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Cultural Revival and Documentation of Nigerian Abandoned and Contemporary Food Derivations from Cassava

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Abstract:

The language and the cultural heritage of a group which includes the peoples' cuisine are the keys to their existence and identity. Centuries ago, Nigeria's populace was sufficiently fed by Nigeria's traditionally processed foods which cassava derivatives formed the majority. With foreign food infiltration into the Nigeria culture, Nigerian's preference for foreign foods increased. Contemporarily, many Nigerian foods including cassava derivatives are socio-culturally abandoned and their processing methods moribund. As a result, there is food scarcity in Nigeria and the prices of food in Nigeria skyrocket daily leaving the poor masses hungry, sick or afflicted with diseases. This paper emerged to study the processes of some abandoned and contemporary cassava derivatives which if revitalized, rebranded and domesticated, will curb the food scarcity threat and boost the Nigerian economy. The study serves as an archive to Nigeria's traditional cassava food processing methods for further studies towards repackaging to suit the contemporary society to save them from extinction and boost the nation's food supply. This research, adopted the use of, oral interviews, questionnaires, personal observation methods, phone calls and note taking to decipher information from five hundred Nigerians selected through a random sampling from five states in Nigeria. The samples were interviewed in some Nigerian markets in Akure, Lagos, Enugu, Abuja, and Port-Harcourt respectively. The result of the data showed that 98% of Nigerians have negative attitudes towards eating cassava derivatives, they patronize foreign foods and culinary in their homes and social functions thereby, making Nigerian foods stand the risk of gradual extinction and replacement with foreign foods and culinary, if urgent measures are not taken. The paper calls for a revitalization, rebranding, domestication, repackaging and documentation of Nigerian foods processes to save them from going into oblivion. It also calls for further researches for improving traditional food processing methods for acceptability to the younger generations for a sustainable development and reduction of hunger, poverty, diseases and death in Nigeria. Their acceptability too requires massive awareness and sensitization campaign on them by stakeholders and the media.

Keywords: Nigerian foods, cassava derivatives, contemporary foods, abandoned foods and food processes

1. Introduction

Nigeria is a nation with multi-cultural groups and language diversity so do the Nigerian food items and culinary cut across communal borders with diverse recipes. However, cassava is one of the staple food items that act as the bases for different cuisines and dishes among various cultural ethnic groups in Nigeria. Contact between Nigerians and the western culture, and other cultures of the world through slave trade, colonization, technological advancements, migration, immigration and globalization, make many Nigerian citizens alienate themselves from the consumption of their traditional staple foods: some cassava derivatives for example.

To so many, the names and recipe of some cassava local derivations have gone into oblivion. Infiltration and consumption of foreign junks: noodles, hamburger, meat pie, and imported foods which are most often preserved with chemicals which are harmful to the body have become the order of the day with resultant health hazards like cancer, kidney diseases, hypertension (High blood pressure) and so on. This paper, therefore, is a clarion call for Nigerians to curb the gradual extinction of Nigerians' indigenous food items by taking urgent measures to revitalize, domesticate, and document their names, processes, recipe and introduce them to younger generations for a sustainable development of the nation. Five hundred Nigerians comprising of one Hundred respondents each from five states were selected through random sampling, and were interviewed in some Nigerian markets in Ondo, Port Harcourt, Enugu, Abuja, and Lagos states respectively. The results of the data show that though many cassava derivatives have proven to be highly nutritious in combination with all the local ingredients and are better than most tuberous staples, it is relegated and its potentials have not been tapped. However, 98% of the respondents prefer processed semovita, wheat, semolina to cassava 'fufu' (swallow) for instance based on the smell and heaviness in the stomach. The findings also showed that 80% Nigerians eat cassava products especially 'Eba or Gaari' while some of the cassava derivations are already extinct. The data also shows that 98% of Nigerians prefer foreign foods in their homes and in social events meaning that they have a negative attitude towards local food items. 60% of young married women between the ages of 26-45 years especially those dwelling in urban areas lack knowledge of cassava cultivation, processing methods of most cassava derivatives, and the traditional recipes while

92% of the males have no idea of the processes involved because to them cooking is a woman affair. Most Nigerians only buy readymade derivatives from the market or eat them in eateries, restaurants, hotels, and 'Mama Put' (Road-side Food Vendors). 96% of the youths have no idea of the recipe of some derivatives of cassava and how they are processed while 85% of them do not know the local names to many of the derivatives and have never tasted them before. It was also observed that most of the local names of such extinct derivations have also gone into oblivion even among some rural dwellers. This paper recommends massive awareness and sensitization campaigns by leaders of various communities in Nigeria, the Nigerian government, non-governmental organizations, agriculturalists, and other stakeholders and the media on Nigerian foods and culinary in order to ensure usage and lesser dependence on foreign foods. According to a former cancer patient (Mugo, 2011) until and unless Nigerians go back to organic traditional foods, fermented food, natural herbs, there is no end in sight for reduced attack of dreaded diseases and increased death rate.

1.1. Scope of the Study

In this study, only the abandoned and contemporary Nigerian traditional cassava derivatives are discussed based on the data before the researcher as gathered from Nigerians of various ethnic groups and culture found in five big markets in five big cities in Nigeria, some rural markets.

1.2. Purpose of the Study

The purpose of this study is mainly to draw the mind of Nigerians towards the gradual erosion of Nigerian traditional foods that are going into extinction and thereby calling for their cultural revival. The study is also to create awareness among Nigerians that they should stop neglecting Nigerian foods as some of them have rich nutritional values, economic benefits and can be sources of employment opportunities if revitalized, domesticated and their processing or methods of preparation as Nigerian cuisine are documented for posterity sake and for a sustainable development of the nation.

The research is a call for Nigerians for another green revolution whereby all Nigerian adults and youths are called to look inwards their communities and begin to produce those food items including cassava which sustained their communities in the past and were naturally grown without much foreign infiltration.

In the face of economic meltdown, galloping inflation trend, and increase in the exchange rate, the continuous importation of food items to the detriment of the locally produced hygienically processed foods that are already traditional staple foods to Nigeria societies are on the increase and are detrimental to the socio-economic survival of the country. There is therefore ardent need to explore the national food resources and revive the dying food culture of the Nigerian nation for healthy living, economic advantage, and socio-cultural exploit.

This study is necessary as it has been observed that the culinary practice of modern-day Nigerians is shifting from the traditional cuisines to the western cuisines. Common cuisines found among the youngsters nationwide are such meals that have been subjected to bleaching, canning, parboiling, baking, chemicalisation and other complex technological processes that are inimical to health like: noodles, meat pies, eggrolls, puff-puff, chin-chin, biscuits, bread, corned beef, processed tinned fish for snacks, frozen chicken, turkey and so on.

However, this study becomes necessary to seek solution to poverty, hunger and diseases by reminding Nigerians of the food items that can be easily produced in their local environment which their fore-fathers survived on before the introduction of foreign foods.

2. Methodology

In the quest to discover the attitude of Nigerians towards Nigerian food items and the true situation of cassava in Nigeria, this research has considered its samples from strategic markets in Nigeria where Nigerians from various parts of the nation are expected to be met.

In effect, the researcher through a field research by random sampling gathered '500' respondents of which '100' samples each were gathered from five states with Nigerians of different ethnic and cultural groups in five major markets in major cities in Nigeria: Abuja, Akure, Enugu, Lagos and Port-Harcourt. The participant observation method was adopted as the researcher is also a Nigerian citizen. The oral purposeful interview, the questionnaire method, and phone calls were used for data collection among real users of particular cassava derivatives. Photographs of data were also taken to clarify issues and present data in its original nature and colour while response of samples were recorded through note taking and phone recorders. Also, secondary sources adopted in this study were text books, journals and electronic online sources.

The collection of data was based on oral face to face interview, and interaction between the interviewers using English language, and some other Nigerian languages for the rural respondents. The services of interpreters were also adopted for a mutual understanding between the researcher and the respondents. For the oral interviews on cassava processing and recipe, rural women were randomly picked as they are major producers, more so cassava processing and preparation is culturally a female domain in Nigeria.

The questionnaire method, involved '100' respondents from each state, '100' persons each were picked randomly and respectively from Idumota market at Lagos, Ojaoba market at Akure, Ogbete market at Enugu, and Gwagwalada market in Abuja and Mile - one market in Port Harcourt. Out of each 100 samples from each city, 50 respondents each were youths while the other 50, were adults. In order to ensure a gender balance in the study each sample of 50, were split into 25 males and 25 females both for the youths and the adults.

2.1. Statement of the Problem

With the inception of modernity, colonization, globalization, civilization and technological advancement, the cultures of more powerful nations of the world have eroded the traditional socio-economic and cultural life of Nigerians giving way to Nigerians craving for the ways of life of those countries while gradually abandoning their own cultural practices some of which have stood the test of time and have positive values. One of such cultural norms is Nigeria's food items, one of them being cassava and its derivatives. The so much desired foreign foods are very expensive because they are either imported or require some processes that make them expensive, scarce and not within the reach of the poor masses thereby, living a great number of Nigerians hungry.

Such crave, also has resulted to Nigerian food items and recipe becoming completely moribund while many Nigerians have developed dislike and negative attitude towards them. Some are already extinct and are not known by the younger Nigerian generations. Most of the foreign culinary accepted by Nigerians as ideal, more presentable and well packaged have been proven to have some health implications while some are quite hazardous to human health. As a result of the increase in junk foods, sicknesses and diseases are on the increase too: hypertension (high blood pressure), cardiac arrest, cancer, and diabetes, low sugar, high cholesterol and so on. Most of the current killer diseases are linked to once food intake. Therefore, this study seeks a way forward towards the cultural revival, domestication, documentation of extinct and contemporary cassava derivatives to boost the supply of food for a healthier living and for a sustainable development of Nigeria.

2.2. Theoretical Framework

The theoretical framework of this work is focused on cultural imperialism that is propounded by Schiller (1976) in his book '*Communication and Cultural Dominance*'. Imperialism is the policy of forcefully extending a nation's authority by territorial gain or by the establishment of economic and political dominance over other nations. In this paper, imperialism means maintenance of unequal relationship between civilizations, favouring the more powerful nation. Cultural imperialism in this sense is the practice of promoting and imposing a culture, usually that of a politically and economically stronger nation over a less powerful society like the western nations have done over Nigeria which is still a developing nation. Cultural imperialism has many facets and affects the attitude, interest of the less powerful nation towards their own culture.

It was a concept used to refer to the idea of Americans exerting their cultural influence over the rest of the world. The theory states that Western nations dominate the media around the world which in return has a powerful effect on the third world cultures by imposing their culture (Runji, Ekpe and Udochi 2017:2660). The term cultural imperialism is adopted in the fields of history, cultural studies and post-colonial theory.

Tomlinson (1991) describes cultural imperialism as the spread of modernity, a process of cultural loss and not cultural expansions, and there never were groups of conspirators who attempted the spread of any particular culture. Instead, global technological and economic progress and integration reduced the importance of national culture. He too published a book titled '*Cultural imperialism*' in January 1991. According to Tomlinson, less economically prominent cultures through the media, technology and globalization import foreign cultures of the wealthier countries. As such, transmission of culture goes on, the less wealthy culture or society adopts the customs, philosophies, world view and general ways of life of the other under such imposition of another culture, the lesser wealthy culture is thought to lose some of their cultural identities in the process.

This theory relates to this study in that Nigerians through the media, modernization, and globalization is fast losing their culture. The love, attitude and interest of Nigerians in most Nigerian food items are eroding away gradually. Nigerians should not be allowed to jettison their traditional foods and recipe for those of Western cultures. Nigerian seven in the midst of modernization and civilization should revive, rediscover, document and show case their traditional food items and cuisine especially cassava and cocoyam to the world just like the westerners.

Globalization is a new avenue for cultural imperialism to occur often with minimal resistance or acknowledgement. With free markets and growth of trades and interaction of various cultures of the world, cultural imperialism takes place though it is difficult to identify what is being imposed on other nations (Lecher and Boli (2012). Imposition of culture could be through creating new laws, policies on education, religion, art and attitudinal change so far it reinforces culture hegemony. Cultural imperialism often occurs during colonization as one nation overpowers another country which is economically and militarily weak. Such was the case of African colonization by the British which has adversely affected Africans including Nigeria through imperialism. In the expansive age of imperialism of the nineteenth century, scholars have argued that European colonization in Africa has led to the elimination of many various cultures, world views and epistemologies, particularly through neocolonization of public education.

As a result, scholars argue that it led to uneven education, de-linguisticization (replacing native African languages with European one) acquiring Western culture as science and attributing, non-western approaches to science the arts, indigenous culture, cuisine etc. as not knowledge (Sayre, and King 2010).

2.2.1. Historical Background and the Description of Cassava

The scientific name for cassava is *Manihot Esculenta* but it is generally known as cassava, manioc, yuca, yucca root, tapioca, casaba, macaxeira, mandioca, aipim and Brazilian arrowroot (Wikipedia, 2019). Cassava is mainly of two types: sweet and bitter types. Both types are consumed by man but the bitter one if eaten raw or undercooked is poisonous while the sweet one is not. They are called Euphorbiaceae, the spurge (Watson and Dallwitz 1992). These families form the largest group in the plant kingdoms. It is a woody shrub native to Brazil and the tropical areas of South America with

Brazil as the greatest producer. It is widely grown all over the Latin American, Jamaica, and the Caribbean and is probably first cultivated by the Maya in Yucatan (Monniaux (2019). Cassava was introduced to Africa by Portuguese traders from Brazil in the 16th century (Nweke, 2015) described as “bread of the tropics” (Adams, Murriet, Siquira, Neves, and Sanches, 2009: 281-305) and it is a staple food in Nigeria, with 25 released varieties (IITA, 2016, Falade&Akingbala 2001 and 2011).

Cassava is a long tuberous starch root vegetable consumed by about 2 billion people and represents the main source of carbohydrate and energy for the approximately 700million people living in the tropical and sub-tropical areas. They are guarantee of food security for developing countries (Piccirillo, 2015 and Pintado, 2015). It is an annual drought tolerant crops and virtually pest resistant. It is a strong crop that can thrive in the poorest of soil conditions making an ideal crop to grow in sub-Saharan Africa and other developing regions (Tan, 2018).

It is propagated by planting cut stem into the ground depending on the specie, from 7 to 10 months of the plantation, long and globular roots or tubers grow in a radial pattern downwards into the soil from the bottom of stem up to the depth of 2-4 feet. A complete grown cassava is about 2-4m in height. The root so grown, feature –a brownish rough, woody,thick textured skin and a snowy white interior flesh (Healthline.com 2017).



Figure 1: Fully Grown Cassava Trees and Cassava Tubers/Roots



Figure 2: Peeled Thick Back of Cassava Tubers
Source: Onuegbu (2021: Researcher)



Figure 3: The Inside of Cassava Tubers
Source: Onuegbu (2021: Researcher)

2.2.2. Roots and Leaves of Cassava

Cassava is a perennial plant with palmate fan-shaped leaves which are parted into five to nine lobes depending on the specie. The fleshy roots are hard like yam tubers. The many varieties range from low herbs to branching shrubs and slender in branching trees. Apart from their normal greenish leaves, there are some with reddish wine colours which are believed are less poisonous and could be eaten after boiling for some minutes.

The roots and leaves of cassava contain cyanide, a poisonous substance that can cause ataxia (a neurological disorder affecting the ability to walk) and chronic pancreatitis. To avoid the consumption of the poisonous substance init, cassava needs to be peeled, and processed properly whether by soaking, cooking thoroughly or by fermentation.

It is simply propagated by using a cut portion of the stem. (Show cut portion of cassava stem).



*Figure 4: Cassava Leavescassavaroots (Google) Cut Cassava Stem For Planting
Source: Onuegbu (2021: Researcher)*

Different varieties of cassava are generally classified into two main types: Sweet cassava and bitter cassava. Sweet cassava roots contain less than 50mg per kilogram hydrogen cyanide on fresh weight basis, whereas that of the bitter variety may contain up to 400mg per kilogram (Centre for Food Safety February 2, 2008 cited in Mercola 2016)).

The roots can weigh several pounds depending on the type and how fertile the land that produced it is. They have tough, scaly and brown thick skin with a starchy white 'meat' inside but care must be taken in harvest as the shelf life is only a few days (Mercola 2016).

Cassava leaves are also used for food and contain 100 times more protein than root but must be cooked and the water discarded (Time 2011 Cited in Mercola 2016).

2.2.3. Uses of Cassava

Cassava is the third largest source of Carbohydrates in the tropics after rice and maize. It is also a very good source of dietary fiber and can be used for baking (cakes, bread, pastries), starch, dough which could be made to chips and fritters, casaba cakes of Yucatan and Tapioca etc. Food items such as 'fufu' of West Africa, and the 'bammy' of Jamaica, come from cassava. The Indians in South America derive an alcoholic beverage known as 'Kasiri' from cassava (Healthline.com 2017).

Some of the economic benefits of cassava result from its derivatives which could be cassava flour, breads, tapioca, laundry starch and an alcoholic beverage.

Cassava has been called a 'weight loss wonder food' due to its ability to decrease appetite and decrease fat storage in fat cells (Kresser, August 14, 2014). It is a versatile staple food which can be boiled, steamed, grilled, fried, and mashed. The root can be made into a ground meal, by washing, peeling and grating and then pressing to press out the poisonous starch and drying the meal.

Tapioca is a source of a popular type of pudding made up of chewy, mildly sweet pearls as well as bubble tea, an Asian concoction often served cold. According to American Journal Gastroenterology (2012:107)'it could be mixed with other flour, plantain, maize, and coconut flour or almond meal to improve the nutrient value of the food'. It can be used as a soup thickener as it is essentially flavourless and could be used to bake flat breads especially in developing countries because it is inexpensive and very versatile.

It is a binder which can improve the texture and moisture content in foods without becoming soggy. It can be added to burgers and dough and can be used as a facial mask if mixed with water and honey after washing face with warm water. According to (Style Craze 2016 cited in Mercola, 2016) cassava made into a simple paste with water can be used as a peel or scrub, smoothes, brightens and hydrates the skin. Cassava roots and leaves are made into a paste to nourish and soften hair and remedy hair loss. Twice a week, apply coconut or olive oil then, cassava paste, wait one hour and rinse.

According to Odura et al (2000), and Ukwuru and Egbonu (2013), among all derived products of cassava, the most important are the high-quality cassava flour from unfermented cassava and gari - granular flour from fermented cassava, Agbelima - fermented cassava dough, Fufu - A paste of boiled cassava wet flour, Lafun - Fine cooked fermented cassava flour Elubor -Half fermented dry cassava flour (Falade&Akingbala 2001).

It is called resistant digestive starch because it does not break down and be absorbed as glucose like most starches. Traditionally, the roots and leaves were used to boost immunity, energy and brain function. It heals wounds, deworms, soothes headaches and fevers, helps manage metabolic syndrome, aid digestion and rheumatoid conditions, lower blood pressure and balances stress levels (Bradshaw (2010: March,).

2.2.4. Precautions on the Use of Cassava

Cassava roots contain toxic compound linamarin which converts to hydrogen cyanide. Improper cooking or processing of cassava is associated with cyanide poisoning which can cause symptoms of vomiting, nausea, dizziness, stomach pains, headache, and irreversible paralysis from a disease called konzo and even death. However, if cassava is peeled and cooked, toxic substances are removed and are safe to eat. However, cassava must not be eaten raw because of the poisonous content. Cyanide content is more in cassava roots outer parts and peel. Peeling reduces the cyanide content, sun drying; soaking in water followed by boiling in salt, vinegar water results to evaporation of the poison and makes it safer for consumption.

Prolong use of monotonous cassava diet may lead to chronic illness like Tropical Ataxic Neuropathy (TAN) and diabetes USDA (2019).

2.3. Nutrition Facts and Health Benefits

Surprisingly, cassava is very low in fat and protein and has no cholesterol. It has more protein than the other tropical food sources like yam, potato, plantains etc.

It is glutens free and is good for special food eaten by celiac disease patients. Young tender cassava leaves are a good source of dietary proteins and vitamins K (good for bone strengthening and is used for the treatment of Alzheimer's disease patients by reducing neuronal damage in the brain.

Cassava has some valuable B-complex group of vitamins (see above) and has the following minerals: Zinc, copper, magnesium, iron, manganese and potassium which form an important part of cell and body fluids and helps to regulate heart rate and blood pressure. See the data below for the nutritional value of cassava root (*Manihotesculenta* CLCrantz) raw, nutrition value per 100g.

Principle	Nutrient	Percentage of RDA
Energy	160 kcal	8%
Carbohydrates	38.06g	29%
Protein	1.36g	2.5%
Total Fat	0.28g	1%
Cholesterol	0mg	0%
Dietary Fiber	1.8g	4%
VITAMINS		
Folates	27Hg	7%
Niacin	0.854mg	5%
Pyridoxine	0.088mg	7%
Riboflavin	0.048mg	4%
Thiamin	0.087mg	7%
Vitamin A	13mg	<1%
Vitamin C	20.6mg	34%
Vitamin E	0.19mg	1%
Vitamin K	1.9Hg	1.5%
ELECTROLYTES		
Sodium	14mg	1%
Potassium	271mg	6%
MINERALS		
Calcium	16mg	1.6%
Iron	0.27mg	3%
Magnesium	21mg	5%
Phosphorus	27mg	4%
Zinc	0.34mg	3%

Table 1

Source: USDA (2019) National Data base www.nutrition-and-you.com/cassava2019

3. Findings of the Study

The findings of this study based on the field research made in this study are classified under the following headings.

3.1. Cassava Processing Methods in Nigeria

Nigerian traditional cassava processing methods for human food consumption, involves several steps which include: peeling, soaking, grinding, steeping in water, fermentation, drying, milling, roasting, steaming, pounding and mixing in cold or hot water.

Cassava processing includes two major forms: fermented and unfermented processing methods which end products give way to diverse derivatives of cassava products.

3.2. Cassava Fermentation Processes

Cassava roots traditionally are fermented to remove the poisonous content called cyanide and improve its nutrient content.

In Nigeria, fermentation takes the following major forms:

- Cassava roots could be washed, and soaked in a covered big container unpeeled for a period of '4' to '5' days or more until it ferments. Within those days the cassava is softened. The softened cassava roots are processed by peeling of the back, washing thoroughly and sieved with water to separate the chaff from the starch. The starch is later poured into a bag and the rest of the water therein is drained off gradually. The process of soaking unpeeled cassava has a disadvantage. It may take longer time to ferment especially when it is not cut into smaller pieces to allow penetration of water. At times the colour may be affected. The wet flour or starch outcome is not as white as the one that is peeled before soaking.
- Secondly, cassava roots could be fermented by firstly, peeling off the thick root outer skin with a knife, washing thoroughly, and storing the cassava roots in a big container which must be covered to allow heat to ferment the cassava roots. After about '4' to '5' days the fermented roots are washed clean and sieved to extract the starch which is poured into a bag and water is allowed to be drained out of the starch gradually until only the starch is left. For a better fermentation of all the soaked tubers, the peeling must be done same day the cassava is uprooted.



Figure 5: Peeled and Soaked Cassava for Fermentation

Source: Onuegbu (2021: Researcher)

- Fermentation also could be done in streams for communities that lack pipe-born water. This is an outdated practice though still done in some remote and rural areas in Nigeria. Women dig small holes at the edge of the river bank where the water volume and flow are less. They make sure the hole is deep enough for flowing water not to sweep away the tubers. Some marks indicating ownership are placed on the various holes. They carry their cassava tubers direct to the stream and soak them unwashed in their various holes. After few days of fermentation usually 4-6 days, the tubers are removed from the holes, washed and sieved with water right there in the stream to separate the chaff from the fermented starch. After draining out water from the starch, the starch is carried home for use as wet flour.
- Preservation of Wet Flour: This can be done by pouring the wet flour into a big bowl or bucket. The wet flour is tightly compressed with the fist to make sure that the flour is airtight. Some quantity of water is sprinkled on top of the flour before the container is covered. Every other day, the flour is sprinkled on the surface with water to prevent insects and flies from infesting the flour thereby making it rot. This method of preserving wet flour can keep it save for up to two weeks or more.
- Fermentation can also take place after grating as in the case of Gaari, whereby the cassava is peeled, washed and grated before it is stocked in a bag and kept for some days from '4' to '7' days to ferment before it is pressed by placing a heavy load on the bag containing the grated flour to press out the water from for further processing.

3.2.1. Derivatives from Fermented Cassava

There are different derivatives of fermented cassava in Nigeria depending on the various cultures of the nation. They are named and processed as follows.

3.2.1.1. Eba (Yoruba) or Garri Esereese (Igbo)

This is a cassava swallow meal.

4. Method of Processing of Eba/Gaari

The cassava tubers harvested, are peeled, washed thoroughly and are grated, pressed to rid of raw starchy water and cyanide. The wet flour is packaged in bags to ferment for between 3 to 6 days. After fermentation, the fermented flour substance in the bag is pressed dry to rid of every form of water. It is fried dry to form sandy flakes called 'Gaari' which are

sieved and stored in bags and containers for several months depending on how well dried it is. Red oil could be added in small amount to the frying Gaari to get yellow Gaari. The chaff sieved out of Gaari is called Koko Gaari(Yoruba).



Figure 6: Peeled and Washed Cassava for Fermentation, Cassava Grater and Powering Engine, Grater Grating Cassava Tubers, Grated Flour Packed in a Bag



Figure 7: Bagged Gaari Being Pressed With Heavy Objects on Top, Frying of Garri under a Local Oven by Mama Ayalada, Filtering Out the Chaff of Gaari, Fully Processed Garri

Source: Onuegbu (2021: Researcher). Gaarimill at Oka, Ondo, Ondo State Nigeria

4.1. Preparation of Eba/Gaari Swallow

To get gaari paste or dough, pour some water into a pot. Boil to boiling point. Take few cups of the boiled water and pour into a plate depending on the quantity of gaari to be prepared, gradually pour few cups of gaari into the hot water and stir to form a thick paste or dough- like swallow meal called Eba and it is ready for consumption with any type of Nigerian soup.



Eba being stirred with a stick in boiled hot water Picture of Eba/gaari esereese

Figure 8

Source: Onuegbu (2021: Researcher)

4.1.1. Lebu (Yoruba)

Lebu is the result of milled Gaari chaff (Koko). Koko is the chaff sieved out from fried gaari which is re-milled to a more powder form to give Lebu. It is made out of the small balls sieved out of Gaari and the chaff which are recycled by re-milling to become flour. It is also prepared by stirring in hot water.



Figure 9

Source: Onuegbu (2021: Researcher). Gaari Mill at Oka, Ondo, Ondo State Nigeria

4.1.2. NriAkpu (Igbo)-Cassava Fufu 1

Cassava fufu is seen as the most traditional of all Nigerian fufu meals. 'Most current generation babies do not even know what it is' (Flo 2019) and how it is processed.

Some tubers of cassava are fermented by steeping in water, sieved and the content stored in a bag to drain away the water (in the content so sieved) leaving only a wet flour in the bag. The drained wet fermented cassava flour shown in the bag below is prepared in various ways to get fufu or Nriakpu- Cassava Fufu as follows:



Figure 10: Soaked Cassava in Big Bowls, Sieved Cassava Packed in Tight but Porous Bags to Drain Away Water, Wet Drained Cassava Flour

Source: Onuegbu (2021: Researcher)

4.1.2.1. Preparation of NriAkpu Asuruasu or Pounded Cassava Fufu

Boil enough hot water in a pot to take as many balls of the wet cassava flour as you desire. At boiling point, mould the wet cassava flour into medium ball like sizes and put inside the boiling water. Allow to cook for about 30 minutes. Remove the balls and put inside a mortar and pound with a pestle till all become very smooth and pasty though not yet cooked. This is first stage boiling.

The second stage is that the water boiled is topped with more water so that it is not too starchy or thick. When boiled to boiling point the second time, mould the pounded pasty cassava wet flour into middle sized balls again and put them inside the boiling water (the second time) allow to cook for about 30 minutes again. Remove one ball, pound to check if it is cooked by observing the taste. If it tastes sugary, it is not well cooked but if it is tasteless, then it is well cooked.

Then you can remove all the balls and pound thoroughly until very smooth. Spoon out the dough into serving plates or wrap to size like those seen in the picture below. Cassava Fufu or NriAkpu or Utara Akpu is ready. Serve with any type of soup.

The paste can be served with various Nigerian soups: egwusi(melon), okro, oha, onugbu (bitter leave), ofeakwukwo (vegetable soup), ofeogbono (draw soup).

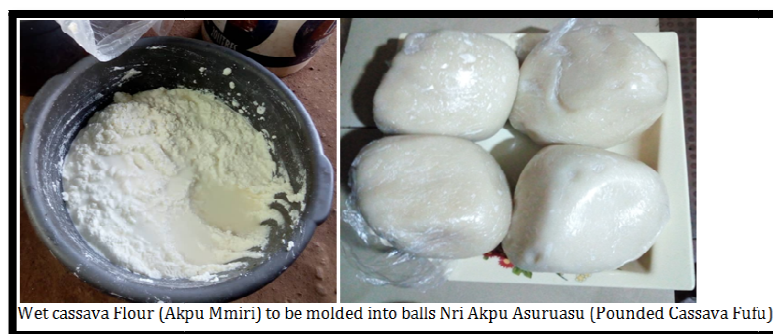


Figure 11

Source: Onuegbu (2021: Researcher). Mostly Prepared by Igbo of Nigeria

4.1.2.2. NriAkpu Eserese (Stirred Cassava Fufu)

Wet cassava flour instead of being boiled and pounded, could be stirred in cooking boiled water. The content after being stirred for a while, with a wooden stick is allowed to simmer for few minutes before stirring further. Stirring continues until the paste becomes tasteless and ready to be served.

There are two types of Nriakpu Eserese (Stirred Cassava Fufu).

- It could be prepared naturally without adding oil. This is a very common type in most parts of Nigeria.



Figure 12

Source: Onuegbu (2021: Researcher)

- It could also be prepared with some red oil added to the boiling water in the pot before the wet or dried cassava flour is poured into the pot and stirred.



Figure 13

Source: Onuegbu (2021: Researcher)

This type of cassava meal with red palm oil is called eruerumanu in Umulumbe (Enugu State) or akpummanu by other Igbo people. This is a very delicious meal with any Nigerian soup but is moribund because contemporarily, only few aged in some rural areas in Enugu state have knowledge of the recipe.

4.1.3. Lafun (Yoruba) Aribo (Igbo) Processing Procedure

Lafun is produced by washing and peeling some tubers of cassava. The peeled cassava is cut into smaller sizes and is soaked in water in a container to ferment for 2-3 days. It must not be allowed to be too soft (it is half fermented). The half-fermented cassava is sun dried, milled into dried powdered flour and stored for use for making fufu or Lafun.



*Figure 14: Peeled, Fermented, Dried, De-Stick Cassava Roots, Milled to Lafun Flour, Lafunfufu
Source: Onuegbu (2021: Researcher)*

4.1.4. Preparation of LafunFufu

Boil some water in a pot to a boiling point. Remove some of the water and pour into another pot or plate. According to the quantity desired pour in some dried powdered flour (Lafun) into the water gradually as you stir. Add some amount of water as required until the flour becomes a very soft smooth paste or dough. Taste to check for sugary taste. If it tastes sugary, continue to stir until it becomes tasteless then; Lafun is ready to be served. It can be eaten with variety of Nigerian soups.

4.2. Pupuru/AkpuOkponku Processing Procedure

4.2.1. Traditional Process of preparing Pupuru/AkpuOkponku

Peel, wash and soak cassava tubers in a big container for '4' to '7' days depending on when they are soft enough or fully fermented. Remove from water, rinse, and sieve out the chaff and store the watery cassava flour in a bag that allows the water to drain away leaving the cassava flour to settle and become wet flour as in the processing of NriAkpuAsuruasu-Cassava Fufu above. The wet flour is molded into ball-like shapes and is either sun dried or dried on the kitchen rafter for preservation purposes.



*Figure 15: Wet Cassava Flour Dried, Ball like Cassava Flour, Ground or Milled Pupuru/Akpu Okponku
Source: Onuegbu (2021: Researcher)*

The dried ball method of preserving cassava is already extinct in many communities in Nigeria while in some parts it is gradually moribund though it is the safest way of preserving cassava flour for a very long time without preservatives. As the need arises, one or more balls are soaked in water for some hours to soften for easy grinding on a local slab with hand stone. When ground, it turns to powder flour and can be stirred in hot water to form fufu.

4.2.2. Modern Process of preparing Pupuru/AkpuOkponku

Peel, wash and soak cassava tubers in a big container for '4' to '7' days depending on when they are soft enough or fully fermented. Remove from water, rinse, pack in a rice bag, press dry and remove sticks from the cassava. Fry the cassava with the smaller sticks or chaff slightly until it is completely dry, mill into dry cassava flour and store in an air-tight bag for future use.

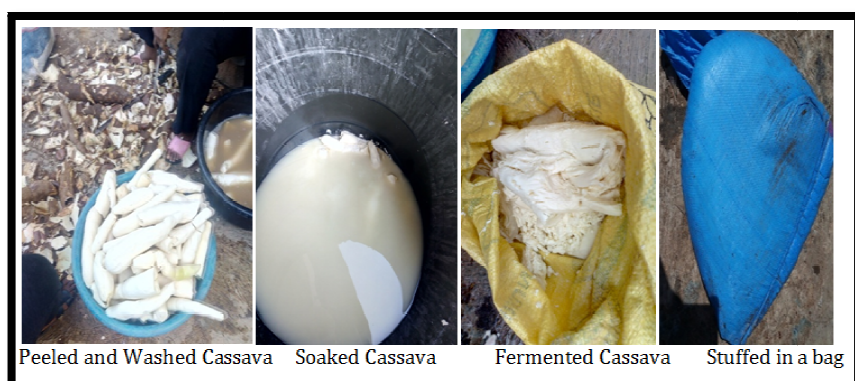


Figure 16

Source: Onuegbu (2021: Researcher)



Figure 17: Grated Garri in Bags Pressed in a Presser, Pressed Cassava Spread and Sundried to Dry Well, Fried with the Chaff, both Fried Garri and Chaff to Be Milled, Milled Pupuru Flour
Source: Onuegbu (2021: Researcher in a Garri Mill Inondo, Ondo State)

4.2.3. Preparation of Pupuru (Yoruba)/AkpuOkpoNku (Igbo) -Fufu

The traditionally dried and solidified ball-like cassava flour depending on the quantity required is washed in clean water to remove the black stains of smoke and its taste. It is soaked in water for some hours to soften. It is broken into smaller pieces and ground in a grinding stone to be returned into dried powdered flour.

On the other hand, the modern Pupuru is already in a flour form ready to be prepared for fufu.

Some quantity of water is put in a pot, boiled to a boiling point. At this point the powdered flour whether modern or traditionally processed is poured into the hot water in the pot or plate and gradually stirred to form a tasteless, paste or dough called Pupuru (Yoruba)/ AkpuOkponku (Igbo) which is ready to be served.

The modern Pupuru because it had been fried before requires little heat so, can be prepared like Eba by pouring hot water into a plate and stirring as the Pupuru flour is gradually poured into the mixture. The quantity of Water must be monitored so fufu formed will not be too soft.

In the preparation of the traditional Pupuru, the colour of the Fufu could be changed by adding a little red oil to the boiling water before the flour is poured into the boiling water in the pot. It is called Eruerumanu and it is a delicacy in Umulumbe (Enugu State).



Figure 18

Source: Onuegbu (2021: Researcher)

4.2.4. Unfermented Processes of Cassava

The unfermented cassava products could be washed, boiled, grated and soaked to remove starch or it could be grated, cooked and water sieved to remove starch before the cassava tuber is ready for use.

Unfermented cassava foods are tapioca; cassava, wet chips, pellets, unfermented cassava flour and starch.

4.2.4.1. Derivatives from Unfermented Cassava Tubers

Just like there are many derivatives from the fermented cassava flour so are there many derivatives from the unfermented cassava tubers. Some of them are:

4.2.5. Abacha (Igbo) Lidije (Delta)

In processing Abacha, some cassava tubers are washed clean without peeling and are allowed to cook for 40-50minutes. It is checked with the pointed end of a kitchen knife to find out if it can penetrate the tubers. As soon as it does, the tubers are removed from the pot and are allowed to cool. It must not be allowed to be so soft so that it will be easy to be grated. If it is very soft, it melts and becomes too gummy to be grated.

After a while, the cassava tubers are grated with lubricated hand grater. Lubrication is done by applying small quantity of red oil on the grater to avoid sticky cassava remnants on the grater which may block the teeth of the grater.



Figure 19

Source: Onuegbu(2021: Researcher: Abacha Processing in Umulumgbe, Enugu State)



Figure 20



Figure 21: Squeezed Wet Abacha, Spread Abacha for Drying, Dried Abacha

After grating, the grated strands in spaghetti shapes are soaked in water for some hours or a day. Later it is thoroughly rewashed clean to get rid of all forms of starch. It is then hand pressed and spread in a scattered pattern in a local long tray made of palm twine or a clean local mat for sun drying. When dried properly, the spaghetti shaped cassava can be stored in a tight sack for up to 2 years or more without going bad or developing ticks. The now dry spaghetti like shaped cassava is ready to be prepared into a meal. It must be presoaked to soften before being prepared into a meal.

4.3. Preparation of Abacha

There are various ways of preparing dishes out of Abacha.

- It is notes worthy that it can be prepared in the wet form (Abacha Mmiri) before drying or dried up very well (Abacha Okpo) and soaked to soften before preparation.
- Ingredients. The common ingredients used in Abacha preparation abound depending on choice and one's financial capability. Some of them are:



Figure 22: Chopped Igbo Garden Egg Leaves (Small Sized Greenish Type), Crayfish, Fried Fish, Chopped Garden Egg

Source: Onuegbu (2021: Researcher)

4.3.1. The Wet Form of Abacha Preparation

The wet form of abacha is the wet abacha that is not dried after final washing. It is prepared for eating immediately after washing. Wet Abacha could be prepared as:

4.3.1.1. Abacha Mmiri (Wet Abacha)

The wet Abacha Mmiri is poured into a plate and eaten with coconut or kernel.



Figure 23: Wet Abacha Pressed with Both Hands to Drain Away Water
Source: Onuegbu (2021: Researcher)

4.3.1.2. Abacha Mmiri Agworoagwo

Abacha Mmiri could be mixed in a source made of pepper, palm oil, chopped garden egg pieces, salt and ogiri local spice (made of cooked, fermented, and ground locust bean seed), some crayfish, fish, meat, and vegetables especially garden egg leaves (Akwukwoanara), ukazi or utazi. This type is called Abacha Mmiri Agworoagwo.



Abacha Mmiri–Wet Abacha Abacha Mmiri Agworoagwo

Figure24
Source: Onuegbu (2021: Researcher)

4.3.2. Preparation of Dried Abacha (Abacha Okpo)

This form of abacha is crisp dried and must be soaked in water to soften before use. The various abachaokpo derivatives are as below.

4.3.2.1. Abacha Okpo and Beans

Some quantities of abachaokpo(dried abacha) are soaked in water to soften. The water in them is pressed out with both hands and the abacha is poured into a container. Some quantity of oil commensurate to the quantity of abacha is poured into a pot, fried with onions, and other ingredients like fried big Crayfish or shrimp which are broken into two pieces each, maggi, and pepper. Already cooked big quantity of beans commensurate with the quantity of Abacha is poured into the pot. The Abacha is poured into the fried ingredients and all items are mixed with salt to taste.

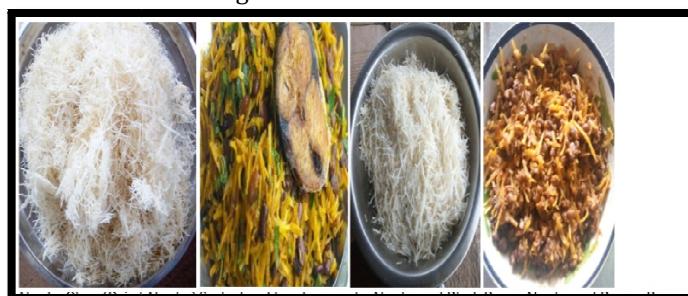
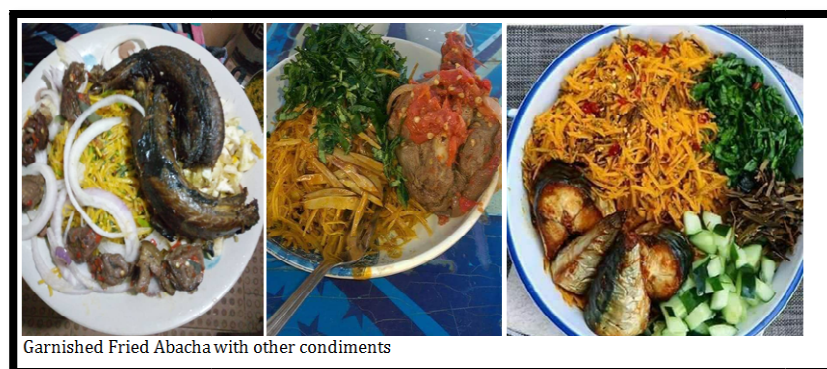


Figure 25: Abachaokpo (Dried Abacha), Abacha Mixed with Black Beans, Dried Abacha Hand Pressed Before Mixing, Abacha and Brown Beans
Source: Onuegbu (2021: Researcher)

4.3.2.2. Abacha Okpo with Fried Oil and Other Condiments

After drying Abacha and storing. It could be prepared by taking some quantity, soaking them in cold water or hot water until it is slightly soft. The Abacha is pressed with both hands to remove water. Fry some red oil, onions, pepper, maggi, and crayfish and allow cooking for five minutes. Then put off the fire and pour the Abacha into the pot and add fish, processed cow skin (kpomo), plenty chopped onions, sliced and fermented oil bean seed (ukpaka/ ugba), chopped fresh garden egg, and beef are prepared and vegetables like garden egg leave, green spinach, ukazi and utazi added and are mixed with the Abacha. Salt is added to taste and the whole food is put on the fire the second time for few minutes to steam the green spinach and to keep the food warm. Over cooking during the second cooking will spoil the abacha and make it to be too soft.



Garnished Fried Abacha with other condiments

Figure 26

Source: Onuegbu (2021: Researcher) Source: Facebook

4.3.2.3. IgbaNcha

This is a type of Abacha Okpo which instead of using fried oil in the mixture, what is called ncha (end product of burnt palm nut bunch stem) is used to make a sauce when mixed with water, pepper and salt. The abacha is poured into the mixture and is mixed with a spoon. Ncha is an extract from burning palm nut bunch after extracting the palm nuts. It could also be used for processing local soap and for cooking especially in thickening red palm oil for the purpose of Igbancha or igwoabacha (mixing abacha with source) and as a meat tenderizer.

The process of mixing abacha with this local source is called Igbancha. The liquid extracted from the burnt object is sieved and stored in a container or bottle for future use while a small quantity is dropped into a pot with some oil to be used for the mixture. The function of 'ncha' could also be done by mixing melted and sieved potash (akanwu or kanwu) to the oil. The sauce is mixed with pepper, maggi cube, ogiri(local spice from locust bean), onions, sliced garden egg or the local small sized garden egg (as shown below in the first dish), chopped garden egg leaves, crayfish, meat, fish, kpomo (cow skin), stockfish, processed and sliced oil bean seed and salt to taste. All the ingredients remain the same as that of abachaokpo but also depend on the user's financial capability.



Abacha Prepared with Ncha or Akanwu

Figure 27

Source: Facebook

Different Stages of Preparing Abacha Mmiri and Abacha Okpo in Picture. The difference is that abachammiri is packed by hand from the bowl and water squeezed out of it compressing some quantity of it one pack after the other by both hands by pressing them hard in between both hands until the whole water is squeezed out.

The dry one is first of all, soaked to soften for some minutes either in cold water or lukewarm water. The one soaked in cold water takes longer time to soften while the one in lukewarm water takes shorter time because it will be too soft if left for a long time.



Figure 28

Source: Onuegbu (2021: Researcher)

4.4. JiAkpu/Abacha Mmiri (Cassava Snacks)

After washing and boiling some cassava tubers for about 40 to 50 minutes, the tubers are removed from the pot, peeled and sliced in big flat pieces with knife. The sliced pieces of cassava soaked in water, are washed and are soaked again for days for all the starch to be washed away. After a day or two, jiakpu is ready for consumption. It can be eaten with palm kernel or coconut. It is also called abachammiri and it is popularly known outside Nigeria as 'Bobozee' nicknamed 'Air Condition' because of the cool feeling it gives to the eater under a hot weather. It can be eaten also with coconut or palm kernel.



Figure 29

Source: Onuegbu (2021: Researcher)

4.5. Iyobe/Ebereebe (Knife-Sliced Cassava)

Iyobe/Ebereebe (Knife-Sliced Cassava) is a delicacy in Udi North, Enugu State. In the preparation of Iyobe or Ebereebe (Umulumbe dialect of Enugu State) some tubers of cassava are washed, peeled and are skillfully cut into long but narrow strands with knife (or are grated with a special grater) as shown in the picture below. Enough water to the size of the Iyobe is placed on fire and allowed to boil to a boiling point. The strands of cassava are washed to remove some starch and are poured into the boiling water to boil for about 40 to 50 minutes depending on the type and nature of the particular specie of cassava. If it is allowed to stay for so long, it could be too soft and become mere cooked starch. It should be monitored often to know when it is ready.

When boiled, it could be mixed with fried oil, crayfish, pepper, maggi cubes, fish, and any type of already boiled beans for the purpose, and salt to taste. It is more enjoyable when eaten with bare hands so that one can pack as much as possible and bring out the sweetness.

There are several types of beans that can be used to prepare Iyobe/Ebereebe. They are (akidi- black beans, heart beans, African beans (fiofio/feregede), and white or brown beans.

Follow the activities in the pictures below for the preparation.

Different stages of preparing Iyobe in Umulumbe of Enugu State by Chinyere Oyeegu, Josephine Mpaatu and Janet Ugwu of Lett/Akpani Village.



Peeled Cassava tubers slicing a tuber of Cassava Sliced bunch of Cassava Iyobe

Figure 30

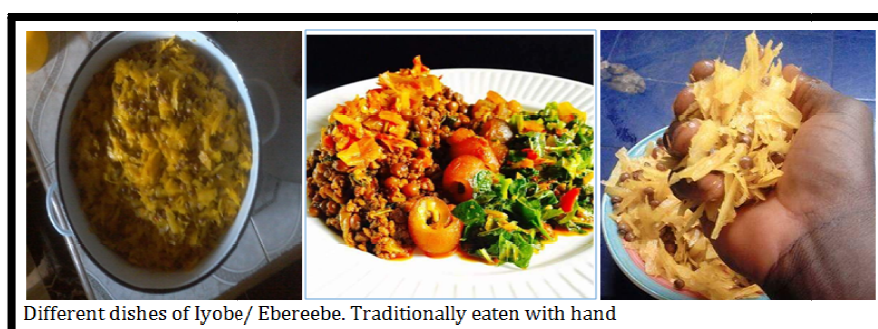
Source: Onuegbu(2021: Researcher). Preparation of Iyobe in Umulumbgeby Mrs Janet Ugwu, Enugu State



Figure 31: Starch Washed Out of Iyobe, Washed Iyobe Poured into 100% Boiling Water in a Big Pot on Fire, Water Sieved Out of Iyobe in a Local Basket for Draining



Figure 32: Cold Water Poured Into Sieved Iyobe to Rinse off More Starch, Iyobe Mixed with African Beans and Other Ingredients: Fried Palm Oil, Pepper, Onions, Crayfish, Taste For Salt
Source: Onuegbu (2021: Researcher). Preparation of Iyobe in Umulumbge by Mrs Janet Ugwu, Enugu State



Different dishes of Iyobe/ Eberebe. Traditionally eaten with hand

Figure 33

Source: Onuegbu, 2021: Researcher) Source: Facebook

4.6. Tapioca Snacks

Peel cassava tubers, wash and grate with a different machine meant for tapioca not the same as that for gaari because the holes in the grater are bigger than that of gaari grater. Wash off starch twice in clean water and soak in water till the next day. The next day, pour into a bag and press out starch from the cassava until dry. Fry the content and sun-dry to get tapioca. It can be eaten with groundnut, coconut etc. by the Delta Igbo of Nigeria.



Figure 34

Source: Onuegbu, 2021: Researcher) Delta State, Nigerian Snacks

4.7. Delta Starch (Unfermented Cassava Starch Fufu)

Delta starch is the fufu that is made from cassava starch.

4.7.1. Processing of Starch Fufu (DeltaStarch)

Peel the cassava tubers following the natural peel lines. Wash and rinse. Cut into smaller pieces and blend adding as little water as possible. Use a chiffon material to sieve and separate the shaft from the cassava. Rinse with clean water as you sieve until all the starch is extracted. Leave the starch so sieved out for some hours until it settles at the bottom of the bowl. The water in the starch is clearly seen on top of the settled starch. Slowly decant the clear water and scrape the starch into a container and store in the refrigerator or freezer.

4.7.1.1. Preparation

Put some amount of starch in a pot. Pour some water according to the quantity of starch. Add enough palm oil and mix until you get a smooth mixture without lumps. Put the pot on the stove, heated as you stir continuously until the starch solidifies. The palm oil and the starch must mix well until the starch is very yellow and well cooked. Serve with Banga Soup or Owho Soup. This is a delicacy in Delta State of Nigeria.



Figure 35

Source: Onuegbu, 2021: Researcher

4.8. Unfermented Cassava Starch and Flour

Unfermented cassava starch and flour are got from cassava roots that are peeled, washed and grated or sliced with kitchen knife and are soaked in water for some time to allow the starch content to settle in the container used for washing the grated content. The settled starch or flour are later extracted for immediate use for starch fufu or are sundried and kept for later use as a cloth starch.

4.8.1. How To Process Unfermented Cassava Starch and Flour

This form of starch is processed exactly as the Delta starch. When the water on top of the starch is decanted, the starch is scraped from the container and is taken to the market to be sold for laundry purpose. It could be sundried too for later usage and can last for several months without getting spoilt.

For the starch to be used for laundry purposes, water is boiled in a pot to a boiling point. Some portion of the starch according to demand is mixed with little quantity of water according to the desired texture just like in the preparation of pap. The hot water is poured into the starch until cooked. The thickness could be reduced by pouring more cold water and turning until the desired texture is reached, now, it is ready to be used as a thickener to cloths so that they become though, hard, stretched smoothly when ironed. The starch is used on cloths to make them stretch, be firm and be

attractive. This form of cloth starch is going into extinction as there is various factory processed starch that are ready for use and are sold very cheap in Nigerian markets today. The processed starch can be dried and stored as flour and can be used for cassava fufu.



Unprepared Cloth Starch

Figure 36

Source: Onuegbu, (2021: Researcher)

4.8.2. New Uses of Cassava

With improved technology and modernization in the contemporary period, cassava is being used to produce bread, biscuits, modernized starch, glucose, gum, pancakes, muffins and cassava cracker etc.

5. Summary and Conclusion

The abandoned cassava derivatives are: Cassava dried balls, Iyobe anderuerumanu. They are only found in the rural communities where they are eaten. Only few aged women still can prepare them as the younger generation has no knowledge of what they are and how they are processed.

Iyobe/Ebereebe which is a delicious and enjoyable meal in Enugu State is gradually moribund. It is no more a staple food like some decades ago because the present generation cannot prepare it.

The traditionally preserved Pupuru by molding and sun or smoke drying is also going into extinction because not many people have the knowledge of processing it. In Igbo land, it is going into extinction. In Yoruba communities where it is produced, the modern form is gradually taking over the old form while in Igbo communities; one can rarely find them except that few aged women still process them for family use. Some modern Igbo youths do not have any idea of what it means.

Major cassava processing techniques if care is not taken may soon become a major problem to cassava food production in Nigeria. It is one of the major areas that are gradually eroding away because most people that eat cassava derivatives presently depend on the market supply by old rural dwellers that are still in the practice of production of such derivatives. Many Nigerian youths and the middle aged who are educated, or live-in urban areas have negative attitudes towards the processing of cassava derivatives as fermented cassava tubers are smelly and messy. They are not interested in learning the processes. That is a danger sign for Nigeria because as time goes on, there may just be only few Nigerians who will have traditional knowledge of cassava processing methods.

Nigerian women from the age of 24 to 55 and majority of Nigerian youths especially those who were born and bred in urban areas cannot process cassava from the raw stage of the tuber to the end product. Most of them only buy the finished products 'fufu' or wet flour from the market. They buy pounded cassava fufu from the market but have little or no idea of how it is cultivated, uprooted, peeled, fermented, sieved, and cooked and pounded to get what they buy from the market.

In Yoruba land, those who love Lebun or Pupuru either buy the finished fufu of the derivative or buy the powdered form or flour from the market. There is the fear that when the older generation of Nigerians especially those leaving in rural areas are gone, the Nigerian Society will begin to experience scarcity of cassava derivatives.

Tapioca snack is neglected as people feel that it is a local snack for the poor and some Delta villagers. Nowadays with the spread of sugar related diseases like Diabetes Mellitus and others like hypertension and so on many Nigerians prefer wheat, semolina, and semovita to eating cassava derivatives which to some has an awful smell (fufu) while to others, are food meant for the low class. Some also dislike them because of their starch or heavy carbohydrate content.

6. Recommendations

The major problem with Nigerians over cassava derivatives is their negative attitude towards them as Nigerians believe that cassava derivatives are meant for the low class and are tedious, smelly and dirty to process. They have a preference for well packaged and easily prepared foods. As a result of the above, this paper hereby highlights the following recommendations.

- That the Nigerian Government should through the personnel and scholars in the agricultural sector of the nation, proffer better, simpler and neater modern processing methods for cassava derivatives.
- There should be a call for revitalization of cassava derivatives as major staple foods in Nigeria.

- The packaging of cassava derivatives should be technologically improved, rebranded, and processed to remove odour and give them palatable taste.
- Nigerians should be encouraged using all forms of advertisement and media techniques to create massive awareness and sensitization campaign to attract the Nigerian populace to patronize Nigerian cassava derivatives.
- Traditional processing methods should be documented and archived for future studies and technological improvement.
- The production of cassava products, methods and recipe should be thought in both the primary, secondary school levels and as General Studies course at tertiary institutions to ensure food production for sustainability.

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