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**A SYNERGY BETWEEN AGRICULTURAL PRODUCTION,
TECHNOLOGICAL INNOVATION & MANAGEMENT EFFICIENCY:
A PANACEA TO ECONOMIC STABILITY
DURING PANDEMIC**

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EFFECTS OF PACKAGING AND STORAGE CONDITIONS ON THE PROPERTIES OF GROUNDNUT AND MELON OIL

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Abstract

The purpose of this study is to investigate ways of solving the problems encountered when extracting oil, and use of suitable packaging materials as well as encourage the oil processor the benefits of extraction and use of standard packaging materials. The study was carried out using five taste panels who evaluates the groundnut and melon oil, also sensory analysis was carried out. The groundnut and melon was roasted for about 30 minutes and then left for 15 minutes to cool. This study showed that the sensory qualities of groundnut and melon could be improved with supplementation of both oil in food production. The storage facilities should proved to prevent wastage associated with local crops by communities.

Keywords: Groundnut, Melon, Packaging, Processing

Introduction

Groundnut, Apios American is grown on a large scale in almost all the tropical and sub-tropical countries of the world. The most important groundnut growing countries are India, Ghana, Nigeria, Sudan and USA. It is grown over area of 24.4 million hectares and an average productivity of 1.6 metric tonnes per-hectare in the whole world (Gonzalez AA 2000). Groundnut is essentially a tropical crop. It requires a long and warm growing season, 50cm. during growing season abundance of sunshine and relatively warm temperature of (25-28°C) and lower temperature are not suitable for its proper development.

Melon (Egusi) belong to the family of water melon. They in grounds which are mainly cultivated for their seeds as the flesh is neither sweet nor edible, melon (Egusi) seed are small and flat. One end of the seed is rounded while the other is tapered.

After harvest, the grounds are the fermented fleshed is then washed off the seeds. The seeds are dried and the light brown husk removed by hand or mechanically. When ready to be used in food recipes, the white cream seeds are ground in to powder and used as soup thickener. This is because after it's harvested, it is dried and in this state, it can be stored for a very long time, they are cultivated during the beginning of the raining season, in the month of April through June and harvested at the onset of the dry season, in the month of October through December under cultivation. The surface is smooth pale green with irregular bands of mottled darker green radiation from the stalk. The flesh is pale green or yellow, and contains numerous brown seeds. In its wild form, the fruit is better to bland in taste, and largely inedible when fresh.

Groundnut is grown on a large scale in almost all the tropical and sub-tropical countries of the world. The most important groundnut growing countries are India, Ghana, Nigeria, Sudan and USA. It is grown over area of 26.4 million hectares with a total production 36.1 million tonnes and an average productivity of 1.6 metric tons in whole world. The groundnut is probably the most famous edible wild plant in Eastern North America. The species range is very broad, from Ontario to Quebec in the North to the Gulf of Mexico and from the Prairies in the west to Atlantic Coast. The Amerindians throughout this area utilized groundnut (Apios Americana) as a major food resource.

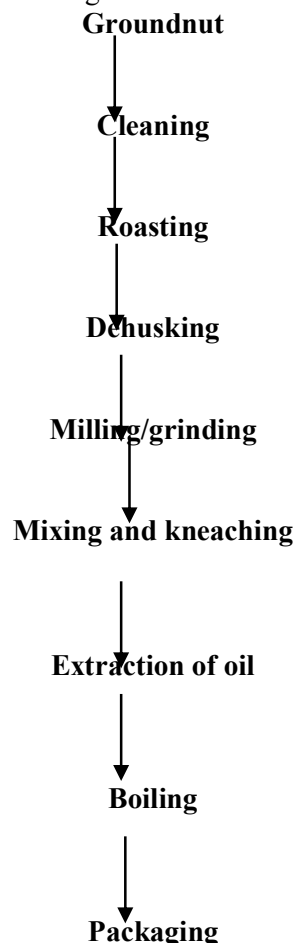
In fact, it is still common to find these plants growing over old Amerindian Village Sites. Early European Explorers and Colonists of North America, depended upon the groundnut for their survival. In the 1580's Colonists (Sir Walter Raleigh's) of settlement on Roanoke Island off the coast of North Carolina (The famous lost colony and the home of Virginia Dare, the first English child born in the new world) send sample of Apios to Queen Elizabeth in 1609, Captain John Smith of Jamestown (Virginia) wrote of the utility of this plant. The pilgrims of Plymouth (Massachusetts, 2001) survived on groundnut when their corn supply was exhausted.

Groundnut is a wild plant, it has a great potential as a future food source using modern genetic techniques selection of strains with superior growth characteristics should be possible, Research by Blackmon and Reynolds (2003) in Louisiana resulted in that it formed 3.7kg (ca.71bd) of tubes per plant in a single growing season. These authors believe that “the prognosis for developing *Apios Americana* as a food crop looks outstanding. If the domestication of this plant is successful, the need for fertilizer should be much reduce since *Apias* is a nitrogen fixing legume so, where can you get some? May be in a few years groundnut will be available in the supermarket. Mc. Donald’s will sell groundnut fries for people who want more protein and less starch, and Mizza will come with groundnut topping. But until then, you will have to dig your own, but be careful in Southampton, MA, offering seeds of perennial vegetables. Mr. Eric Toensmarier at West Africa requires an estimated 600,000 tones of groundnut seeds per year. According to Gomez and Gomez (2003), current seed supply schemes produce less than one-tenth of this requirement. If you manage to gather a meals worth of groundnut tubers (that is without getting arrested in Southampton of catching a case of poison along the connection River what is next? How do you look them? Pick up almost any book on edible wild plant and you will find a section of groundnut. Invariably recipes are included in such manual; boiled groundnut, roasted groundnut, baked groundnut, suited roasted groundnut, tubers may be peeled, sliced, diced and mashed. Some at these recipes are very imaginative and show real culinary creativity if you try out one of these experiments, you may be the first to taste the result. It is not recommended to eat raw tubes.

Methodology

Materials and method

The flow chart below shows the production of the groundnut oil.



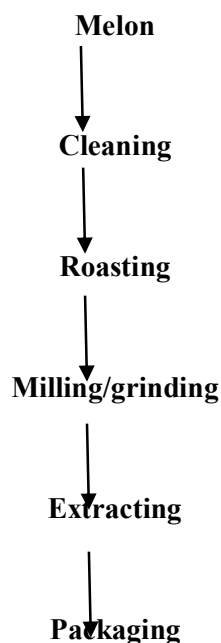
Material for processing melon oil

Material	Quantity
Bowl	Medium size
Stove	1
Knife	1
Spoon	1
Pot	Medium
Melon	500g
Water	10m/s
Salt	To taste

Material for processing melon oil

Material	Quantity
Bowl	Medium size
Stove	1
Knife	1
Spoon	1
Pot	Medium
Melon	500g
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Salt	To taste

The flow chart below shows the production process of the melon oil.



Traditionally, the groundnut seeds and melon seeds are removed from the rind and then roasted it for about 20-30 minutes respectively, remove the brown shell and dirt particles from the both seeds (Groundnut and Melon), Grind the two separately and add salt, little water and mix well and knead to extract oil, add 5ml water and boil for 10- 15 minutes, leave to cool and package in customized bottle.

Table below shows that the respondents that choosen excellent for sample a were 60% while respondents that choosen for sample b were 60%.the respondent choosen very good were 30% for sample b also the, the respondent choosen very good for sample a is 30% while respondent choosen good 30% for sample b also, the respondent choosen good for sample a is 10% while respondents for sample b is 10 . this indicate that most of respondent choosen excellent for sample a and b were 10% and 60%.It can be revealed that the colour of sample A and B were almost the same.

Range	Frequency	Percentage	Frequency	Percentage
Excellent	6	60%	6	60%
Very good	3	30%	3	30%
Good	1	10%	1	10%
Poor	0	0	0	00
Very poor	0	0	0	0
Total	10	100%	10	100%

The table below shows that the respondents that chose excellent for sample A were 40% while respondents that chooses for sample B were 30%. The respondentschooses very good were 30% while for sample B were 40%, the respondents chooses Good for sample A were 30% while respondents chooses sample B also 30%. Thisindicate that most of respondents were revealed the test of sample A.

Table 2: Distribution of the respondents according to the taste of groundnut and melon.

SAMPLE	A		B	
Range	Frequency	Percentage	Frequency	Percentage
Excellent	4	40%	3	30%
Very good	3	30%	4	40%
Good	3	30%	3	30%
Poor	0	0	0	0
Very poor	0	0	0	0
Total	10	100%	10	100%

The below table shows that the respondent that chooses Excellent for sample A were 30% while respondent that chooses for sample B were 70%. The respondents that chooses for very good were 60% in sample A, while respondents chooses for sample B were 10, the respondents chooses Good for sample A is 10% also. This indicates that most of respondents chooses Excellent for sample A is 30 while sample B is 70%. In summary, it can be revealed that the aroma of sample B is good.

Table 3: Distribution of the respondents according to the Aroma of Groundnut and Melon

Sample	A		B	
Range	Frequency	Percentage	Frequency	Percentage
Excellent	3	30%	7	70%
Very Good	6	60%	1	10%
Good	1	10%	1	10%
Poor	0	0	1	10%
Very poor	0	0	0	0
Total	10	100%	100%	100%

The table below shows that the respondents that chooses Excellent for sample A were 60% while respondents that chooses for sample B were 30%, the respondents chooses Very Good were 40% for sample A while

respondents chooses 50% for sample B also, the respondents chooses Good for sample A is 10% while respondents fro sample B is 20%. It revealed that the Appearance of sample A is better than that of sample B.

Distribution of the respondents according to the appearance of Groundnut and Melon

Sample	A		B	
Range	Frequency	Percentage	Frequency	Percentage
Excellent	6	60%	3	30%
Very good	4	40%	5	50%
Good	1	10%	2	20%
Poor	0	0	0	0
Very poor	0	0	0	0
Total	10	100%	10	100%

The table below shows that the respondents that chooses Excellent for sample A were 60% while respondents that chooses for sample B were 30%, the respondents chooses Very Good were 40% for sample A while respondents chooses 50% for sample B also, the respondents chooses Good for sample A is 10% while respondents fro sample B is 20%. It revealed that the Appearance of sample A is better than that of sample B.

Table 5: Distribution of the respondents according to the Texture of Groundnut and Melon.

Sample	A		B	
Range	Frequency	Percentage	Frequency	Percentage
Excellent	2	20%	4	40%
Very good	4	40%	3	30%
Good	4	40%	3	30%
Poor	0	0	0	0
Very poor	0	0	0	0
Total	10	100%	10	100%

The table below shows that the respondents that chooses Excellent for sample A were 70% while respondents that chooses for sample B were 50, the respondents chooses very Good were 20% for sample A while respondents for sample B were 40%, the respondent chooses fro Good were 10% for sample A, while respondents chooses for sample B were 10% also.

This study showed that the sensory qualities of groundnut and melon oil could be improved with supplementation of both oil in food production. The sensory evaluation was analysed in term of colour and overall acceptability indicate that groundnut oil can be used as supplementation and substitution in food production.

Table 6: Distribution of the respondents according to the overall of Groundnut and Melon.

Sample	A		B	
Range	Frequency	Percentage	Frequency	Percentage
Excellent	7	70%	5	50%
Very good	2	20%	4	40%
Good	1	10%	1	10%
Poor	0	0	0	0
Very poor	0	0	0	0
Total	10	100%	10	100%

Conclusion

Based on the findings of the study, it was observed that, majority of the respondents which is represented by 70 % appreciate the product A by saying it was excellent which 20 % observed the product were very good and the remaining 10 % of the respondents concluded that the product was good. However, based on the findings for sample B, it was observed that 50% of the respondents appreciate the product by saying it was excellent while 40% observed that the product were very good and the remaining 10% of the respondents concluded that the product was good. This study showed that the sensory qualities of groundnut and melon oil could be improved with supplementation of both oil in food production. The sensory evaluation was analyzed in term in of colour and overall acceptability indicates that groundnut oil can be used as supplementation and substitution in food production.

Recommendation

Based on the effects of packaging and storage conditions on the properties of groundnut and melon oil. The result indicated that individual should have necessarily facilities and instrument required for the study, on this note, we hereby recommended these product for the use of food processors.

References

- AOAC (2006). Association of Official Analysis Chemists, Official Method for Analysis 13th Edition Washington.
- Black and Reynolds (2003) in Louisiana Resulted in that it Formed 3.7kg (ca.71lb) Tubers per Plant in Single Growing Season.
- Brown, G.F., Armstrong, D.F. and Macrae, J.C. (2005). The Establishment in One Operation of Cannula into Rumen Cannula into the Duodenum and Ileum of the Sheep. Br. 124:78 – 81.



- Gonnez, K.A. and Gomes A.A. (2003). Statistically Procedure for Agricultural Research, 2nd Ed. Willy and Sons Inco. 80 – 85 .
- Hussein, E.I.A., Steven, B. and Belyea (2005). Lowering Rumen Degradability of Groundnut by Heat Treatment. *Sud. J Vet Sci. Anim. Husb.* 44(1):75 – 80.
- Lynch, L.G., Berger, L.L., Mercher and Baker, C.E. (2005). Effect of Heat and Alcohol Treat of Soya Beans on Nitrogen Utilization. *Sheep. J. Anim. Sci.* 9:30 – 60.
- Okewole, Lawal F. (2003). Investment by the Common Found for the Commodities.
- Massachusetts, (2001) Survilled on Groundnut when their Corn Supply was Exhausted.