot of fibre and are rich in calcium and magnesium. The soy protein has a high biological value and contains all the essential amino acids (United Soybean Board, 2015). In Ondo, it has been observed through personal communication with people (especially the indigenes) that *ogiri* is preferred to *iru*, probably because of the variation in the aroma/odour. It is widely consumed in the area and readily available in markets. This is probably because of the aroma it gives foods. Some people in the area still find it difficult to consume vegetables without *ogiri*.

## STATEMENT OF THE PROBLEM

Malnutrition has assumed the status of a 'resident national health problem' in the country. Authors (Ali, Karim & Haider, 2005; Ekpo, Omotayo, & Dipeolu, 2008; Ajieroh, 2009; Ojiako, Manyong & Ikpi, 2009; Ajieroh, 2010; Amosu, Degun, Atulomah & Olanrewaju, 2011; Babatunde, Olagunju, Fakayode, & Sola-Ojo, 2011; Ola, Ahmed & Mofida, 2011; Aliyu, Oguntunde, Dahiru & Raji 2012; Akorede & Abiola, 2013) have determined its prevalence especially among vulnerable groups (infants, preschoolers, children and elderly). Over the years, efforts are made to ensure food security and eliminate malnutrition. Despite all efforts, these problems remain. One of such efforts made towards this end is fortification and supplementation that is, adding a food rich in nutrients that are deficient in the main food. *Ogiri* is an oily paste produced mainly from melon seeds which serves as a cheap soup condiment. It is a food flavouring condiment used in sauces and stews that serve as accompaniment to starchy root and vegetable diets. It is also added to foods as seasoning. It is embraced by many and its use is quite common in Ondo West Local Government Area of Ondo State. This condiment/seasoning is culturally prepared from melon and has been observed to be rich in fat, protein, potassium and sodium (David & Aderibigbe, 2010; Onawola, Asagbra & Faderin, 2012). On the other hand soybean is a species of legume widely grown for its edible bean which has numerous uses and rich in protein, fat and carbohydrates. It is abundantly available but less consumed by people in Ondo. The study therefore intends to compare the nutritional contents and health benefits of *Ogiri* prepared from melon and that prepared from soybeans towards reducing the state of malnutrition and encouraging the consumption of soybean in the local government area.

## OBJECTIVE OF THE STUDY

The main purpose of the study was to compare the nutritional value of *ogiri* prepared from melon and that from soybeans. Specifically, the study:

- i) highlighted the awareness of the nutritional contents of *ogiri* made from melon seeds;
- ii) highlighted the awareness the nutritional contents of *ogiri* made from Soybeans;
- iii) compared the acceptability of *ogiri* made from melon seeds and that made from soybeans.

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### **Research Questions**

- i) What are the nutritional contents of *ogiri* made from melon seeds?
- ii) What are the nutritional contents of *ogiri* made from soybeans?
- iii) What is the level of acceptability of *ogiri* made from melon seeds and that made from soybean?

## **METHODOLOGY**

### **Design**

The nature of the study warrants a descriptive survey

### **Population of the Study:**

The population of the study comprised of selected students, academic and administrative staff in Adeyemi College of Education, Ondo and selected men and women in Ondo West Local Government Area of Ondo State.

### **Sample Size and Sampling Techniques**

Purposive sampling technique was used to select thirty (30) panelist comprising of ten (10) students (5 males, 5 females), ten (10) (5 males, 5 females) academic and ten (10) (5 males, 5 females) non-academic staff in Adeyemi College of Education, Ondo. Sixty (60) men and women were randomly selected from the selected wards in Ondo West Local Government Area of Ondo State.

### **Research Instrument**

An acceptability form of 7-point hedonic scale and a questionnaire were used to elicit information from the respondents. The form consists of two sections. The questionnaire consists of three sections.

### **Administration of Instrument and Data Collection**

The researcher served panelists with foods and stews prepared with *ogiri* from melon and *ogiri* from soybean. Each dish carried a tag. Acceptability form of seven hedonic scales was administered to the respondents. The filled copies of the form and questionnaire were collected immediately after completion.

### Method of Data Analysis

The responses of respondents to the acceptability form and questionnaire were analyzed descriptively and inferentially using frequency counts, simple, percentages, mean and Analysis of Variance (ANOVA)

### FINDINGS OF THE STUDY

- a) Awareness of the nutritional contents of *ogiri* made from melon seeds

Table 1: Nutritional contents of *ogiri* made from melon seeds

N = 60, C = 2.5				
S/N	Nutritional contents of <i>ogiri</i> made from melon seeds	$\bar{X}$	Std. Dev.	Remark
1.	It contains as much protein as cow milk.	3.06	1.124	Agree
2.	When used, it improves the appearance of soup/stews.	3.00	0.730	Agree
3.	When used, it improves the taste and nutrients of delicacies.	3.26	0.815	Agree
4.	It contains some minerals required by the body and can be used as supplements.	2.97	0.795	Agree
5.	It contains nutrients that help build worn out tissues in the body.	3.00	0.730	Agree
6.	It is a cheap source of nutrients required by the body.	3.35	0.709	Agree
7.	It can be used in place of processed seasonings.	2.90	0.978	Agree

*N* - Total number of respondents, *C*-cut-off point,  $\bar{X}$  - mean, *Std. Dev.*- Standard deviation

Table 1 shows the awareness of people in Ondo West local Government Area of Ondo State on the nutritional contents of *ogiri* made from melon seed. The table revealed that the mean of items 1, 2, 3, 4, 5, 6 and 7 ranged from 2.90 to 3.35 and were greater than the cut-off point (2.5), hence, respondents agreed to all the item statements. The standard deviation for each item was relatively low which shows that the scores were clustered round the mean.

b) Awareness of on the nutritional contents of *ogiri* made from soybeans

**Table 2: Nutritional contents of *ogiri* made from Soybeans**

N = 60, C = 2.5				
S/N	Nutritional contents of <i>ogiri</i> made from soybeans	$\bar{X}$	Std. Dev.	Remark
1.	It contains as much protein as meat.	3.13	0.922	Agree
2.	It contains unsaturated fat that is useful for the body.	3.19	0.703	Agree
3.	When used it improves the taste and nutrients of delicacies.	3.35	0.608	Agree
4.	It contains some minerals required by the body and can be used as supplements.	3.39	0.495	Agree
5.	It contains nutrients that help build worn out tissues in the body.	3.32	0.748	Agree
6.	When used it improves the appearance of soup/stews.	3.06	0.963	Agree
7.	It is a cheap source of nutrients required by the body.	3.35	0.709	Agree
8.	It can be used in place of processed seasonings.	3.10	0.944	Agree

*N* - Total number of respondents, *C*-cut-off point,  $\bar{X}$  - mean, *Std. Dev.* - Standard deviation

Table 2 shows the awareness of people in Ondo West local Government Area of Ondo State on the nutritional contents of *ogiri* made from soybeans. The table revealed that the mean of items 1, 2, 3, 4, 5, 6, 7 and 8 ranged from 3.06 to 3.39 and were greater than the cut-off point (2.5), hence, respondents agreed to all the item statements. The standard deviation for each item was relatively low which shows that the scores were clustered round the mean.

- c) Level of acceptability of *ogiri* made from melon seeds and that made from soybean

**Table 3: Level of acceptability of *ogiri* made from melon seeds and that made from soybean**

	Appearance	Flavour	Taste	Texture	Overall acceptability
<i>Ogiri</i> (melon seed)	5.57±2.161 <sup>c</sup>	5.60±1.923 <sup>a</sup>	5.60±2.175 <sup>d</sup>	5.73±1.856 <sup>b</sup>	5.80±2.219 <sup>f</sup>
<i>Ogiri</i> (soybean seed)	6.13±1.041 <sup>c</sup>	5.83±0.874 <sup>a</sup>	6.10±0.923 <sup>d</sup>	6.20±0.847 <sup>b</sup>	6.17±1.020 <sup>f</sup>

*The mean of each parameter followed by common letter (e.g. <sup>a-a</sup> or <sup>b-b</sup>) superscript in the same column are not significantly different.*

Table 3 presents the level of acceptability of *ogiri* made from melon seeds and that made from soybean. The table revealed that respondents liked moderately the appearance, flavour, taste, texture and overall acceptability of *ogiri* made from melon and that made from soybean ( $\bar{X} \geq 5.57 \pm 2.161 \leq 6.20 \pm 0.923$ ). The table also revealed no significant difference in the appearance, flavour, taste, texture and overall acceptability of *ogiri* made from melon seeds and that made from soybean.

## DISCUSSION OF FINDINGS

*Ogiri* is one of the condiments that is often used to improve the taste of delicacies, but beyond that, it contains minerals required by the body and increases the nutrients of delicacies. It is a cheap source of nutrients made from melon but can also be made from legumes (soybean). This study investigated the awareness of the health benefits and acceptability of *ogiri* made from melon and soybeans. Respondents perceived that *ogiri* made from melon seed contains as much protein as cow milk, it improves the appearance of soup as well as the taste and nutrient of delicacies, it contains some minerals required by the body and can be used as food supplements and it also help to build worn out tissues in the body. Apart from the fact that it is a cheap source of nutrients required by the body, it can as well be used in place of processed seasonings. Ojieh *et al.* (2007) found out that the crude protein composition of melon was 23.4% and that is comparable to other plant proteins food sources such as soybean, cowpeas and pumpkin seeds.



Findings of this study showed that *ogiri* made from soybeans, contains as much protein as meat, has unsaturated fat that is useful for the body and just like *ogiri* made from melon, it improves the taste and nutrients of delicacies when used. It is also a cheap source of nutrients and can be used in place of processed seasoning. Belewu and Belewu (2007) found out that soybean is a cheap source of quality protein that is superior to all other plant foods because it has good balance of the essential amino acids. Its seed has a close protein content and fairly close amino-acids with cow milk. Adegoke *et al.* (2002) stated that the fat from the soybean is unsaturated type unlike saturated fats from animal origin and hence is good for heart disease patients. Also, Oshoand Dashiell (1998) showed that one kilogram of soybean contained as much protein as 2kg of boneless meat or 45 cups of cow's milk or 5 dozen of eggs.

Considering the nutritional value of soybean, it can be recommended in the production of *ogiri*. However, the study further considered the acceptability of *ogiri* made from soybean and found no significant difference when it is produced from the traditional ingredient (melon) and when produced from soybean.

## CONCLUSION

The nutritional contents and acceptability of *ogiri* made from melon seed and that made from soybean were similar. *Ogiri* made from soybean was as acceptable in Ondo West Local Government Area as *ogiri* made from melon seed. Soybean can be used in preparing *ogiri* condiment, it is highly nutritious, delicious and acceptable. In Ondo West Local Government Area, people are quite aware of the health benefits of *ogiri* made from melon seed and that made from soybeans.

## RECOMMENDATIONS

The study has found out that *Ogiri* made from soybean can compete favourably with that made from melon seed in terms of nutritional contents and acceptability. Based on this finding, it is recommended that producers of *ogiri* should utilise soybean in the production of *ogiri* in order to reduce the burden placed on melon seed and encourage the utilization of soybean in the local government area. Awareness and orientation programmes should be organized by governmental bodies and educational institutions on the nutritional benefits of soybean and the various dishes it can be used to prepare in order to encourage its use,

reduce the burden people place on other food products, increase food security and reduce malnutrition especially among vulnerable groups.

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