Cocoyam Food Preference at Household Level in Southwest Nigeria

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ABSTRACT

The study assessed preferences of Cocoyam foodstuff against its local substitutes in South-west Nigeria. Cocoyam is produced for local consumption and Nigeria is a world major producer. Interview schedule was used to elicit information from 322 respondents from four states in the region. Two local government Areas were purposively selected from each state based on the availability of the crop. Cocoyam foodstuffs were matched against their twenty two closest substitutes and respondents rated their preferences on a continuum. The ratings were subjected to Cochran Q-Test. Results showed that Cocoyam was preferred to yam by 70% of respondents in six major utilization forms. It was not preferred to other foodstuffs like corn flakes, potato chips, maize pap and solid meal, etc. There was a proportionate difference between the perceived characteristics of Cocoyam foodstuff and consumers` utilization level, Q-value of 561.02, $p < 0.05$. Cocoyam food preference does not depend on perception but availability of the close substitutes. Hence, increased production of Cocoyam foodstuff is recommended to make the processed Cocoyam foodstuff cheaply available to city and rural dwellers alike to increase nutritional status of Nigerians.
Keywords: Cocoyam foodstuff , utilization, food preference, substitute, Cochran Q

INTRODUCTION

Cocoyam is one of the major tuber crops produced in Nigeria for local consumption alongside yam, cassava, Irish potato and sweet potato. The crop is mainly grown by women and in most cases planted as an intercrop in established farms. It is therefore regarded as a woman's or lazy man's crop, a poor man's food. Lyonga and Nzietchueng (1986) reported that the per capita consumption of cocoyam is only 43 calories per day. This is about one-seventh of the value of yam consumption and one-sixth of cassava's consumption in Nigeria.

Cocoyam is an excellent weaning meal due to its total digestibility which is about 97%. Some people in Nigeria cherished cocoyam and they use it a lot as foodstuffs particularly the Idomas and the Agatus of the Middle Belt of Nigeria (Agbelemoge, 2003)

Statement of Research Problem

In the Southern States of Nigeria, these starchy tuber crops together with fruits provide between 50% to 90% of the daily per capita energy intake and form 20% to 28% of the daily protein intake. Yam and cassava remained the most valuable of the tuber crops in Nigeria. Cocoyam always carried a low importance despite its high nutritive value as evident from its exceptional richness in ash, low fibre and fairly a good source of ether extracts (Oyenuga, 1968).
The people regarded cocoyam as inferior to yam. Hence, they see cocoyam as a poor man's food. They seldom consume it. The Yorubas of the Southwest Nigeria find it difficult to consume as a staple food, a crop that grows wild in the bush. In certain parts of Edo and Delta States of Nigeria, there was the misconception that cocoyam causes tiredness and thus make men lazy. Hence, only the females eat it. Cocoyam is regarded as a subsistent crop of the low-income African families (Nyiira, 1994). It is therefore considered for consumption during the periods of hunger or food scarcity.

The introduction of the early maturing and high yielding cassava varieties led to the relegation of cocoyam both in production and consumption. The extensive researche in maize, rice and cassava have also led to the decline in the acceptability of cocoyam as food. The same situation prevails in most parts of Southwest Nigeria. Hence, there is need for this study.

Objective of the study

This study examined the pattern of cocoyam utilization at household level in southwest Nigeria and determined the people's preferences for cocoyam foodstuffs. The hypothesis of the study was formulated in a null form as:

Ho: There is no significant or proportionate difference between the perceived characteristics of cocoyam foodstuffs and cocoyam utilization level.

The basis of this hypothesis is that personality, attitude, memories, moods, experiences and psychological differences that determine ones preferences are found to influence food choice and behaviour.

Theoretical Framework

Food Choice; Food choice is a psychological phenomenon. It should be interpreted in the light of theory of human behaviour such as Personal Construct Theory (Thomson and McEwon, 1989).

Statement of Theory; There are substantial differences between individuals in their preferences for food choices and diet. Understanding these differences in preferences and in food choice are of major concern in determining the factors influencing food consumption. Generally, any form of food related behaviour is the result of interaction between three things namely: the consumer, the food itself, and content or situation within which the interaction takes place (Gains, 1994). This is presented in **Figure 1.**

Perception of Cocoyam foods; Initially, a construct is related to an individual's perception of other people and the differences between them. In practice, objects are arranged into groups of three (triads), such that each object appears in at least one triad and that one object from each triad is carried over to the next triad. Each triad is presented to the consumer and two of the objects within the triad are arbitrarily associated with each other and dissociated from the third. The consumer is then asked to describe how the two associated objects are similar and in the same way different from the third. The consumer is asked to describe the extremes of each elicited construct so as to form a scale on which the object can be quantified on a continuum.

METHODOLOGY

Area of Study

The area of study was the Southwest Nigeria covering Lagos, Ogun, Oyo, Osun, Ekiti, and Ondo states. The area lies in the humid tropical rain forest zone bordered by the mangrove forest to the South although some part close to the Middle Belt have derived forest or guinea savannah vegetation. The rainfall distribution is about seven (7) months although there are hardly three consecutive months without rain and the region experiences double maximal of rain in June and late August-September with annual amount of rainfall between 800 – 1500 millimetres and between 75% to 95% humidity round the year. The inhabitants of this region are the Yoruba speaking ethnic group who produce food and cash crops in arable and permanent tree plantations mostly in mixed cropping systems. They produce all tuber crops except Irish potato, which does not adapt to the humid tropics. Yam is their indigenous crop but other crops had gained prominence due to yam's laborious production requirements, which make cassava and cocoyam to be fast taking its place.

Sampling Technique and Sample Size

A purposive sampling technique was used to select four out of six states in Southwest Nigeria. Three of these four states are renowned for high volume of cocoyam production and consumption namely Ekiti, Ondo and Ogun States and the fourth state Lagos as a consuming state. Two (2) Local Government areas were purposively selected from each state based on the volume of cocoyam produced and consumed. These resulted into eight LGAs in all.

A random sampling technique was applied to select three communities from the headquarters of each local government area using balloting systems. The names of the communities were written on paper, folded, dropped in a bag and picked one after the other resulting into a total of twenty four communities from all the four states sampled for the study.

At the community level, a systematic sampling procedure was followed at 20% intensity. In Linear settlements, every 12th house was selected starting from 1, 13, 25, 37, etc. In nucleated settlements, from every five streets one street was selected. In that street every 5th house is selected starting from 1 , 5 , 10 , 15 , 20 , 25 , 30 , 35 , 40 , etc. From each of the community, fifteen households were randomly selected and interviewed. This yielded three hundred and thirty two respondents.

Measurement of variables

This referred to the way the respondents perceived the cocoyam foods in relation to other foodstuffs. The cocoyam food is presented and paired with another closely related foodstuff and the third (triad) foodstuff that is totally different from the previous two. The consumer is asked to describe them using the triad as the origin and basis of estimation on a scale of 0, 1 2 to 9. The rating of cocoyam is then compared with the other foodstuff to determine its preference whether higher or lower and by what magnitude. It is based on George Kelly's Personal Construct Theory of triadic elicitations from consumers, adapting Pearce, et al (1986) Unipolar Hedonic Magnitude Estimation scale of 0, 1, 2, 3, ……. to 9

The statements under triad elicitation of preference levels were:

Roasted cocoyam, yam and cassava

Boiled cocoyam, yam and cassava

Pounded cocoyam, yam and breadfruit

Cocoyam cake (ojojo), yam and cassava

Cocoyam porridge (Ikokore), yams and cassava

Fried cocoyam, yam and cassava

Cocoyam local chips (eepa), yam and potato

Cocoyam fufu, cassava and yam.

Cocoyam meal, cassava (tapioca) and potato

Cocoyam starch, cassava and yam

Cocoyam leaf soup, cassava and yam

Cocoyam ebiripo, banana (momo) and maize (abari)

Cocoyam flakes, cornflakes and cassava flakes

Cocoyam chips, potato and cassava

Corm size, irish potato and breadfruit nuts

Cocoyam pap, maize and soyabean

Cocoyam biscuit, corn (kokoro) and cassava

Cocoyam Ebiripo (white), maize (eko) and beans (ekuru)

Cocoyam bread, corn bread and cassava bread

Cocoyam baby food, guinea corn and soyabean.

Cocoyam leaf meal, baobab (Luru/ose) and ilako

Cocoyam petiole (odunrun), mushroom and pumpkin meat

Method of Data Analysis

For the analysis, the number of times cocoyam foodstuff is preferred to other foodstuff is noted and summed up while number of times that other foodstuffs are preferred to cocoyam foodstuffs were also noted and summed up and tested for difference in the preferences of cocoyam foodstuff to other foodstuffs using Cochran Q test.

Non-Parametric Statistics–Cochran Q Test; The Cochran Q Test is an extension of McNamara's chi-square test for changes in frequencies or proportions of more than two dependent samples. It specifically tests whether several matched frequencies or proportions differ significantly among themselves. Cochran Q Test is particularly appropriate for data recorded in nominal scale or that have been artificially dichotomised as in this case; more preferred or less preferred.

Hypothesis; Cochran Q test was used to determine whether the difference in utilization levels of cocoyam is proportionate to the perceived characteristics of cocoyam foodstuffs.

The Cochran Q test made it possible to determine the proportionality of the respondents` preferences of cocoyam foods to their utilization levels. It tested for the proportionate difference in cocoyam utilization levels and cocoyam food preferences; based on the factors such as personality, attitude, memories, moods, experiences and other psychological differences that determine one's preference that influence food choice and consumption.

The data on food preference were recorded in ratio scale. The respondent's preferences of a food over the other (matched pair) were quantified in magnitude of 0 to 9. This was dichotomised and recorded, more preferred as 1's and less preferred as 0's.This information was fed into the computer and instructed to perform Cochran Q test on them

The formula for Cochran Q test is:

$$Q = \frac{K - 1\,(K\Sigma\,(X2) - (\Sigma ij)2)}{K\Sigma ij - \Sigma\,(Y)2}$$

Where

Q is Cochran Q test value

K is the number of matched pairs..

X is the summation of the preferences of the matched pairs in rows.

Y is the summation of individual respondents` preferences in columns

Σij is the summation of the preferences of the ith row and the jth column

K–1 is the degree of freedom

Chi square table is useful for the determination of the significant level.

RESULTS AND DISCUSSIONS

Cocoyam was preferred to yam by 70% of respondents in six major utilization forms in the region namely: roasted Cocoyam by 68%, when boiled by 64%, Cocoyam cake by 72%, Cocoyam porridge by 68.5%, while fried cocoyam by 70.7%, cocoyam local chips by 53.3% and cocoyam leaf meal by 59% but cocoyam was not preferred to other foodstuffs like corn flakes, potato chips, maize pap and solid meals, corn biscuit and bread, guinea corn baby food, baobab draw leaf and mushroom.(see **Table.1).**

Hypothesis Testing:

The test of hypothesis was highly significant as Cochran Q-test value was 561.02 at $p<0.05$. Therefore, the hypothesis of no proportionate difference is rejected and the alternate hypothesis accepted that there was a proportionate difference between the perceived characteristics of cocoyam foodstuffs and the consumers` cocoyam utilization level.

CONCLUSION AND RECOMMENDATIONS

Cocoyam was preferred to yam in the study area. About 70% of respondents preferred cocoyam to yams in six major utilization forms except pounded yam that was slightly preferred to pounded cocoyam by 52% of the respondents. Cassava was preferred to cocoyam foodstuffs in its three major forms by 71% averagely but cocoyam leaf meal was preferred to cassava leaf meal by 59%. Cocoyam was subsequently preferred less to all other foodstuffs like corn flakes, potato chips, maize pap, and maize solid meal, corn biscuit, and bread, guinea corn baby food, baobab draw leaf and mushroom. The mean of the normalized score was 0.0014 while it ranged from –18.67 to 30.11 and the standard deviation was 7.85.Cocoyam was preferred to all yam foodstuffs for it had been a close substitute for long to an extent that they preferred it to yam - their main staple, except for pounded yam but had been rated lower in preference than any other foodstuffs in every sphere. Thomas and Gunden (2017) reported that Consumers preferences are guided by 5 attributes of the foods: freshness, taste, hygiene, nutritional value, and affordable price. Cocoyam cannot substitute cassava more so when cassava is cheaply available due to the explosive researches that had accelerated cassava production and made it a food name in every home. So also cocoyam cannot substitute maize for it is cheaply available everywhere. Cocoyam food preference does not depend on perception but the availability of cocoyam in the absence of its substitute. Commercial production and processing of cocoyam is recommended to make the processed cocoyam food products available to the rural people and city dwellers thereby promoting utilization while the increased utilization of cocoyam will enhance the nutritional status and health of the rural populace..

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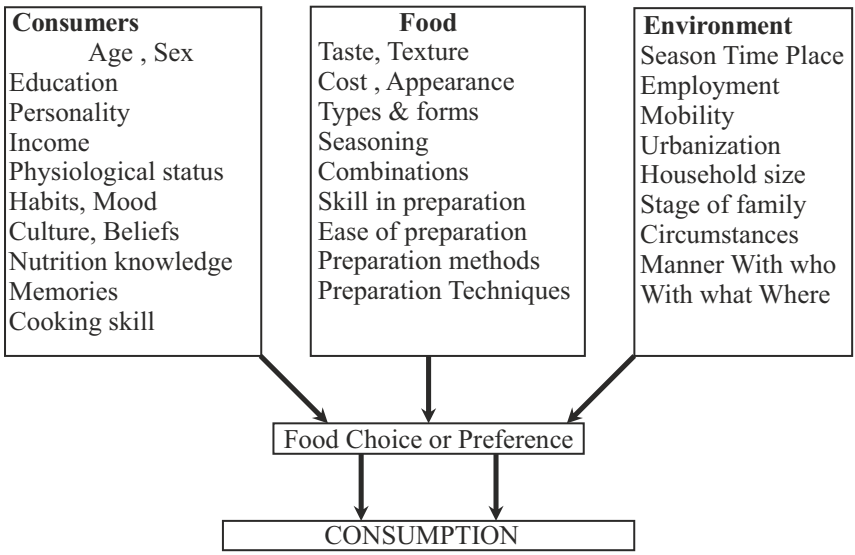
Table 1. Cocoyam Food's Perception and Preference Level in Percentages

Variable	Ekiti	Ondo	Ogun	Lagos	Mean
1. Roasted Cocoyam and yam	58.8	72.3	65.1	85.7	68.0
2. Boiled Cocoyam and yam	58.8	63.7	74.4	73.5	66.4
3. Pounded Cocoyam and yam	22.9	48.4	59.8	82.9	48.5
4. Cocoyam cake and yam	69.4	70.4	78.1	71.4	72.3
5. Cocoyam Porridge and yam	73.5	71.0	59.3	71.4	68.5
6. Fried Cocoyam and yam	71.8	74.2	63.6	74.3	70.7
7.Cocoyam local chips and yam	62.0	56.8	34.5	56.7	53.3
8. Cocoyam fufu and cassava	16.9	23.1	05.8	21.9	16.7
9. Cocoyam meal and cassava	65.9	54.4	20.6	41.4	48.5
10. Cocoyam starch and cassava	17.1	29.6	07.8	46.7	22.5
11. Cocoyam leaf meal and cassava	70.2	59.3	45.2	55.2	59.0
12. Ebiripo and banana (momo)	37.8	26.8	58.8	32.1	39.3
13. Cocoyam Flakes and cornflakes	50.0	36.1	17.2	15.6	31.6
14. Cocoyam Chips and potato chips	45.0	37.8	31.4	42.4	38.6
15. Cocoyam corm size and irish potato	29.3	19.5	50.0	25.8	30.7
16. Cocoyam pap and corn/maize pap	11.1	07.7	04.6	12.9	08.6
17.Cocoyam Biscuit and corn (kokoro)	36.4	20.5	10.8	13.3	21.9
18.White ebiripo and maize (eko)	27.6	16.3	44.6	29.0	28.3
19. Cocoyam bread and corn bread	30.1	16.1	05.1	06.7	16.5
20. Cocoyam baby food and guinea corn	28.1	17.4	10.2	25.8	20.1
21. Cocoyam leaf meal and baobab (luru)	44.3	29.7	18.0	16.1	29.8
22. Cocoyam Petiole and mushroom	51.7	61.2	42.4	74.1	54.9

Figure. 1. Factors influencing food preference and choice



(Source: Randall &Sanjur, 1981, Gains, 1994).