The Acceptability of Five Varieties of Cassava for Ghanaian Food Uses Based On their Pasting Characteristics.

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ABSTRACT

The pasting characteristics of the starches and flours obtained from five varieties of cassava with the aim of evaluating their suitabilities for use in some Ghanaian paste-like food products were investigated. The flour samples were obtained through dehydration of 5 mm sliced cassava and milling, whilst the starches were by the sedimentation method.

The pasting temperature, peak viscosity, viscosity at 95ºC, viscosity at 50ºC, paste stability at 50 ° C, and setback were the parameters investigated. Flour and starch from the cassava variety *Yebeshie* gave the highest peak viscosities 482 and 1057 BU, with equally very good setback values of 118 and 258 BU, respectively. There was very little coorerelation between the starch content and the pasting properities. These properties make cassava variety Yebeshie as being useful for paste-like food products like *fufu*. The starch from the *Yebeshie* cassava will have a greater ability to form a thicker paste. This property gave the idea of the texture and quality of the product from which the starch will be used for. For local products like *fufu*, a high peak viscosity and setback are desirable. *Yebeshie* cassava was the preferred option for paste-like local products.

INTRODUCTION

- Cassava, (*Manihot esculenta Crantz,)* is a perennial woody shrub with an edible root. It has several advantages as a crop
- It roots can be cooked and eaten fresh and processed into flour . Cassava can also meet industrial needs such as starch for use in paper and drug making industries
- Cooking behaviours of different starches can be compared with a Brabender viscoamylograph, which records the change in viscosity under low shear rates .

OBJECTIVE: To assess the suitability of cassava for local food uses based on the proximate composition and pasting characteristics of their flours and starches.

MATERIALS AND METHODS

Raw Materials

Cassava *(Manihot esculenta)* - *Yebeshie,, bosom nsia*, 061, 094 and 065 varieties.

Methods

- **Starch Extraction**

Sedimentation method (Trim *et al.*, 1993). Extraction was done in three batches for each of the five varieties of cassava.

- **Proximate analysis** (AOAC, 2000)
- **Cassava flour :-**(Badrie and Mellowes, 1992).
- **Pasting characteristics**

The method by (Zobel, 1988) using Brabender Viscograph E (IDENT. NO. 802525, Duisburg, Germany).

RESULTS AND DISCUSSION

Table 1: Pasting characteristics of starches and flour from 5 Cassava varieties

Sample	Peak viscosity (BU)	Viscosity at 95 ºC (BU)	Viscosity at 50ºC	Setback
Starch				
061	690 ± 38.97	262 ± 3.46	331 ± 60.93	137 ± 35.23
094	741 ± 55.89	325 ± 8.14	339 ± 21.28	221 ± 13.45
065	633 ± 263	300 ± 86.31	399 ± 117	189 ± 50.82
Bosom nsia	773 ± 30.57	411 ± 32.92	486 ± 14.01	222 ± 11.15
Yebeshie	1057 ± 56.02	366 ± 4.04	522 ± 19.65	258 ± 12.09
flour				
061	482 ± 4.36	218 ± 15.04	244 ± 18.72	106 ± 4.16
094	299 ± 12	151 ± 4.04	137 ± 2.31	55.3 ± 1..53
065	384 ± 2	169 ± 5.77	164 ± 3.46	76.6 ± 0.58
Bosom nsia	400 ± 17.00	197 ± 10.69	162 ± 6.08	66 ± 4.51
Yebeshie	482 ± 8.39	207 ± 7.51	219 ± 8.50	118 ± 5.68

Pasting characteristics of cassava starch

Yebeshie starch gave the highest peak viscosity(1052BU).*Yebeshie* starch will form a thicker paste.

High setback was recorded by *Yebeshie* starch. It will readily associate to form a gel during cooling.

Proximate composition of cassava varieties

There were significant differences in chemical composition Table 2. The differences could be a result of the variety, location, age and environmental conditions of the cassavas.

Starch content (g/100) of cassava in increasing order

061, 065, *Yebeshie*, 094, *bosom nsia*

Pasting characteristics of cassava flour

The peak viscosity of the cassava flours ranged from 299BU to 482BU. *Yebeshie* and 061 cassava gave the 482BU values.

Comparison of pasting of cassava starches and flour

Setback viscosities for starch ranged from 137 BU for *061* cassava starch to 258 BU for *Yebeshie* cassava *starch* while values for flour, ranged from 55.3 BU for *094* cassava flour to 118 BU for *Yebeshie* cassava flour. Generally, the starches recorded greater pasting properties than the cassava flour.

Differences in peak viscosity and viscosity at 95ºC implied differences in paste strength and attendant differences in behaviour during processing.

The peak viscosities and set back values appear not to have been influenced by the starch and carbohydrate contents

Table 2: Some chemical Compositions of 5 cassava varieties

Variety	Moisture	Carbohydrate	Starch	Ash
061	70.9 ± 0.38	27.9 ± 0.39	11.2	0.65 ± 0.01
094	60.0 ± 0.34	38.2 ± 0.27	15.4	1.2 ± 0.01
065	61.7 ± 0.31	36.7 ± 0.3	14.7	0.9 ± 0.01
Bosom nsia	50.7 ± 0.0	40.9 ± 0.2	17.5	1.1 ± 0.01
Yebeshie	58.8 ± 0.2	39.1 ± 0.2	14.8	1.2 ± 0.02

CONCLUSION

The *Yebeshie* starch recorded the highest peak viscosity, viscosities at 95 ºC and 50 ºC and setback and its flour gave high peak viscosity and setabck compared to the other varieties. *Yebeshie* cassava was most preferable for local foods like *fufu* flour, pounded *fufu* and other paste-like local products, because of its great ability to form a paste.

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