

### Short Communication

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## Composition of Seed Oils of *Gmelina (Gmelina Arborea)* and *Teak (Tectona Grandis)*

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*Gmelina (Gmelina arborea)* and *teak (Tectons grandis)*, both of Verbenaceae family [1] are two tree plants of the tropical rain forest. The teak hard wood is used in furniture making and *gmelina* for pulp and paper production [1,2].

No previous work has been reported on the seed oils of the two plants in Nigeria. This study therefore, reports the chemical characteristics and fatty acid compositions of the oils of Nigerian species of *gmelina* and *teak*, as a continuation of attempts being made to investigate the lesser known Nigerian seed oils for possible source of vegetable oil [3].

The seeds of the two plants were collected during 1989 season. Each plant's seeds were ground and Soxhlet extracted using hexane. Iodine and saponification values were determined using standard methods [4].

The oil was methylated using  $\text{BF}_3$ -methanol complex [5], and the methyl esters were chromatographed using 100 gm DEGS  $\text{Kg}^{-1}$  chromosorb W HP packed in a glass column (200 cm X 2mm id) on a Varian 3700 GC equipped with a flame ionization detector. The methyl esters were identified by comparing their retention times with those of standards under the same operating conditions and quantified by triangulation.

Table 1 shows the characteristics and fatty acid composition of the two seed oils. They both showed low oil contents and high degrees of unsaturation. The major fatty acid distribution patterns were similar with linoleic acid being greater than 50% in both.

Teak seed oil showed a similar fatty acid profile to that obtained from India [6] (C16 : 0, 12%, C18 : 0 9%, C18 : 1, 17%, C18 : 2, 58%), but the latter had a higher oil content (34%). However, *gmelina* seed oil varied in fatty acid profile from that of India whose content was C 16: 0, 14.7%, C18 : 1, 48.2% and C18 : 2, 22.6% [7]. This variation could be due to differences in soil characteristics.

The low oil contents of both seeds may not make them viable as commercial sources of vegetable oils.

TABLE 1. CHARACTERISTICS AND FATTY ACIDS COMPOSITION OF *GMELINA ARBOREA* AND *TECTONA GRANDIS* SEED OILS\*.

		<i>Gmelina arborea</i>	<i>Tectona grandis</i>
<i>Oil characteristics</i>			
Oil % (dry weight)		14.1	1.04
Iodine value		106.3	98.7
Saponification value		201.7	194.4
<i>Fatty acid composition</i>		% Total fatty acid	
Lauric	C12 : 0	0.8	—
Myristic	C14 : 0	0.4	—
Palmitic	C16 : 0	6.7	12.8
Stearic	C18 : 0	3.8	10.8
Oleic	C18 : 1	20.8	21.8
Linoleic	C18 : 2	62.5	53.3
Linolenic	C18 : 3	5.1	—
Arachidic	C20 : 0	—	1.3

\*Average of two determinations.

**Key words:** *Gmelina*, *Teak*, Seed oil characteristics, Fatty acids.

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