



**OYO STATE COLLEGE OF AGRICULTURE AND
TECHNOLOGY, IGBOORA (OYSCATECH)**



in Collaboration with

OYSCATECH GLOBAL CONSULT

PRESENTS

2ND BIENNIAL CONFERENCE

TAGGED:

OYSCATECH

2021

E-Proceeding

Theme:

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

Date: Mon. 12th - Thur. 15th July, 2021

Venue: 800-Seater, Lecture Hall, OYSCATECH, Igboora

Editors:

Dr. W. B. BELLO, Dr. M. A. MOSOBALAJE

Dr. G. O. OYELERE, Mr. R. A. AJAO

A COMPARATIVE ANALYSIS OF NUTRIENT COMPOSITION AND ACCEPTABILITY OF JUTE LEAF (EWEDU) TREATED WITH POTASH AND SODIUM BICARBONATE.

Olatunji, I. I.¹, Oyeniyi, A. O.², LHameed, W. A.¹

¹Department of Home and Rural Economics; ² Department of Food Technology
Oyo State College of Agriculture and Technology, Igboora. Oyo State. Nigeria.

Abstract

This study comparatively analysed the nutrient composition and acceptability of Jute leaf treated with potash or sodium bicarbonate. The preparation of Jute soups took place in the Department of Home and Rural Economics Food Production Unit of Oyo State College of Agriculture. Jute leaf was cooked with addition of Potash, Sodium Bicarbonate or no additives at all. A chemical analysis of the three soups was undertaken and results showed that Sample B (jute leaf prepared with potash) had the highest nutrients in Fe (183.800 μg), Mn ((3.645 μg), Zn (1.299 μg) and Vit.. C (64.059 μg). Thus, sample B had highest nutrients overall. The sensory evaluation showed that overall acceptability of the Jute soup without addition of potash and Jute soup with Sodium bicarbonate had higher acceptability (95%). It was concluded that jute leaf soup is nutritious and accepted irrespective of the additives. It is recommended that jute leaves with potash should be encouraged for its nutritive properties.

Introduction

Jute Leaf (*Carchorus Olitorious*) known as Ewedu in Yoruba land. Ahinghara (Igbo) and Rama or Ayoyo (Hausa) is a traditional soup usually taken with local solid foods such as Amala, Fufu, Gaari etc (Agoyi, Olajubu & Osuntokun, 2019; Udomoh 2020) The younger jute leaves are generally tender and has flavour but the older leaves are fibrous and woody. Jute leaf contains vitamins which are key in the protection of the body against diseases. Consumption of jute soup improves the immune system, nourishes the body and beautifies the skin. (Udomoh, 2020).

Most nutrients needed for the proper functioning of the human body are found in Jute leaf. It is rich in carotenoids, vitamins A C, B, K, Folic acid, calcium, potassium and iron and dietary fibres. It is also rich in both essential and non-essential amino acid, such as lysine. (Okoye 2020) These vitamins are important in protecting the body against degenerative diseases like cancer. The Jute leaf has high antioxidant property such as vitamin E and contains: vitamin A that helps in repairing the body's cells and improve eyesight. Some nutrients that we can get from eating ewedu are listed below:

• 20 calorie, 0.3 gr of fat, 3.1 gr of carbohydrate, 0.4 gr of fiber, 1.3 gr of protein, 87 mg of calcium, 22 mg of phosphorous, 1,334 IU of beta-carotene .1 mg of iron, 0.02 mg of thiamine, 0.04 mg of riboflavin, 0.3 mg of niacin, 10 mg of Vitamin C and 48.9 IU of Vitamin. (DrHealthBenefits.com.2017)

Health benefits of eating ewedu include:

1. Prevent aging
2. Ward off cancer.
3. Strengthen bones and teeth
4. Reduce the pain.,
5. Stabilize blood pressure,
6. Lower cholesterol levels
7. Prevent skin cancer
8. Preventing acne,
9. Prevent prostate problems.
10. Reduce interference in women when in menstrual period,
11. Solve hair problems,
12. Improve Brain Function,
13. Helps Lose Weight
14. Cure Asthma
15. Overcome digestive problems.
- 16 Improves eyes vision,
- 17.. Accelerate the regenerate of body cells.
- 18 Maintain the nail clean
19. Lower the risk of cataracts and other eye disorders,
20. Improve the immune of body
21. Cure Ebola virus (DrHealthBenefits.com.2017)

Micronutrient deficiencies are major global public health problem especially in low-income countries .i.e. . resource poor countries Exact data of number affected and the prevalence is not available but estimated to be more than 2 billion people globally and a lot are suffering from multiple micronutrient deficiencies (Tulchisky, 2010). Many of these micronutrients are embedded in jute leaves.

The general objective of the study is to examine the nutrient composition and acceptability of jute leaf (ewedu) soups; while the specific objectives are to:

- i. Treat jute leaf samples with specified additives (potash and sodium bicarbonate);
- ii. Undertake a chemical analysis of jute soups to determine the nutritional composition; and
- iii. Evaluate the acceptability of Jute leaf soups comparatively.

Methodology

This research was carried out at Food Production Unit of Home and Rural Economics in Oyo State College of Agriculture and Technology Igboora. The micronutrient analysis of jute leaf soups was carried out at Central Laboratory of University of Ibadan, Oyo State.

Twenty (20) taste panelists comprising ten (10) staff and ten(10) students were drawn from Department of Home and Rural Economics of Oyo state College of Agriculture and Technology Igboora.

3.1 Preparation of jute leaf without additives, with Potash & Sodium Bicarbonate

Jute leaves without Additives		Jute leaves with Potash		Jute leaves with Sodium bicarbonate	
Material	Quantity	Material	Quantity	Material	Quantity
Pack of fresh Jute leaves	2 packs	Pack of fresh Jute leaves	2 packs	Pack of fresh Jute leaves	2 packs
Ground crayfish	1 table spoon	Ground crayfish	1 table spoon	Ground crayfish	1 table spoon
Locust bean	1 table spoon	Locust bean	1 table spoon	Locust bean	1 table spoon
Seasoning	To taste	Seasoning	To taste	Seasoning	To taste
Salt	To taste	Salt	To taste	Salt	To taste
		Potassium	(KLM 04)	Sodium Bicarbonate	

3.2 Preparation of Jute leaves

- a. Remove the leaves from the stem and rinse under cold water to remove the dirt of the leaves.
- b. Boil a cup of water (depending on the quantity of the leaves) chop the clean leaf. Then pour it into the boiling water.
- c. After boiling complete the process by blending it together..
- d. Add locust beans, seasoning, ground crayfish. Stir and simmer 2.3 minutes.
- e. Check the seasoning and take off the heat,

Results and Discussion

4.1 Sensory evaluation

4.1.1 Sensory evaluation of the sample A (Jute soup without potash):

Texture: From the result of the sensory evaluation it was revealed that 11 (55%) of the respondent likes the colour of the sample A (Jute without potash), 5 (25%) liked it very much 3 (15%) liked it moderately and 1 (5%) of the respondent slightly.

Flavor: The result from the stable shows that 8 (40%) of the respondents liked flavor of the Jute without potash extremely, 8 (40%) likes it very much and 4 (20%) liked it moderately.

Aroma: It was revealed on the table based on the result from the sensory evaluation that 10 (50%) of the respondents liked the aroma of the sample A (Jute without potash) extremely, 2 (10%) liked it very much, 3 (15%) liked it slightly.

Colour: The result from the table shows that 12 (60%) of the respondents liked the colour of the soup extremely, 4 (20%) liked it very much, 3 (15%) moderately and 1 (5%) liked it slightly.

Overall acceptability: The result from the sensory evaluation shows that 10 (55%) of the respondents liked the overall acceptability of the soup extremely, 5 (25%) liked it very much and 4 (20%) liked it moderately.

4.1.2 Sensory evaluation of the sample B (Jute soup with potash):

Texture: From the result of the sensory evaluation it was revealed that 10 (50%) of the respondent likes the colour of the sample B (Jute wit potash), 3 (15%) liked it very much 3 (15%) liked it moderately and 2 (10%) of the respondent slightly.

Flavor: The result from the stable shows that 10 (50%) of the respondents liked flavor of the Jute without potash extremely, 4 (20%) likes it very much and 6 (30%) liked it moderately.

Aroma: It was revealed on the table based on the result from the sensory evaluation that 10 (50%) of the respondents liked the aroma of the sample B (Jute with potash) extremely, 2 (10%) liked it very much, 6 (30%) liked it moderately and 2 (10%).

Colour: The result from the table shows that 12 (60%) of the respondents liked the colour of the soup extremely, 4 (20%) liked it very much, 3 (15%) moderately and 1 (5%) liked it slightly.

Overall acceptability: The result from the sensory evaluation shows that 11 (55%) of the respondents liked the overall acceptability of the jute soup with potash extremely, 3 (15%) liked it very much and 4 (20%) liked it moderately.

4.1.3 Sensory evaluation of the of sample C (Jute soup with sodium bicarbonate):

Texture: From the result of the sensory evaluation it was revealed that 5 (25%) of the respondent likes the colour of the sample C (Jute with sodium bicarbonate), 2 (10%) liked it very much 3 (15%) liked it moderately and 5 (25%) of the respondent slightly.

Flavor: The result from the stable shows that 11 (55%) of the respondents liked flavor of the Jute sodium bicarbonate extremely, 4 (20%) likes it very much and 5 (25%) liked it moderately.

Aroma: It was revealed on the table based on the result from the sensory evaluation that 6 (30%) of the respondents liked the aroma of the sample C (Jute with sodium bicarbonate) extremely, 5 (25%) liked it very much, 5 (25%) liked it moderately and 4 (20%).

Colour: The result from the table shows that 10 (50%) of the respondents liked the colour of the soup extremely, 5 (25%) liked it very much, 3 (15%) moderately and 2 (10%) liked it slightly.

Overall acceptability: The result from the sensory evaluation shows that 8 (40%) of the respondents liked the overall acceptability of the jute soup with sodium carbonate extremely, 4 (20%) liked it very much and 4 (20%) liked it moderately.

The values obtained for Vitamin C present at high concentrations with (42.831mg/100g) in sample A (Jute with bicarbonate). Thus eating vegetables will bring out increase in ones blood level. The differences in the value

obtained for the samples could be due, partly to their source (Sai and Tindall 2016), or the land where they are harvested from. Finally, an observation of table shows that Sample B (Jute with potash) has (183.800 μ g/g) and Sample C has (36.172 μ g/g) while the sample D has high concentration of Iron (15.967 μ g/g) and Vitamin C (63.383mg/100g).

4.1.4 Discussion: The sensory evaluation showed that overall acceptability of the Jute soup without addition of potash nor sodium bicarbonate and Jute soup with Sodium bicarbonate had highest of 95% acceptability while Jute soup with potash has the least acceptability 90%. which show that Jute soup without any addition is well accepted.

Parameters	Texture F %		Flavour F %		Aroma F %		Colour F %		Overall accept F %	
Without Potash										
Like extremely	11	55.0	8	40.0	10	50.0	12	60.0	10	50.0
Like very much	5	25.0	8	40.0	2	10.0	4	20.0	5	25.0
Like moderately	3	15.0	4	20.0	6	30.0	3	15.0	4	20.0
Like slightly	1	5.0	-	-	2	10.0	1	5.0	1-	5 -
Undecided	-	-	-	-	-	-	-	-	-	-
Dislike slightly	-	-	-	-	-	-	-	-	-	-
Dislike moderately	-	-	-	-	-	-	-	-	-	-
Dislike very much	-	-	-	-	-	-	-	-	-	-
Dislike extremely	-	-	-	-	-	-	-	-	-	-
Total	20	100	20	100	20	100	20	100	20	100
With Potash										
Like extremely	10	50.0	10.0		10.0	50.0	12	60.0	11	55
Like very much	3	15.0	4.0		2.0	10.0	4	20.0	3	15.0
Like moderately	3	15.0	6.0		6.0	30.0	3	15.0	4	20.0
Like slightly	2	10.0	-		2.0	10.0	1	5.0	-1	5.0
Undecided	2	10.0	-		-	-	-	-	-1	5.0
Dislike slightly	-	-	-	-	-	-	-	-	-	-
Dislike moderately	-	-	-	-	-	-	-	-	-	-
Dislike very much	-	-	-	-	-	-	-	-	-	-
Dislike extremely	-	-	-	-	-	-	-	-	-	-
Total	20	100	20	100	20	100	20	100	20	100
With Sodium Bicarbonate										
Like extremely	5.0	25	11.0	55.0	6.0	30.0	10.0	50.0	8.0	40.0
Like very much	2.0	10	4.0	20.0	5.0	25.0	5.0	25.0	4.0	20.0
Like moderately	3.0	15	5.0	25.0	5.0	25.0	3.0	15.0	4.0	20.0
Like slightly	5.0	25	-	-	4	20.0	2.0	10.0	3	15.0
Undecided	5.0	25	-	-	-	-	-	-	1	5.0
Dislike slightly	-	-	-	-	-	-	-	-	-	-
Dislike moderately	-	-	-	-	-	-	-	-	-	-
Dislike very much	-	-	-	-	-	-	-	-	-	-
Dislike extremely	-	-	-	-	-	-	-	-	-	-
Total	20	100	20	100	20	100	20	100	20	100

Table 1 Showing the result of Sensory Evaluation.

4.2 Micronutrient Analysis

The result of Jute soups shows that the micronutrients contents of sample B (Soup with Potash) was highest in Fe (183.800 μg) followed by Sample A (36.172) and Sample C (28.565). Sample B was highest in Mn (3.645) followed by sample C (3.315) and Sample A (0.682), Sample B that is soup with potash was highest in Zn (1.299) followed by Sample C (1.085) and Zn was absent in Sample A (0.000). Cu (0.143) was present in Sample A but absent in Samples B and C that is soup with potash (0.000). Vitamin C (64.059) was highest in Sample B, followed by Sample C (42.831) and Sample A (21.412) and Vitamin A (0.008) was the same in Samples A, B and C, The result shows that Sample B had the highest nutrients Fe, Mn, Zn and Vit. C but low in Cu . Sample B that is soup with potash had highest nutrients overall.

Table 2 Results of the micro nutrients of Jute soups

Sample	Fe ($\mu\text{g/g}$)	Mn ($\mu\text{g/g}$)	Zn ($\mu\text{g/g}$)	Cu ($\mu\text{g/g}$)	Vitamin (mg/100g)	CVitamin ($\mu\text{g/100g}$)	A
A	36.172	0.682	0.000	0.143	21.412	0.008	
B	183.800	3.645	1.299	0.000	64.059	0.008	
C	28.565	3.315	1.085	0.000	42.831	0.008	

Conclusion: Jute Soup is well rich in micronutrients and all the methods of treatment made use of are well accepted but treatment with potash gave the highest micronutrients

References

- Agoyi, T. O, Olajubu, F.A., & Osuntokun, O. T. (2019) Evaluation of Corchorus Olitorius, Ukuere a food condiment found in the Southwestern Nigeria: A Scientific and Cultural Significance. *International Journal of Social Science Technology* 4(4).
- DrHealthBenefits.com (2017) 21 Health Benefits of Eating Jute Leaves (Ewedu) on <http://rarmersdigest.org/21-health-benefits-of-eating-jute-leavesewedu/> downloaded from Farmers Digest on 9/7/2021
- Ngozika Okoye (2020) Ewedu, More Than Just a Vegetable Pharmanews online.com
- Tulchinsky, T.H. (2010) Micronutrient Deficiency Conditions: Global Health Issues. *Public Health Rev* 32, 243–255. <https://doi.org/10.1007/BF03391600>
- Udomoh, E. (2020) Side Effects and Health Benefits of Ewedu (Jute Leaf) nimedhealth.com.ng/2020 . H. (2010) Micronutrient Deficiency Conditions- Global Health Issues. *Public Health Rev* 32,243-255.