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CHEMICAL CONSTITUENTS OF FOUR VARIETIES OF DRIED PEPPER

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SUMMARY

The Chemical constituents of four varieties of dried pepper were investigated. The analyses included moisture, ash, nitrogen, acid insoluble ash, water soluble ash, calcium, phosphorus and iron.

INTRODUCTION

Pepper is used for spices and condiments and as a vegetable food as in salads, cooked dishes and as 'sito' It is also used in concoctions and in drinks in Ghana.

Using the fruit shape, Epenhuijsen (1974) classified the local varieties of pepper grown in Nigeria into two groups, Capsicum annum L. (round and bell shaped); C. Frutescens L. (slim elongated and slim short). Most of the cultivars are pungent but C. annum are not as pungent as the C. frutescens.

The peppers analysed consisted of four varieties described as follows:

Capsicum frutescens L. Slim elongated variety known as "Akwele Waabi" (Ga) or "ohenebansatia" (Twi) and Capsicum annum L. round and bell shaped variety. The green round variety is called "Kpakpo Sito" (Ga) and the red and yellow bell shaped variety is called "Tongo" (Ga) or "Kumkyerewa" (Twi)

EXPERIMENTAL

Materials

The pepper varieties were bought fresh from Accra markets. These are:-

(i) Capsicum frutescens L. (slim elongated, red) known as "Akwele waabi" (Ga) or "Ohenebansatia" (Twi)

(ii) Capsicum annum L. (bell shaped, yellow) known as "Tongo" (Ga), or "Kumkyerewas" (Twi)

(iii) Capsicum annum L.(bell shaped, red) known as "Tongo" (Ga) or "Kumkyerewa" (Twi)

(iv) Capsicum annum L. (round, green) known as "Kpakpo Sito" (Ga)

The moisture, nitrogen, ash, acid insoluble ash and water soluble ash contents were determined according to methods described in Pearson (1970) as follows:-

Moisture

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

Nitrogen

The nitrogen was determined on about 2g. sample by the macrokjeldahl method.

Ash

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

Acid L. insoluble Ash

The ashed sample was dissolved in 50% HCl. It was filtered and washed with hot water. After filtration the residue was ashed again. The ash was weighed and the percentage acid insoluble ash was calculated.

Water Soluble Ash

The ashed sample was mixed in hot water and filtered. After filtration the residue was ashed again. The water insoluble ash was then measured. The water soluble ash is the difference between the total ash and the water insoluble ash.

Minerals determination

For the determination of the minerals the ash was dissolved in 10ml 5N 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 as the oxalate.

The oxalate was dissolved in 2N - H_2SO_4 and the liberated Oxalic acid 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 dipyridyl solution the intensity of the colour was measured in a Coleman Model 18 Colorimeter in a 19mm diameter cuvette 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 6 Colorimeter in a 12mm cuvette using filtered 8-215. The phosphorus content was calculated by reference to a standard curve.

TABLE 1: CHEMICAL CONSTITUENTS OF FOUR VARIETIES OF DRIED PEPPER

Scientific Name	Local Name with description	% Moisture	% Nitrogen	% Ash	% Acid insoluble ash	% water soluble ash	Calcium (mg/100g)	Phospho. (mg/100g	Iron (mg/100g)
Capsicum frustescens L.	Akwele Waabi (Ga) Ohenebansatia (Twi) Slim elongated, red)	10.2 (7) 7.4-12.8	1.9 (6) 1.9-2.2	5.9 (8) 3.9-7.6	0.1 (3)	4.9 (4) 2.4-6.6	588 (2)	495 (2)	6 (2)
Capsicum annum L.	Tongo (Ga) Kumkyerewa (Twi) (bell shaped,yellow)	14.6 (2)	-	7.1 (2)	0.4 (2)	6.7 (2)	-	726 (2)	12 (2)
Capsicum annum L.	Tongo (Ga) (bell shaped, red)	12.9 (2)	-	5.3 (2)	0.2 (2)	4.3 (2)	729 (2)	637 (2)	13 (2)
Capsicum annum L.	Kpako Sito (Ga) (round, green)	11.4 (2)	-	5.9 (2)	0.3 (2)	3.0 (2)	426 (2)	492 (2)	6 (2)

The figures represent mean and range balues.
Figures in parentheses denote the number of samples analysed.

RESULTS AND DISCUSSION

Table 1 shows the result for the chemical constituents of four varieties of dried pepper. The Capsicum frutescens L. contains 1.9% nitrogen.

The ash content for Capsicum frutescens L. is 5.9% while that for Capsicum annum L. varieties ranges from 5.3-7.1%. The ash figure can be regarded as a general measure of the quality of the pepper.

The acid insoluble ash content is a measure of the sandy matter in the pepper. Capsicum frutescens L. contains 0.1% acid insoluble ash while that for Capsicum annum L. varieties ranges from 0.2 - 0.4%. Low water soluble ash content indicates previous abstraction of important constituents from the pepper thus lowering its quality. The water soluble ash content of Capsicum frutescens L. is 4.9% while that for the Capsicum annum L. varieties ranges from 3.0 -6.7%.

The dried pepper samples contain calcium ranging from 426-729mg/100g; phosphorus ranging from 495-726 mg/100g and iron levels ranging from 6-13mg/100g.

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