

MAIN TRADITIONAL FOOD USES OF CASSAVA IN GHANA

by

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Cassava, a principal starchy staple crop is second only to maize in cultivated acreage. Varieties that are cultivated in Ghana are mainly the sweet type which contain low levels of cyanogenic glycoside, a toxic principle in the roots. (3)

Figure 1 shows the major products which are derived from cassava. The peeled tubers are given various treatments which are divided below into 3 main groups.

### 1. Boiled cassava (amgesi)

Peeled cassava tubers are boiled in water until well cooked. The boiled flesh of cassava, amgesi, is eaten with vegetable soups or stews. It may also be pounded separately or together with boiled plantain, cocoyam or yam into a smooth stiff paste called fufu which is eaten with soups.

### 2. Kokonte (6) (8)

Tubers are peeled, cut into chips, washed and sun-dried. In the rainy season drying is sometimes facilitated by the application of heat. Cassava pieces are spread on platforms with fire underneath.

Ramsley (1969)<sup>(7)</sup> reported that bacterial fermentation occurs during the first 2-3 days of the drying period which takes up to 20 days. Taste tests showed that characteristic kokonte flavour is produced after the acidity has reached a value of 0.35% (lactic acid).

Chemical composition of market samples of kokonte is shown on Table 1.

Table 1 Proximate composition of Kokonte <sup>(4)</sup>

Moisture content %	11.5 - 14.0
Protein%	1.3 - 1.6
Fibre %	0.9 - 1.3
Ash %	1.5 - 2.2
Carbohydrate% (including fibre)	84.3

To prepare the flour, dried cassava chips are pounded in a mortar before they are ground into fine flour at powered service mills.

Table 2 shows sieving analysis results of market samples of Kokonte flour

Table 2

Sieving analysis of market samples of kokonte flour  
(Unpublished data)

Sieve Aperture Size (micron)	Percent retained		
	Sample 1	Sample 2	Sample 3
420	11.6	0.9	4.2
297	22.6	9.0	12.6
177	33.1	24.3	22.9
105	16.8	18.8	19.5
74	12.6	30.0	35.0
74	3.2	16.8	5.7

### 3. Cassava mash

Cassava mash is an intermediate product from which various other products such as cassava dough, gari, starch and tapioca are made.

#### 3.1. Cassava dough

Peeled cassava is washed and grated into a mash of finer texture than is used for gari. The mash is left in baskets to ferment over a period of 12hrs - 3 days depending on the final use. Juices drain out of the mash which assumes the consistency of a dough. The mildly fermented dough may be steamed into a spongy type of girdle cake called yakayake, a staple dish that is eaten with soups or stews. Agbeli kaklo, a deep fried snack in the shape of croquettes or balls is also prepared from cassava dough. This is eaten with the flesh of mature coconut. One part fermented cassava dough is boiled with 2 parts maize flour or fermented maize dough into a stiff paste called akole, another staple dish which is usually eaten with soups or stews.

#### 3.2. Starch

Starch is another traditional product that is prepared from cassava mash. Liberal amount of water is added to the mash before it is wet-sieved through muslin cloth sacks. The filtrate starch suspension is allowed to settle for about 6 hours before the supernatant is decanted. The starch sediment is stirred with addition of fresh water and allowed to settle again.

The top layer of the sedimented starch, yellowish in colour and containing a lot of impurities, is scraped off.

The finished product has a moisture content of about 45%. Traditionally, starch is usually disposed of in the moist state either by selling it or by processing it further into other products. The following are the quality characteristics that the consumer looks out for:-

- (i) the starch should be very white
- (ii) it should have no fibrous matter when rubbed between fingers.
- (iii) it should be clean and free from sand and specks.
- (iv) it should be free from peculiar odour.

### 3.2.1. Tapioca

Tapioca is partially gelatinized and dried granules of cassava starch. It is prepared in Ghana as irregular lumps with diameter 6-15mm. Moist starch is broken up by rubbing it through coarse bamboo sieves and roasted in a shallow oiled pan with continuous stirring. The gelatinized granules are then spread on raised platforms to dry in the sun to a moisture content of about 12%. Good quality tapioca is free - flowing, free from dirt, grit, foreign matter and any off-flavours. It should be white to creamy-white in colour. Tapioca is soaked in water before it boiled or is eaten uncooked with the addition of sugar and milk.

### 3.2.2 Biscuits

Sun-dried cassava starch is ground into a fine flour and mixed with coconut, milk, eggs, sugar and salt to make biscuits. A few drops of red palm oil are added to impart a yellow colour to the biscuits.

### 3.3. Gari

Cassava mash is placed in sacks and left to ferment for about 3 days. Heavy stones are put on top of the sacks to press and extract juices from the mash while it ferments. After fermentation the dewatered cassava mash is broken up by hand, sifted through a coarse sieve and dried partially in the sun before it is roasted in a hot shallow container with constant stirring. The roasting process partially cooks the starch and dries the product to a moisture content of about 13% or below.

Gari is a popular student food in boarding schools in Ghana because (i) it has very good keeping qualities and can be stored for more than three months (ii) it may be eaten without cooking and has been found handy as an instant food under conditions where ready-to-eat dishes are needed. Gari is eaten in a variety of ways. It is soaked in cold water with sugar and milk and eaten as a thin gruel. With just enough water, gari is allowed to swell into a compact mass which is eaten with preserved spices and canned fish or meat. A popular way of serving gari is with boiled cowpeas in a dish called Yoo-ke-gari. When cooked, gari is made into thick paste in boiling water and is eaten with Vegetable soups or stews.

The various characteristics used to assess the quality of gari by the consumer are crispiness, swelling capacity, colour, taste, aroma and cleanliness. (1) (5) Good quality gari has

- (i) low moisture content (8-10%)
- (ii) swelling capacity of at least 300%
- (iii) creamy or very light yellow colour
- (iv) no dirt, insect parts or insects
- (v) uniform particle size
- (vi) no abnormal odour
- (vii) low HCN content (20 p.p.m.)
- (viii) acidity 0.8 - 1.2%

Acceptability of level of sourness depends on preference of a particular locality.

#### 4. PRODUCTS WITH PROSPECTS FOR COMMERCIALIZATION

Cassava products which lend themselves to commercial production are gari, kokonte (cassava flour) tapioca and dried starch. These are dried products in the form of flour or grits which have very good keeping qualities provided they are efficiently dried and well packaged.

Trade links already exist among neighbouring countries in West Africa for import or export of these products which are of dietary significance in these countries.

1. Akinrele, I.A., Collins, G., Cook, A.S., Helgate, R.H.,  
Janaid, Y. and Baumer, G. (1962)  
Gari pilot plant (1 ton a day). Result of 3 month trial  
run. Federal Institute of Industrial Research;  
Nigeria Research Report N.13.
2. Codex Alimentarius Commission (1979)  
Important Agricultural Products in North Africa and  
French-speaking countries South of the Sahara.  
CX/AFRO 79/6, Rome.
3. Doku, E.V. (1966)  
Cultivated cassava varieties in Ghana.  
Ghana Journal of Science, 6, (3 & 4) 74-86.
4. Eyeson, K.K. and Ankrah, E.K. (1975)  
Composition of Foods Commonly used in Ghana.  
Food Research Institute (CSIR), Accra, Ghana.
5. Ingram, J.S. (1975)  
Standards, specifications and quality requirements for  
processed cassava products.  
Tropical Products Institute,  
Report No. G102, London.
6. Jones, W.O. (1959)  
Manioc in Africa pp. 106, 108, 113  
Stanford University Press, Stanford,  
California.
7. Ramsley, J. (1969)  
Crop Storage.  
Food Research and Development Unit, Accra,  
FAO Technical Report, PL:SF/GHA 7.
8. Whitby, P. (1968)  
Foods of Ghana.  
Research Bulletin 1, 1-31,  
Food Research Institute, Accra, Ghana.