Short Communication

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STUDIES ON THE FIXED OIL OF THE SEEDS OF *LEUCAENA LEUCOCEPHALA*. Part-I

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Leucaena leucocephala commonly known as Apil Apil, is a tropical tree belonging to the family Leguminosae. Much work has been carried out on the different aspects of *Leucaena glauca* [1-5] while a lot of work has still to be done on *Leucaena leucocephala*. Studies on fixed oil from the seeds of *L. leucocephala* have been reported in the present communication.

The seeds were collected from the pods of the plant which were crushed to a powdry material. 500 gms of this material was extracted with *n*-hexane using soxhlet apparatus and recovered 25 gms of oil (5% yield). The oil was filtered and used for physico-chemical investigations. The specific gravity, refractive index, saponification value, acid value, iodine value, ester value and INS value of the oil were recorded using the standard procedures [6].

The free fatty acids were liberated from the oil (5 gms) and their methyl μ esters were prepared [7]. The I.R. spectrum showed the absence of carboxyla peak at 2.9 μ and shifting of carbonyl peak from 5.9 μ to 5.7 μ, infering that all the fatty acids have been esterified. The methyl esters were then indentified on a Pye Unicam 104 series gas chromatograph fitted with an F.I. detector using WCOT carbowax 20 meter column. Hydrogen was used as the carrier gas with a flow velocity of 26 ml/sec. and sample size 0.02 m. The temperature was programmed as 108° for 5 minutes with 10 minutes increase to 220° while detector and injector temperature were 300° and 250° respectively. The sample gave nine peaks identifying capric (0.168%), lauric (0.163%), palmitic (18.75%), stearic (20.586%), oleic (42.475%), linoleic (0.658%), linolenic (0.223%), arachidic (1.955%) and lignoceric (3.524%) acids. These results were confirmed by running a standard mixture under identical conditions.

The physico-chemical characteristics of *L. leucocephala* seed oil are given in Table 1. The fatty acid composition of the seed oil of *L. leucocephala* is markedly different from that of the *L. glauca*. A comparative study has been given in the Table 2. This shows that the fixed oil of the different species of the same genera can differ to a much noticeable extent.

Work is in progress to study the unsaponfiable matters of the oil which are 3.8%. It is also intended to study the proteins and the carbohydrates of the seeds which are about 95% in weight. These studies will bring out the practical utility of these fractions.

Table 1. Physico-chemical properties of the fixed oil of *Leucaena leucocephala*.

Fixed oil	5%
Colour	Yellow brown
Specific gravity	8.966
Refractive index at 25°C	1.49
Saponification value	187.03
Acid value	4.7124
Iodine value	119
Ester value	182.3176
I.N.S. value	68.03
Peroxide value	96.5
Unsaponifiable matter	3.86%
Saponifiable matter	96.16%

Table 2. Fatty acid composition of the fixed oils of *Leucaena leucocephala* and *Leucaena glauca* [2]

Fatty acids	*L. leucocephala* (%)	*L. glauca* (%)
Capric	0.168	–
Lauric	0.163	–
Palmitic	18.751	12.74
Stearic	20.586	5.01
Oleic	42.457	23.63
Linoleic	0.658	54.31
Arachidic	1.955	–
Behenic	–	3.64
Lignoceric	3.524	0.67

Key words: Fatty acids, Esterification, Saponification.

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