Short Communication

Composition of the Kernels of the Faveleira Nut (*Cnidoscolus phyllacanthus*)

J.K. Daun[a], L.D. Burch[a], R. Tkachuk[a] and H.H. Mundel[b]

[a]Grain Research Laboratory, Canadian Grain Commission, 1404-303 Main St., Winnipeg, Manitoba, R3C 3G8 Canada, and [b]Agriculture Canada Research Station, Lethbridge, Alberta, Canada

Cnidoscolus phyllacanthus **(faveleira) nuts had a high oil content (32% of nut, 54% of kernels) and the meal had a high nitrogen level (12.4% of oil-free kernels) and acceptable amino acid composition. The oil contained 55% linoleic acid and traces of arachidic, gadoleic and behenic acids. The possible presence of toxic substances in the meal must be considered.**

Cnidoscolus phyllacanthus (faveleira) is a thorny tree or bush which grows in an area of at least one million square kilometers in Northeastern Brazil. The leaves and the latex from plants in this genus have been used in folk medicines (1), and the seed has been eaten, ground up and mixed with cassava flour, by people in rural areas in times of food shortage (L.C. Pimental, personal communication). Faveleira has not been exploited as a commercial crop, and there has been little information published on the composition of the seed.

This study reports on the composition of faveleira seeds which were received in Canada as a result of intergovernmental technical exchange.

MATERIALS AND METHODS

A single sample of faveleira nuts was obtained from Northeastern Brazil in 1979. The nuts were hand dehulled. The hulls constituted about 55% of the dry weight. The oil content was determined on the whole nuts, hulls, and dehulled kernels using AOCS method Ai 3-75 (2). Nitrogen content was determined by the Kjeldahl method (3). Fatty acid composition was determined by gas liquid chromatography (4), and the amino acid composition was determined using a Beckman analyzer (5,6). Crude fiber was estimated by AACC Method 32 10 (7) and ash content by AACC Method 08-01 (7).

RESULTS AND DISCUSSION

The nuts were found to contain a substantial amount of oil (Table 1), especially the dehulled kernels. The fatty

TABLE 1

Proximate Composition of the Faveleira Nut

	% (Dry Basis)			
Seed portion	Nitrogen	Oil	Crude fiber	Ash
Whole nut	3.81	32.0	24.9	5.04
Hulls	1.29	3.7	—	—
Kernels	5.69	54.3	—	—
Oil-free kernels	12.41[a]	—	—	—

[a]Calculated from the whole kernels.

TABLE 2

Fatty Acid Composition of Oil from the Faveleira Nut Compared with Cotton Oil

	% Total Fatty Acids	
Fatty acid	Faveleira nut oil	Cottonseed Oil[a]
Palmitic (C16:0)	17.4	21.1
Stearic (C18:0)	9.4	2.5
Oleic (C18:1)	15.1	18.3
Linoleic (C18:2)	55.4	53.6
Linolenic (C18:3)	1.0	0.3
Arachidic (C20:0)	0.4	0.4
Gadoleic (C20:1)	0.2	0.4
Behenic (C22:0)	0.4	0.2
Other	0.7	3.2

[a]Analysis of Smalley Check Series Sample 85-5.

TABLE 3

Amino Acid Composition of Faveleira Nut Protein and Soybean Protein[a]

	g Amino acid/100 g N	
Amino Acid	Faveleira	Soybean
Lysine	18.9	38.3
Histidine	13.4	17.0
Arginine	74.3	42.2
Aspartic acid	33.4	70.8[b]
Threonine	22.2	22.1
Serine	31.3	29.0[c]
Glutamic acid	36.9	113.0
Proline	27.7	32.1
Glycine	26.4	26.3
Asparagine	29.0	—
Alanine	25.7	26.1
Cysteine	6.68	12.9[d]
Valine	48.2	33.3
Methionine	11.6	8.1
Isoleucine	22.3	29.6
Leucine	39.4	44.0
Tyrosine	16.0	19.0
Phenylalanine	27.0	28.8
Glutamine	73.8	—
Recovery, %	94.4	91.3
Protein, %	76.7	—

'Uncorrected' Protein/Nitrogen Factor: 5.28
'Corrected' Protein/Nitrogen Factor: 5.03

[a]Soybean protein from reference 5.
[b]Includes asparagine.
[c]Includes glutamine.
[d]Includes cysteine.

acid composition of the oil (Table 2) showed relatively high levels of palmitic and stearic acid and about 70% unsaturated fatty acids, in basic agreement with a study carried out in Brazil (8). Linolenic and other highly unsaturated fatty acids were not noted to be present in significant quantities. The fatty acid composition is similar to some other members of the Euphorbiaceae family, notably *Cnidoscolus texanus* (Bull nettle) (9) and *Hura polyandra* (Habilla) (10). Among vegetable oils, cottonseed oil is most similar but faveleira oil is higher in stearic acid (9% vs 2%) and lower in oleic acid (15% vs 25%) than cottonseed oil (11).

Faveleira meal is high in nitrogen, and the protein (Table 3) was found to contain less histidine, isoleucine, leucine and lysine but more arginine, methionine and valine than soybean protein. Although the high protein content and low ash level of the kernels indicate that it may be suitable for feed, it will be necessary to examine the meal for the presence of natural toxins or other antinutritional factors. The thorny leaves of the plant have been observed to exude drops of cyanide originating from a β-cyanoglucoside (12), indicating the possible presence of cyanogenic glycosides in the meal, and the latex of the plant has been used as a blood coagulant and a disinfectant.

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