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QUALITY EVALUATION OF GARI

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### SUMMARY

The quality of gari was measured in terms of the physical and chemical characteristics involving the determination of swelling capacity, proximate composition, starch and minerals.

### INTRODUCTION

Gari is a fermented roasted product of cassava. It is consumed as a convenience food as a source of carbohydrate. In this article samples of gari were bought from the markets at Accra for analyses in the laboratory.

### EXPERIMENTAL

#### Materials

The gari samples analysed were bought from the market of Accra. They were brought down to the laboratory for analyses.

#### Methods

The gari samples were analysed for percentage swelling. Total acidity, moisture, ash, protein, starch and minerals as follows:

### METHOD

#### Swelling Capacity

A portion of gari was poured into 100ml measuring cylinder up to 25ml mark. Water was then poured on it to the 100ml mark at room temperature. The mixture was allowed to stand at constant volume. The percentage swelling capacity was then measured.

#### Total Acidity

18g gari was transferred into 500ml conical flask and 200ml distilled water was added. The mixture was heated at 40°C. It was then filtered. The 100ml of the filtrate was titrated against N/5 NaOH using phenolphthalein as indicator.

The acidity was calculated as per cent lactic acid as follows:-

1ml 5/N NaOH = 0.2% lactic acid

Moisture, protein, ash and calcium were determined according to the methods of the A.O.A.C. (1970) 11th edition.

Moisture 5g of the sample was left in moisture oven at 105°C for 4 hours for moisture determination.

Ash Ash was measured by igniting 5g sample in muffle furnace at 550°C.

Protein - The protein content was determined on about 2g sample by the macrokjeldahl method.

Starch -

Starch was determined by Lintner's method as described in Percon as follows:-

5g portion of gari was mixed with 20ml of water and 40ml HCl. The mixture was washed into a 200ml flask with HCl. 10ml of 5% Phosphotungstic acid was added to precipitate proteins and the volume was made up to 200ml with 12% HCl. It was shaken, filtered and the optical rotation of the filtrate was measured in a 200-mm tube. The percentage starch was then calculated.

Mineral Determination

The determination of the minerals, the ash was dissolved in 10ml 5 N HCl and made up to 50ml with water.

Calcium and Iron determination

A slightly modified method of the A.O.A.C. was used for the determination of calcium and iron as follows: - Calcium was precipitated on the oxalate. The oxalate was dissolved in 2N -  $H_2SO_4$  and the liberated oxalic acid was titrated against 0.02N -  $KMnO_4$  solution

Iron was determined by reducing 0.5ml portion of the ash solution with ascorbic acid. After adding dipyrldyl solution the intensity of the colour was measured in a Coleman Model (18 Colorimeter in a 19mm diameter Curvette using filter 8-206. The iron content was then read from a standard curve.

Phosphorus Determination

Phosphorus was determined according to the method described by Fogg and Wilkinson (1958) on a measured volume of the ash solution. After reducing the molybdophosphate with ascorbic acid, the optical density was measured with a Coleman Model 8 Colorimeter in a 12mm cuvette using filter 8-215. The phosphorus content was calculated by reference to a standard curve.

TABLE 1: THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF GARI

% Swelling Capacity	% Total Acidity (as lactic Acid)	% Moisture	% Ash	% Protein	% Starch	Calcium (mg/100g)	Phosphorus (mg/100g)	Iron (mg/100g)
301 (7)	0.7 (6)	8.1 (7)	1.3 (7)	1.2 (4)	66.7 (6)	71 (1)	45 (1)	4 (1)
256-388	0.4-0.9	6.8-9.7	1.1-1.5	1.0-1.6	54.6-78.0			

The figures represent mean and range values.

Figures in parentheses denote the number of samples analysed.



RESULTS AND DISCUSSION

The results are reported on Table 1. The mean percentage swelling capacity was 301 while the mean total acidity (as lactic acid) was 6.7%. The moisture and ash values were 8.1% and 1.3% respectively. These results compare favourably with figures of gari from the Ghana Standards Board. The mean starch content was 66.7% while the mean protein content was 1.2%. The calcium, phosphorus and iron levels were 7mg/100g, 1.5mg/100g and 1mg/100g respectively.

The data presented here will be useful to workers involved in nutrition, dietetics and food science and technology programmes. The results will also be fed into the Food Composition Data work in Ghana.

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