SHORT COMMUNICATION

Chemical Investigation of *Solanum khasianum* Seed Fat

ABSTRACT

The seeds of *Solanum khasianum* contain 14.5% of a fatty oil. The component fatty acids were found by gas liquid chromatography analysis to be 0.2% myristic, 14.2% palmitic, 0.9% palmitoleic, 4.4% stearic, 15% oleic, and 62.6% linoleic acids.

INTRODUCTION

Solanum khasianum, var. 'Chatterjecanum' grows wild and abundantly in Assam, including in the Khasi hills up to an altitude of 1500 meters (1).

The present investigation related the fat from the seeds and determined the components. The seeds of this plant were found to contain 14.5% fat. The fat was extracted with petroleum ether and its component fatty acids were examined by gas chromatography.

EXPERIMENTAL PROCEDURES AND DISCUSSION

Isolation of Fat or Oil

The seeds (2 kg) were ground and extracted in a Soxhlet apparatus with petroleum ether (bp = 40-60 C), and the extract allowed to stand overnight. A white crystalline compound deposited on cooling the solution. This was removed by filtration and found to be carpestrol (2-4). The filtrate on distillation gave 291 g yellowish oil with the following characteristics: saponification value = 199.4; iodine value (IV) = 181.1; specific gravity = 0.941; and refractive index at 27 C = 1.4725.

Saponfication

The fatty oil (11.4 g) was saponified with 3 g KOH in 75 ml methanol. The unsaponifiable product and fatty acids were isolated by the standard procedures (5,6).

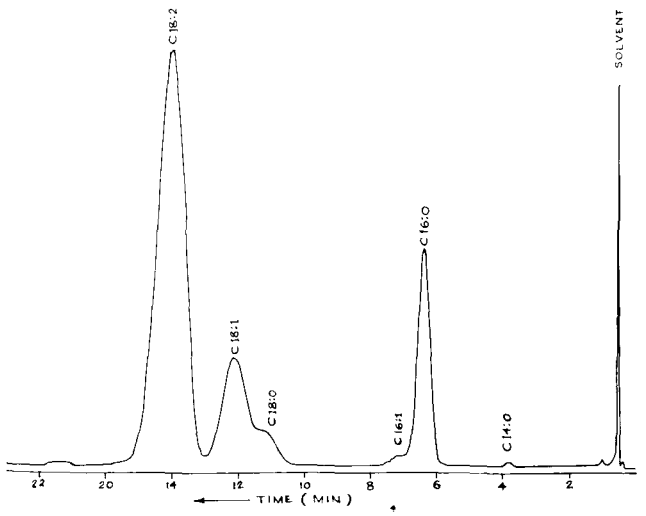

FIG. 1. Analysis of fatty acids on 25% resoflex, 3% 0-phosphoric acid coated on chromatosorb "P" 60-80 mesh, 220 C (isothermal), 60 ml/min hydrogen, 2.4 x 4.5 mm internal diameter stainless steel coil TCD, Filament current, 120 mA. Sample size = 3.0 μl.

TABLE I

Fatty Acid Composition as Determined by Gas Chromatography

Fatty acid	Concentration (%)
Unknown	2.7
$C_{14:0}$	0.2
$C_{16:0}$	14.2
$C_{16:1}$	0.9
$C_{18:0}$	4.4
$C_{18:1}$	15.0
$C_{18:2}$	62.6
Higher	Traces

Preparation of Methyl Esters

The mixed fatty acids were converted into esters by refluxing with absolute methanol containing 1% concentrated H_2SO_4. Then, the unesterified acids were removed. Samples were stored under nitrogen atmosphere until required for gas chromatography.

Determination of Fatty Acids by Gas Chromatography

In this investigation, a Beckman GC-2A gas chromatograph with Bristols dynamaster recorder was used. To achieve most effective resolution and separation of methyl esters, several analytical columns were screened and Resoflex with H_3PO_4 was found to be the most suitable liquid phase for scanning the material (Fig. 1). During the determination of the methyl ester mixture, the apparatus was run at 220 C with a hydrogen flow rate of 60 ml per min. Gas chromatographic analysis of the methyl esters allowed calculation of the fatty acid composition shown in Table I.

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