Studies on the Fixed Oil from the Seeds of *Aegle marmelos* Corr.

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ABSTRACT

The fixed oil from the seeds of *Aegle marmelos* Corr. has been investigated in detail. Palmitic and oleic acids have been found to be the major constituents of the oil followed by linoleic, linolenic and smaller amounts of Stearic acids.

INTRODUCTION

Aegle marmelos Corr. is a medium sized deciduous tree found commonly in Central and South India (1-2). The fatty oil has been characterized in the past by older methods, i.e., thiocyanogen and ester fractionation methods (3). The present study is aimed at a more complete analysis – in terms of percentage of individual constituting fatty acids – using modern methods of TLC and GLC.

MATERIALS AND METHODS

The coarsely powdered seeds were extracted with petroleum ether (60-80 C) in a Soxhlet, and the oil (yield 18%) was purified over animal charcoal. The values of its physico-chemical properties were determined (Table I). The oil was saponified (KOH and alcohol), and the mixed acids so obtained were further resolved into saturated and unsaturated acids by lead salt method (4). The physico-chemical properties of the mixed acids and the separated saturated and unsaturated acids were determined. The acids were converted to their methyl esters (methonal H_2SO_4). The esters were qualitatively identified by TLC (on Silicone oil-impregnated Silica Gel G plates developed with acetic acid/water (85:15), sprayed with dextrin and exposed to iodine vapors) and quantitatively determined by GLC (Perkin Elmer 881; column, 6 ft; stainless steel, filled with 27% Reoplex on Chromosorb W; column temperature, 220 C; detector, T.C.D. carrier gas, H_2; and chart speed, 15 mm/min.).

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TABLE I

Physico-Chemical Properties of the Oil

Determination	Value
Specific gravity at 25 C	0.9080
Refractive index at 25 C	1.4640
Optical rotation at 25 C	± 0
Acid value	0.6589
Saponification value	185.40
Iodine value	116.20
Acetyl value	36.50
Unsaponifiable matter	1%

RESULTS

The percentage of each ester, calculated from its peak area in the Chromatogram (GLC) has been found to be: 33% methyl palmitate; 38% methyl oleate; 17% methyl linoleate; 10.3% methyl linolenate; and 1.5% methyl stearate.

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