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CONSUMERS KNOWLEDGE AND CONSUMPTION MANNER OF BOILED CASSAVA ROOT SOLD IN GASHUA, YOBE NIGERIA

[*]Saheed Adewale OMONIYI [1], Phidelia Ramatu WAZIRI-UGWU[2]

[1]*Department of Home Science and Management, Federal University, Gashua, Yobe State Nigeria,*
omoniyidewale2005@yahoo.com
[2]*Department of Agricultural Economics and Extension, Federal University, Gashua, Yobe State Nigeria*
*Corresponding author
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Abstract: *The study investigated the consumers' knowledge and consumption manner of boiled cassava root sold in Gashua, Yobe Nigeria. Well-structured questionnaire were administered to one hundred and fifty (150) people on information on their demographic characteristics and also on their knowledge about boiled cassava root. The data obtained were analyzed with descriptive statistic. The results showed that majority of respondents are young people (19 – 28 years), male (70.70%), married (61.34%), University graduate (54.67%) and civil servant (72.00%). Majority of the respondents (56.00%) are not aware that cassava roots have anti-nutritional factors but also majority (65.20%) of the respondents knew that cassava roots have little nutrient contents. Majority of the respondents (54.70%) are consuming boiled cassava root as meal and they did not suffer from any ailment after eating boiled cassava root while minority (5.30%) reported that they suffered stomach ache after consuming it. However, majority (72.00%) of the respondents like eating boiled cassava root with protein based foods such as beans (53.30%), bambara nut (4.00%), pigeon pea (1.30%), eggs (6.70%), groundnut cake (4.00%) and meat (2.70%) while remaining 28.00% stated that they are addicted eating it without protein based foods. The study showed that the majority of the respondents are not aware that cassava roots contained anti-nutritional factors but they aware that it is safe to be consumed. Also, majority of the respondents knew that cassava roots have little nutrient contents but consuming it with non-protein foods, and they like to be eating it with protein based foods especially beans.*

Keywords*: Cassava root, Boiling, Consumer knowledge, Hydrogen cyanide, Safety*

1. Introduction

Cassava is grown widely in tropic and sub-tropic countries due to its comestible root [1]. Cassava can withstand drought and survive in poor soil [2]. Cassava roots have abundant carbohydrate content with lower protein content and other nutrient contents [2]. Also, Falola [3] reported that cassava roots have high quantity of carbohydrate content with great value of inexpensive calorie. Various varieties of cassava roots has been recognized and grouped as either sweet cassava or bitter cassava with respect to linamarin content in the root [4]. Anti-nutritional contents in bitter cassava root are higher than in sweet cassava root [5]. Hydrogen cyanide is being released during the processing of cassava roots and the degree of removing it is based on methods of processing used [6]. Different processing methods such as peeling, pressing, boiling, fermentation, soaking, grating and drying reduce the cyanide level of cassava root to safer level [7], [8].

However, Montagnac et al. [9] revealed that two or more processing methods are being used to lower the anti-nutritional or increase the quality of cassava products. Various Authors have reported in literature that boiling majorly reduce anti-nutritional properties in cassava roots. Boiling has reported as an important method of lower the cyanide in cassava root [7]. Also, Omosuli [10] reported that boiling majorly lower the anti-nutritional contents in cassava roots while Montagnac et al. [9] revealed that boiling cassava with high volume of water or cutting cassava roots into smaller size improve the effectiveness of boiling method to reduce cyanide. The significant of cassava has improved seriously over three decades [11]. The increase in populations of people in cassava cultivated nations shall keep on supply domestic market for cassava root and its various products [11]. Numerous people in underdeveloped nations utilize cassava roots and its various products as principal foods [12]. In Nigeria cassava roots are being processed to flour, tapioca, chips, fufu and cassava meal [7]. In Nigeria, cassava provides nearly 70% of calorie to more than fifty millions people [13]. Gashua is headquarters of Bade local government located in north east, Yobe state, Nigeria. Gashua is located in semi-arid region of northern part of Nigeria and lie between latitude 11^{o} 50^{1} and 12^{o} 55^{1} -North, and longitude 10^{o} 35^{1} and 11^{o} 15^{1}East [14]. The food crops being planted in Gashua includes millet, groundnut, sorghum, rice, wheat and cowpea [15]. However, probably due to hot weather condition, cassava root is not being cultivated in Gashua. Thus, it is being purchase from Nguru and Tulo-tulo in Yobe state and also from Kwarin kanwa in Niger Republic, Boiled cassava root is only snack of root and tuber crops sold in Gashua throughout the year. It is cheaper in price, always available and selling on all streets of Gashua. People living in Gashua irrespective of age, gender, religious affiliation, educational background and social class consume boiled cassava roots.

Since boiling reduces the cyanide content of cassava root and boiled cassava root is consumed throughout the year in Gashua, there is need to investigate the consumption manner and consumers knowledge about nutrient contents and safety level of boiled cassava root.

2. Materials and methods

2.1 Study location

The study was carried out in Gashua, the headquarters of Bade local Government of Yobe state North-East, Nigeria.

2.2 Methodology

Well-structured questionnaire were administered to one hundred and fifty (150) respondents. Information on their demographic characteristics and also on their knowledge about boiled cassava root sold in Gashua, Yobe state, Nigeria was gathered.

Data analysis

The data were analyzed with descriptive statistic which includes frequency counts and percentages.

3. Results and discussion

Figure 1 shows the frequency and percentage of respondents' ages that consume boiled cassava root. The ages of respondents are grouped as 19 - 28 years (34.67%), 29 - 38 years (32.00%), 39 - 48 years (21.33%), 49- 58 years (9.33%) and above 58 years (2.67%). The result showed that majority of ages of respondents that consuming boiled cassava root are the young people (19 – 28 years).

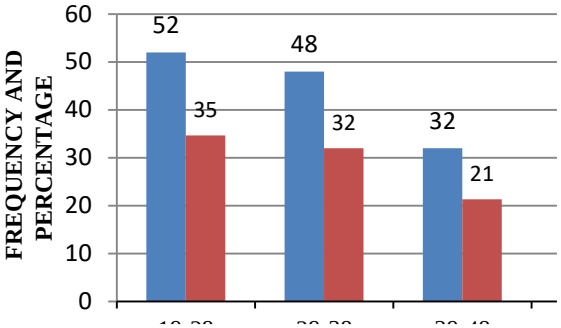

Fig.1. Frequency and percentage of age groups of respondents

Table 1 shows the demographic characteristic of the respondents. The result showed that majority of the respondents were male (70.70%) and married (61.34%). Also, majority of the respondents were University graduates (54.67%) and civil servant (72.00%).

Table 1: Demographic characteristics of respondents

Parameter	Frequency	Percentage (%)
Gender		
Male	106	70.70
Female	44	29.30
Marital status		
Single	56	37.33
Married	92	61.34
Separated	2	1.33
Educational background		
University	82	54.67
Polytechnic	12	8.00
College of education	16	10.67
College of agriculture	6	4.00
Secondary school	34	22.66
Occupation		
Civil servant	108	72.00
Politicians	4	2.66
Business personnel	10	6.67
Students	28	18.67

Figure 2 shows the frequency and percentage of respondents' source of safety information for consuming boiled cassava root. Majority of the respondents got the information from school (42.70%) while others got their information from radio (12.00%), television (5.30%), newspaper (1.30%), internet (4.00%) and parent (34.70).

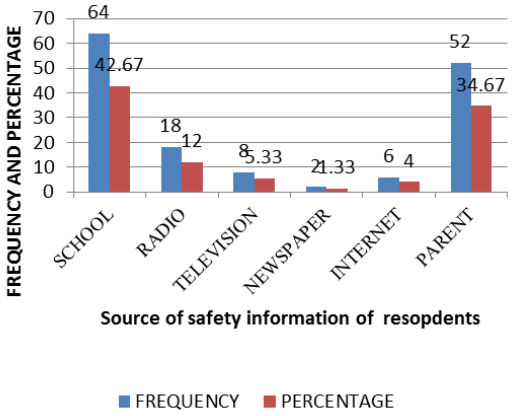

Fig. 2. Source of safety information of respodents for consuming boiled cassava root

Figure 3 shows the frequency and percentage of quality attributes of boiled cassava root preferred by respondents. The quality attributes of boiled cassava root preferred by respondents are taste, texture and aroma. However, majority of the respondents preferred taste (88.00%) while others preferred texture (8.00%) and aroma (4.00%).

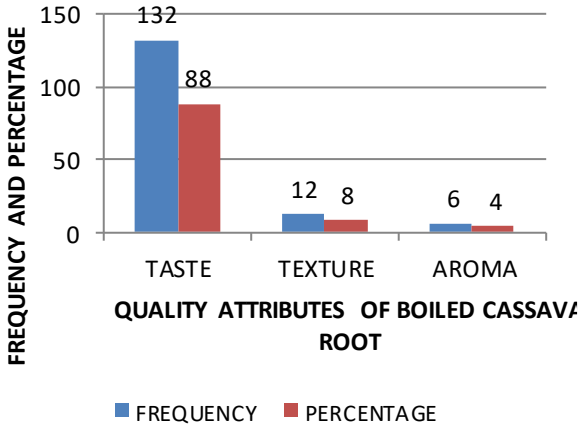

Fig.3. Frequency and percentage of quality attributes of boiled cassava root

Figure 4 shows the frequency and percentage of food items consumed with boiled cassava root by respondents. However, the food items are non-protein foods which include salt (17.33%), pepper (20.00%), salt/pepper (14.67%) and salt/pepper/maggi (48.00%).

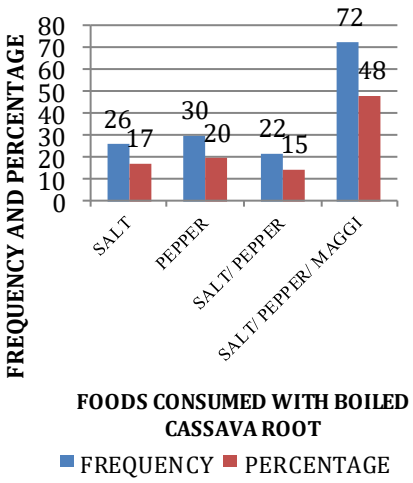

Fig.4. Frequency and percentage of food items consumed with boiled cassava root

Table 2 shows the respondents knowledge about boiled cassava root. Majority of the respondents (56.00%) are not aware that cassava roots contained anti-nutritional factors. This is in line with Thomas and Philips [8] who revealed that cassava processors are not aware that cassava roots contained cyanide content.

However, out of minority (44.00%) respondents that aware that cassava roots have anti-nutritional factors, most of them got their information from school (32.00%) while others got their information from radio (5.33%), television (1.33%), newspaper (1.33%), internet (2.68%) and parent (1.33%%). Majority of the respondents (94.70%) did not suffer from any ailment after eating boiled cassava root. The minority of the respondent (5.30%) reported that they suffered stomach ache after consuming boiled cassava root.

Table 2

Respondents' knowledge about boiled cassava root

Question	YES		NO		If yes, how?		
	Frequency	Percentage	Frequency	Percentage	Source	Frequency	Percentage
Are you aware that cassava roots have anti-nutritional factors?	66	44	84	56	School Radio Television Newspaper Internet Parent	48 8 2 2 4 2	32.00 5.33 1.33 1.33 2.68 1.33
Have you suffered from any ailment after eating boiled cassava root?	8	5.30	142	94.70	Stomach ache (ailment)	8	5.30
Do you know that cassava roots have little nutrient content?	98	65.30	52	34.70	School Radio Internet Parent	76 8 8 6	50.70 5.30 5.30 4.00
Do you like eating it with protein based food?	108	72	42	28	Beans Bambara nut Pigeon pea Eggs Groundnut cake Meat	80 6 2 10 6 4	53.30 4.00 1.30 6.70 4.00 2.70

The stomach ache can be attributed to fact that the consumed boiled cassava roots were not thoroughly boiled by the seller. This problem can be overcome by boiling of cassava root thoroughly by the seller as this is in line with Ezeigbo et al. [7] who reported that cooking of cassava root for ninety minutes resulted in over 93% decrease in cyanide. 65.20% of the respondents knew that cassava roots have little nutrient contents. The higher percentage is due to the fact that all respondents are literate. The 65.20% respondents got their information from school (50.70%), radio (5.30%), internet (5.30%) and parent (4.00%). Since cassava root has little nutrient contents, 72.00% of the respondents like eating boiled cassava root with protein based food while the remaining 28.00% stated that they are addicted to eating it without protein based foods. However, majority (72.00%) of the respondents like eating boiled cassava root with protein based foods. Out of 72.00% of the respondents, majority of respondents like eating boiled cassava root with beans (53.30%), while other respondents like eating it with bambara nut (4.00%), pigeon pea (1.30%), eggs (6.70%), groundnut cake (4.00%) and meat (2.70%). Since, majority of respondents like eating boiled cassava root with protein based foods especially beans, the combinations of two foods comprises high carbohydrate and protein and this is in agreement with Omeire [16] who revealed that proteins of cassava root are rich in arginine but poor in others amino acids, thus it need to be complimentary with protein based foods. Also, consumption of boiled cassava root with protein based foods will prevent some protein-deficient diseases as Akoja and Mohammed [17] reported that the utilization of cassava is limited due to lesser quantity of protein contents and its consumption has been resulted with malnutrition.

Table 3 shows Respondents means of eating, purchasing time and price of boiled cassava root. Majority of the respondents (54.70%) are consuming boiled cassava root as meal while remaining 45.30% are consuming it as snack.

Table 3
Respondents means of eating, purchasing time and price of boiled cassava root

Question			
Means of eating		Frequency	Percentage
	SNACK	68	45.30
	MEAL	82	54.70
Time of purchasing and eating per day	ONE	134	89.34
	TWO	8	5.33
	THREE	8	5.33
Amount bought at a time	₦10 -₦50 ($0.03 -$0.14)	58	38.67
	₦60 -₦100 ($0.17 -$0.28)	48	32.00
	₦110 -₦150 ($0.31 -$0.42)	14	9.33
	₦160 - ₦200 ($0.45 -$0.56)	24	16.00
	₦210 -₦250 ($0.58 -$0.69)	6	4.00

This could be attributed to the fact that boiled cassava root can be bought at cheaper price. The respondents are purchasing and consuming boiled cassava root one or two or three times daily with majority (89.34%) consuming it one time daily. The amounts of boiled cassava root bought at a time range from ₦10 - ₦250 ($0.03 - $0.69). However, majority of the respondents (38.67%) bought boiled cassava root within the range of ₦ 10 - ₦50 ($0.03 - $0.14) while others are ₦60 - ₦100 [$0.17 - $0.28] (32.00%), ₦110 - ₦150 [$0.31 - $0.42] (9.33%), ₦160 - ₦200 [$0.45 - $0.56] (16.00%) and ₦210 - ₦250 [$0.58 - $0.69] (4.00%).

4. Conclusions

The study showed that the majority of the respondents are not aware that cassava roots have anti-nutritional factors but they aware that it is safe to be consumed. Also, majority of the respondents knew that cassava roots have little nutrient contents, but consuming boiled cassava root as meal with salt, pepper, and Maggi which are non-protein foods, and they like to be eating it with protein based foods especially beans.

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