EFFECT OF VARIETY, AGE AT MATURITY AND DRYING METHOD ON PHYSICOCHEMICAL PROPERTIES OF HIGH QUALITY CASSAVA FLOUR (HQCF).

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INTRODUCTION

TMS980510 and TMS98/0505 are among the 10 latest varieties introduced by IITA. However, effect of age at harvest on the chemical properties of the processed flours of these varieties are yet to be established.

These varieties and common drying method were evaluated for quality and safety with the set standard by Standard Organization of Nigeria (SON).





High Quality Cassava Flour (HQCF)

Specific features:

- unfermented
- odorless
- white
- Fine
- value-added
- Chemical properties; moisture, crude fibre, carbohydrate, pH and cyanide contents

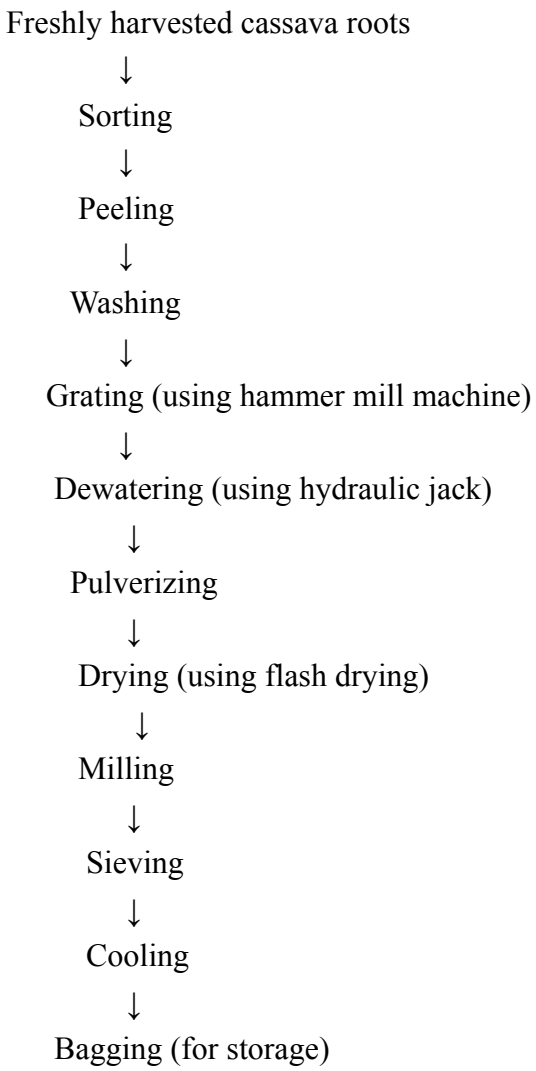

Fig. 2: Flow chart for HQCF production (Modified method of Sanni *et al*., (2006)).

Materials and Methods

Raw materials - The Cassava roots (TMS98/0510 and TMS98/0505)

Processing of HQCF - Modified method of Sanni *et al*., (2006).

- Flash drying of the sample - Blopamed Nig. Limited, Ijebu - Imuwen, Ogun State.
- Solar drying of the sample - Federal University of Agriculture, Abeokuta, Ogun State

Analyses:

- The proximate analysis was determined by the method described by AOAC (2005)
- pH analysis was carried out using the method described by Sanni (1999)

Materials and Methods (Contd)

- Cyanide content was determined by the alkaline picrate method as described by Ikediobi *et al*., 1980 and Olugboji, 1987

Data Analysis

- All data obtained were subjected to analysis of variance (ANOVA) using General Linear Model (Multivariate). Descriptive statistics was used to determine significance differences at 5% probability between means.

RESULTS

TABLE 1: EFFECT OF VARIETY AND AGE AT MATURITY PHYSICOCHEMICAL PROPERTIES OF CASSAVA ROOTS

Variety	Age at Harvest (mths)	Moisture	Fibre	Carbohydrate	pH	HCN (mg/kg
TMS98/0510	7	61.05	0.59	36.09	7.00	48.86
	9	58.65	0.84	38.22	7.15	48.01
	12	56.15	1.68	40.31	7.10	21.14
TMS98/0505	7	61.00	0.57	36.35	7.05	46.18
	9	57.75	0.73	39.88	7.05	45.51
	12	55.75	1.08	41.58	7.05	17.63
SE		0.18	0.01	0.19	0.02	0.13
Range		55.75 - 61.05	0.57 - 1.68	36.09 - 41.58	7.00 - 7.15	17.63 - 48.86
P of Variety		*	*	*	ns	*
P of Age at Harvest		*	*	*	ns	*
P of variety *Age		*	*	*	ns	*

TABLE 2: EFFECT OF VARIETY AND AGE AT MATURITY ON PHYSICOCHEMICAL PROPERTIES OF HIGH QUALITY CASSAVA FLOUR (HQCF).

Variety	Age at Harvest	Drying method	% Moisture	%Crude Fibre	%Carbohydrate	pH	HCN (mg/kg)
TMS98/0510	7	Flash	8.00	1.99	86.47	5.31	0.77
		Solar	9.59	3.59	83.81	5.75	1.25
	9	Flash	9.39	2.34	85.40	5.15	1.26
		Solar	10.22	3.80	82.92	6.05	1.58
	12	Flash	8.49	2.60	85.69	5.50	0.60
		Solar	9.93	4.03	83.17	6.30	1.54
TMS98/0505	7	Flash	8.05	1.92	86.60	5.25	0.50
		Solar	9.07	3.42	84.37	6.03	1.10
	9	Flash	10.04	2.13	85.02	5.45	0.45
		Solar	10.26	3.59	83.17	6.10	1.43
	12	Flash	8.01	2.47	86.33	5.95	0.29
		Solar	9.64	4.49	83.04	6.25	1.88
SE			.07	.02	.08	.03	.02
Range			8.00 - 10.26	1.92 - 4.49	82.92 - 86.60	5.15 - 6.30	0.29 - 1.88
P of Variety (Var)			ns	ns	ns	*	*
P of Age			*	*	*	*	*
P of Drying method (DM)			*	*	*	*	*
P of Var * Age			ns	*	ns	ns	*
P of Var * DM			ns	ns	ns	ns	*
P of Age * DM			*	ns	ns	ns	*
P of Var * Age * DM			ns	*	ns	*	*

*Significant at p<0.05 ns- not significant SE- Standard Error

DISCUSSION

- The standard requirements for moisture, crude fibre and carbohydrate contents in HQCF samples are 12% maximum, <3% and 70% minimum, respectively, (SON)

- Age negatively impacted the crude fibre content of the flour, it was observed increasing with age. Variety TMS98/0505 had the highest values at 12 mths. Ideally, it is better to harvest at 9 month

- The CHO range was above the recommended minimum value of 70%, this serves as a good indicator for starch content in these varieties.

- The pH was within the acceptable level for HQCF utilization. The pH is a good quality indicator as it reduces the substitution level of the flour used in baking and also improves the quality of the product. The ranged obtained in this study fell within the recommended pH range between 5.5 and 6.5 for flours

DISCUSSION (CONTD)

- Regarless of age at maturity, the M.C, cyanide and pH values within the acceptable limits. The cyanide was decreasing with age, therefore, it is more safer having at 12 month.

- Sakyi-Dawson *et. al*., (2006) reported that both variety and processing methods had significant effect on the chemical composition and cyanide level of cassava products.

CONCLUSION

- The two varieties have potentials of meeting the requirement/ standard for HQCF at 9 month of harvest.

- Both the drying methods are effective for the production of HQCF, however, the flash drying produced the most desirable result.

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