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NOTES

Fatty Acids Composition from the Seeds of *Crotalaria Laburnifolia Linn*

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Fatty acids composition of *Crotalaria laburnifolia Linn* seeds has been reported.

Crotalaria laburnifolia Linn[1] (N.O. *Leguminosae*) is known as Muna in Hindi. It occurs in Western Peninsula, Northern Andhra, Mysore and Travancore; also in Ceylon, Malaya and Philippines. It is usually cultivated in gardens for its large flowers. The ayurvedic system of medicine describes the plant to be useful as gargle for sore throat inflammation of the mouth.

2 Kg of air dried and finely powdered seeds of *Crotalaria laburnifolia Linn* were extracted with petroleum ether (60–80°) in a soxhlet extractor for 70 hrs. The petroleum ether (2 litre) was concentrated under reduced pressure to 100 ml and kept in the refrigerator overnight when a yellow coloured deposit was obtained at the bottom of the flask which was separated by filtration. The filtrate on the removal of the solvent yielded a yellow coloured fat (4.6%) having following constants:

TABLE 1
PHYSICO-CHEMICAL CONSTANTS OF THE FAT

Constant	Value
Colour	Yellow
Yield	4.6%
Specific gravity	30°, =0.8467
Refractive index	$np^{28}=1.6785$
Iodine value	73.0
Acid value	4.65
Saponification value	174.45
Unsaponifiable matter	2.6%

The fat obtained from the petroleum ether (60–80°) extract was saponified by a solution of potassium hydroxide in 95% alcohol (500 ml)

by boiling under reflux for 3 hrs, and the excess of alcohol distilled off. The soap formed was cooled and dissolved in water. The unsaponified matter was separated by shaking (soap solution) continuously with ether in a separating funnel. The solvent was distilled off when a white coloured compound was obtained. Study of this compound is in progress and will be communicated separately.

The mixed fatty acids were separated into solid and liquid fatty acids by Twitchell's, lead salt alcohol[3] process as modified by Hilditch and co-workers[4]. The observation and results are recorded in Table 2.

TABLE 2

Sl. No.	Fraction	%	Acid value	Saponification value	Iodine value
1.	Solid	71.7	4.5	221.25	0
2.	Liquid	24.9	5.6	195.20	186.0

The solid and liquid fatty acids were chromatographed by paper chromatography[5] on Whatman No. I filter paper in different solvent systems (i) 75% ethanol (ii) Methanol : acetic and : Petroleum ether (30 : 1 : 7) by ascending and descending chromatographic technique. The observations and results are recorded in Tables 3 and 4.

TABLE 3

Sl. No.	Solid fatty acid	Solvent System I		Solvent System II	
		Rf Recorded[5]	Rf Found	Rf Recorded[5]	Rf Found
1.	Lauric acid	0.80	0.81	0.63	0.61
2.	Stearic acid	0.28	0.27	0.25	0.26
3.	Arachidic acid	0.29	0.30	0.26	0.27
4.	Myristic acid	0.58	0.57	0.48	0.49
5.	Palmitic acid	0.39	0.37	0.35	0.34

TABLE 4

Sl. No.	Liquid fatty acid	Solvent System I		Solvent System II	
		Rf Recorded[5]	Rf Found	Rf Recorded[5]	Rf Found
1.	Oleic acid	0.46	0.47	0.62	0.63
2.	Linoleic acid			0.82	0.80

The quantitative estimation of the fatty acids was done by gas liquid chromatography using their methyl esters.

GLC of Methyl Esters

The mixed fatty acids were converted into their methyl esters and analysed bp GLC which was run on a C.I.C. model gas chromatography provided with a flame ionization detector and automatic digital recorder. A copper column packet with Reoplex was used under the following conditions.

1. Column temperature 180°C
2. Injection part 270°C
3. Detector 300°C
4. Carrier gas N_2
5. Rate of flow 100 ml/min.
6. Chart speed 16″/hr
7. Attenuation 6×100

The peaks were identified by the comparison of the retention times of various peaks with those of authentic samples and their quantitative studies was done by calculating the various signal areas, and the results are recorded in the following Table 5.

TABLE 5

Sl. No.	Fatty acid	% composition of fatty acid
1.	Oleic acid	12.1
2.	Linoleic acid	5.2
3.	Lauric acid	14.2
4.	Stearic acid	13.6
5.	Arachidic acid	18.6
6.	Myristic acid	19.7
7.	Palmitic acid	11.5

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