A NOTE ON BANDAKKA (HIBISCUS ESCULENTUS, L.) AS A SOURCE OF EDIBLE OIL

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KS. MARKLEY and F. G. Dollear (1) have recently directed attention to the potentialities of *H. esculentus* as an oilseed crop in the Southern and South-Western States of the U. S. A.

Bandakka is cultivated throughout Ceylon as a vegetable (2, 3, 4), but has not been considered as an oilseed. We have examined a sample of ripe seed from plants grown at Bandirippuwa Estate, Lunuwila, and our results are tabulated below, with figures from the literature for comparison.

It will be seen that in oil content and general composition our sample did not differ materially from American-grown seeds. Nevertheless, we do not consider that Bandakka is worth consideration as an oilseed crop in Ceylon. Solvent extraction would be necessary for recovery of the oil, unless the seeds are separated into seed-coats and kernels, and only the latter pressed. This separation is not a simple matter (1). If new sources of vegetable oils, supplementary to coconut, are to be developed in Ceylon, we should regard the most promising annual crops as being gingelly, groundnut and sunflower.

Experimental.—Ten dry seed pods (total weight 134·5 gms.) gave 775 seeds weighing 51·5 gms. (38·3 per cent.). This seed weight corresponds to approximately 6,830 seeds to a lb.

TABLE I.a.—COMPOSITION OF UNDECORTICATED BANDAKKA SEED.

Per Cent.	Present (Ceylon) Sample.	Range of figures quoted by Markley and Dollear (1).
Moisture	11·75 ..	5·67–12·17
Fat	15·07 ..	12·8 –22·03
Protein (N x 6·25)	16·86 ..	16·12–22·86
Crude Fibre	22· 7 ..	19·68–28·35

TABLE I.b.—ASH CONSTITUENTS OF CEYLON BANDAKKA SEEDS.

	As Per Cent. of ash.	Per Cent. of whole original seeds,	Literature figures (5),
Ca O	5·3 ..	0·198 ..	0·155–0·276
K_2O	16·4 ..	0·617 ..	—
P_2O_5	33·2 ..	1·250 ..	—

The oil (15·07 per cent.) extracted by ether was greenish-yellow in colour, and had a strong odour reminiscent of olive oil. It had the following characteristics :

TABLE II.—PROPERTIES OF BANDAKKA SEED OIL.

	Present Sample.	Figures of Markley and Dollear (1),	Jamieson and Baughman (6).
Iodine Value (Wijs, 1 h.) ..	87·2 ..	91·1 ..	93·2–100·3
Saponification Value ..	201·1 ..	194·6 ..	195·2–195·5
Free fatty acid (as oleic per cent.) ..	2·4 ..	1·4 ..	0·68–2·84
Unsaponifiable (per cent.) ..	2·4 ..	1·1 ..	0·37

Both Jamieson and Baughman (6) and Halverson and Naiman (5) report that okraseed oil gives the Halphen reaction characteristic of cotton seed oil and some other oils of Malvaceous species. Neither our sample nor its derived fatty acids gave this reaction.

The oil-free extracted meal could be separated on a 50-mesh sieve into 34 per cent. of fine meal (almost free from seed coats) and 66 per cent. of coarse meal mostly consisting of seed coats. The former contained only 3·54 per cent. of crude fibre, compared with 51·21 per cent. in the coarse fraction (both figures calculated on the dry weight).

Since the above paper was completed we have received the paper by R. Singh and S. Dutt (*Indian Soap J.*, 1947, *13*, 99–101). These investigators found 14·82 per cent. of oil in Indian seeds. The oil had Iodine Value, 77·95; sap val., 194·4, acid value 12·14, unsap. per cent. 1·23. They report that the mixed acids (titre, 39·50) contained myristic 0·76, palmitic 23·02, stearic 4·98, oleic 49·29 and linoleic acid 22·04 per cent. The unsaponifiable matter contained sisosterol.

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