

Chemical composition of cake samples of Ghanaian copra (*Cocos nucifera*)

E. K. ANKRAH

Food Research Institute, CSIR, P. O. Box M. 20, Accra, Ghana

SUMMARY

The proximate composition and mineral contents of cake samples of copra (*Cocos nucifera*) were determined. Mean values observed for moisture, protein, fat, and ash were 10.2, 20.6, 12.6, and 6.0 per cent, respectively. Calcium and phosphorus also gave mean values of 90 and 513 mg per 100 g sample, respectively.

Research and development note. Received 29 Sep 97; revised 18 Jun 98.

Introduction

Copra cake is a by-product in the extraction of coconut oil from copra (*Cocos nucifera*). The fresh copra meal is eaten as food or is boiled with sugar as a confectionery product. In Ghana and other countries, copra cake is chiefly used as animal feed in livestock and poultry industries. Copra cake has limited use as nitrogenous fertilizer. There is also a possibility of copra cake being used as a protein food for man (Thieme, 1968; Woodroof, 1970).

This study provides analytical data for the proximate composition and mineral contents of some cake samples of Ghanaian copra.

Materials and methods

The cake samples of copra were collected from Winneba, Takoradi, and from Mamprobi and Bubuashie in Accra.

The cake samples of copra were analyzed for proximate composition, as well as for calcium and phosphorus contents. Moisture, protein, fat, and ash were determined according to the methods of

RÉSUMÉ

ANKRAH, E. K.: *La constitution chimique des échantillons de cake de coprah Ghanéen (Cocos nucifera)*. Une analyse de la constitution immédiate et les contenus minéraux étaient effectuées. Les valeurs moyennes observées pour l'humidité, la protéine, la graisse et la cendre étaient 10.2, 20.6, 12.6 et respectivement 6.0 pour cent. Le calcium et le phosphore également donnaient les valeurs moyennes de 90 mg et 513 mg respectivement par 100 g d'échantillon.

Pearson (1976).

A slightly modified method of the AOAC (1984) was used to determine calcium. Phosphorus was measured according to the method of Fogg & Wilkinson (1958).

Results and discussion

Table 1 shows the nutrient composition of some cake samples of Ghanaian copra. The data have been compared with corresponding values for cake samples of copra analyzed in the United Kingdom, France, and Germany (Thieme, 1968).

The average moisture content of the Ghanaian copra samples was 10.2 per cent with the range of 8.6 to 12.1 per cent. The moisture range for copra cake samples analyzed in France and Germany were 6.0 to 12.0 and 10.0 to 12.0 per cent, respectively.

The average protein content for the cake samples of Ghanaian copra was 20.6 per cent with the range of 18.1 to 25.7 per cent. A copra cake sample from the United Kingdom gave a protein value of 21.2 per cent while ranges of 19.0 to 22.9

TABLE 1

Nutrient Composition of Ghanaian Copra Cake Samples Compared with Values from other Countries

Source of copra cake samples	Moisture (percent)	Protein (percent)	Fat (percent)	Carbohydrate (Total including fibre) (percent)	Ash (percent)	Calcium (mg/100 g)	Phosphorus (mg/100 g)
Ghana	10.2 (14) 8.6-12.1	20.6 (11) 18.1-25.7	12.6 (14) 7.5-12.8	50.6 (9) 48.6-56.4	6.0 (14) 5.5-6.7	90 (8) 60-120	513 (6) 237-982
United Kingdom*	-	-	21.2	7.3	-	5.9	-
France*	6.0-12.0	19.0-22.9	5.0-8.0	-	-	-	-
Germany*	10.0-12.0	20.0-22.0	4.0-7.0	-	5.0-7.0	-	-

The figures represent mean and range values

Figures in parenthesis denote the number of samples analysed

*Figures from Thieme (1968)

and 20.0 to 22.0 per cent were obtained for samples analysed in France and Germany, respectively.

The cake samples of Ghanaian copra were found to be high in fat with an average of 12.6 per cent and a range of 7.5 to 12.8 per cent. A sample analysed in the United Kingdom had an average of 7.3 per cent, and ranges of 5.0 to 8.0 and 4.0 to 7.0 per cent were obtained for samples analysed in France and Germany, respectively. This indicates that the oil from the cake samples of Ghanaian copra has been partially extracted.

The protein and fat values of copra cake are important requirement in the formulation of animal feed whilst the nitrogen content is needed for fertilizer purposes.

The average ash content for the Ghanaian copra cake samples was 6.0 per cent with a range of 5.5 to 6.7 per cent, while that for a sample analyzed in the United Kingdom was 5.9 per cent, with Germany registering a range value of 5.0 to 7.0 per cent.

The average calcium and phosphorus contents of the cake samples of Ghanaian copra were 90

and 51 mg/100 g, respectively.

Acknowledgement

The author greatly appreciates the technical assistance of the staff of the Chemistry Section of the Food Research Institute.

REFERENCES

- AOAC (1984) *Official methods of analysis*, 14th ed. Washington DC, Association of Official Analytical Chemists.
- Fogg, D. N. & Wilkinson, N. T. (1958) The colorimetric determination of phosphorus. *Analyst, Lond.* 83, 406-414.
- Pearson, D. (1976) *The chemical analysis of foods*, 7th ed. Edinburgh, London, Churchill Livingstone.
- Thieme, J. G. (1968) *Coconut oil processing*. FAO Agricultural Development Paper 89, 219-220. Rome, Food and Agriculture Organization of the United Nations.
- Woodroof, J. G. (1970) *Coconut: Production, processing, products*. Westport, Connecticut, The Avi Publishing Company Inc.