



Effect of Moringa Oleifera Leaves and Spinach on the Proximate Composition and Acceptability of Yam Balls

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Abstract: This study is aimed at determining the proximate composition and acceptability of yam balls. Forty (40) sensory evaluation sheet were used in order to analyze results. The result indicated that the overall attributes for sample A and Bin of color sample A has 9.1 and sample B has 8.2 in terms of taste and flavor s A has 8.5 and 8.6 while sample B has 8.3 and 8.4 respectively. Also for texture and general acceptability sample A has 8.3 and 9.00 while sample B has 8.6 and respectively. Also the research of the proximate composition of the product b percentage the result shows that sample A has color 22.7%, taste 21.2%, texture 20.7%, flavor 21.5%, general acceptability 22.5% while for sample B has co 205%, taste 20.7%, texture 21.5%, flavor 21.0% and general acceptability I respectively.

Key words: Composition, Moringa, Leaves, Spinach & Yam Balls

INTRODUCTION

Yam is an important staple food crop in many communities Yam according to (Uguru 1996). Belongs to the family of Dioscorecea which is one of the monocoteplants which is planted and harvested every farming season. It's propagation as food and staple crop carried out with six species which are popularly cultivated in Nigeria namely; Dioscorecea rotundata, (white yam), Dioscorecea al (water yam), Dioscorecea cayenesis (yellow yam), Dioscore bulifera (aerial yam), Dioscorecea asculenta (Chinese yam); Dioscorecea dumentorum (trifoliale yam). (Osuji 1985). Stated that the genus classified as monocotyledonous crop under the genus Discocerea, family Discocereaceae and under Discocereales. The author stressed further that many people lay emphasis on Discoc rotundata, which is consumed mostly on the tropical zone. O species like Discocerea alata, Discocerea cayenesis, Discoc dumentum, Discocerea esculenta and Discocerea bulferia are cultivated but in a minute quality. In the opinion of (ININA, 20C yam is a stem tuber crops which is inch in carbohydrate Ugu (1996), emphasized that among all the six species of yam that cultivated in Nigeria. Discocereaceae rotundata is the most important species that is cultivated in most of the Eastern States of Nigeria.

These states include Anambra, Ebonyi, Enugu, Abia and I State. This species of yam is also cultivated in Edo, Benue Adamai Taraba and Southern Section of Kaduna State. Emedo (2004) agreed with (Uguru 1996) stating that Discocerea rotundata is much the most important species in cultivation in Southern-Eastern State of Nigerian This is as result of adaptability of yam to the environment and 1 yield derived from it. Processing

of food for human consumption of prime importance in determining the consumer's acceptance the particular food (F.A.O. 2000). Ihekeronye (1986) def processing as an activity designed to alter the shape and size product with a view to improving the handling and qu; CNWEKE 19921. Emphasizing that processing involvestransformation of the raw produce into other forms in which it can stored or eaten. Processing improves the acceptability, palatability and digestibility of the produce. I the view of (Onweme, 1991).

Processing is seen as a means of reducing post-harvest losses tropical roots and tuber crops Siki (1999) stated that yam can processed into the following major products and they include: Y« flour, yam flakes, yam chips and pounded yam. (Uguru, 19 emphasized that yam can be processed into various types of food which includes pounded yam, boiled yam, roasted yam or gilled y filled yam, mashed yam, yam chips, yam flakes and yam balls.

Yam balls is a common snack in Ghana and the product originally prepared from yam tuber, the processing of preparing y is to peel and cut the yam into cubes, cover in pot with water season with salt, boil to soft and then drain out the water while still hot, mash the yam together with butter, egg yolk, garlic powder white pepper, paprika, adding salt if necessary, add the timely chopped spring onions and coriander if desired (Roth). Into small balls and dip into the unliked egg mixture, spread the bread crumbs on a plate and role the balls on it, waiting it evenly now heat oil in a deep fryer, work or large sauce pan to 180°C cook them for around 3 minutes until they rise to the top and are golden brown and crisp drain the balls on kitchen paper. Then place in a warm oven while you coo the remaining balls. Serve this on a platter with some weakye leaf shito and freshly ground "pepe" (Blended mixture of scotch to taste smith 2002).

AIMS AND OBJECTIVE

- To produce yam balls with Moringa and spinach
- To determine the effect of spinach and Moringa on the proximate composition of yam balls, using food composition tableSensory evaluation

RESULTS AND DISCUSSION

Table 1; Overall Attribute of Sample

SAMPLE	COLOUR	TASTE	TEXTURE	FLAVOUR	GENERAL ACCEPTABILITY
A	9.1	8.5	8.3	8.6	9.00
B	8.2	8.3	8.6	8.4	8.5

The table above indicated that the overall attributes for sample A and B in terms of colour sample A has 9.1 and sample B 8.2 in terms of taste and flavor sample A has 8.5 and 8.6 while sample B has 8.3 and 8.4 respectively. Also for texture and general acceptability Sample A has 8.3 and 9.00 while sample B has 8.6 and 8.5 respectively.

Table 2: Percentage Distribution of Samples

SAMPLE	COLOUR	TASTE	TEXTURE	FLAVOUR	GENERAL ACCEPTABILITY
A	%	%	%	%	%
A	22.7	21.2	20.7	21.5	22.5
B	20.5	20.7	21.5	21.0	21.2

The table above shows the percentage distribution of the sensory evaluation questionnaires for both samples. Sample A shows that the responded mixely proforted the colour of the sample. Sample B shows that responded mixely proforted the texture of the sample.

USES OF FOOD COMPOSITION TABLE

TABLE 3: YAM SP (DIOSCOREA ARMATA TUBER RAW)

French Name	Food Energy	Moisture %	Protein %	Fat %	CHO %	FIBER %	ASH %	CA %	
	Others	100g	100g	100g	100g	100g	100g	100g	100g
Ignames	116	68.4	3.0	1	27.0	10.0	1.5	69	4

TABLE 4: 4 MORINGA OLEIFERA M. PTERYAOSPERM LEAVES RAW.

French Name	Food Energy	Moisture %	Protein %	Fat %	CHO %	FIBER %	ASH %	CA %
Moringa	78	73.9	8.2	6	14.7	2.1	2.6	571

TABLE 4.4

Iron	Retinol	13-Carotene	Thiamine	Riboflavin	Niacin	Tryptophan	Ascorbic Acid	Reference
		EQUIVALENT		VIA		HAN	ACID	AS PURCHASE
Mg	Micro	Micro	Mg	Mg	Mg	100g	Mg	%
100g	100g	100g	100g	100g	100g	100g	100g	
11.4	11.920	.22	.77	2.6			182	

4.5 SPINACH

French	Food	Moisture	Protein	Fat	CHO	FIBER	ASH
NAME	ENERGY	%	%	%	%	%	%
	Calories	100g	100g	100g	100g	100g	100g
Amaranthus	4.2	84.0	5	4.2	8.3	1.8	2.9

IRON	RETINOL	B-CAROTENE	THIAMINE	RIBOFLAVIN	NIACIN	TRYPTOPHAN	ASCORBIC ACID
							IN PURCHASE
Mg	Microgram	Microgram	Mg	Mg	Mg	Mg	Mg
8.9		5,716	/05	1	1.2		

CONCLUSION

This research work shows yam balls is very important and is good for our health. Therefore, encourage people to go for yam production. This is attributed to fact based data collected and the result obtained from this research which revealed that the nutritive value of the yam is so great and several health benefits can be achieved from intake of the yam.

RECOMMENDATION

I will like to draw the attention of government women, doctors, dieticians and nutritionist on the following recommendations.

1. Government should invest on yam production.
2. Women/mothers should go into traditional method of processing yam balls.
3. Doctor should recommend or even prescribe the use of yam balls to patients suffering from diseases like malnutrition and many other diseases.
4. Dieticians and nutritionist should encourage the intake of yam balls generally and include the preparing therapeutic diet for certain disease/condition.

REFERENCES

According to the Food and Agricultural Organization Report, in 1985, Nigeria Produced 18.3 million tones of yam from 1.5 million hectare, representing 73.8 percent of total yam production in Nigeria.

Blended mixture of scotch bonnet tomatoes and onions with a pitch of salt to taste (Smith 002), *Dioscorecea Exculenta* (Chinese Yam) and *Dioscorecea dumertorum*) trifotate yam Osuji, 1985.

Emoda 2004 agreed with (Uguru 1996). In the opinion of Nena 2008 yam is a stem tuber rops.

Ihekeronye (1986) Defined Processing as an activity designed to cover shape and sign.

Knuth (1924) Estimated that there are about 600 species in the genus *Dioscoreal*.

Nweke 1992 Emphasis that processing involve transform 2:: ;r of the raw produce into other form, Processing improve acceptability, palatability and digestibility produce onivuece 1991).

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Tropical root and tuber siki 1999.

Uguru 1996 emphasized that among all the six species of yam that it cultivated in Nigeria. Yam is an importance staple food crop in many communities According to (Uguru 1996).

Uguru (1996) Emphasized that yam can be processed into various types of food which includes pounded yam, yam balls, friend yam.