Fatty Acid Composition of Yellow- and Violet-Flowered *Sesbania Sesban* Seeds

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ABSTRACT

The fatty acid composition of seed oils from yellow- and violet-flowered *Sesbania sesban* varieties was determined. Their composition and properties were too similar to provide chemotaxonomic distinction between the varieties.

INTRODUCTION

In continuation of our program of investigating medicinal plants growing locally, *Sesbania sesban* Merr. (syn. *S. aegyptiaca* Poir.) of (family Leguminosae, subfamily Papilinoideae) was evaluated. The plant is reported (1,2) to be used for a variety of ailments. Recently, abortifacient activity of flowers of *S. sesban* on rats has been reported (3). Several American *Sesbania* species have been found active against lymphocytic leukemia (4,5) and are known for various cytotoxic effects in animals (6). *S. sesban* is a soft-wooded tree of rapid growth and occurs in three varieties which differ in the color of the flowers. We have made a comparative study of the fatty acid composition of the seed oils of yellow- and violet-flowered varieties of *S. sesban* in an attempt to differentiate them on the basis of chemotaxonomy. Results are presented in this communication.

EXPERIMENTAL PROCEDURES

Plant Material

Pods of the yellow- and violet-flowered varieties of *S. sesban* were collected locally in the month of July. The seeds were separated mechanically from the dried pods.

Extraction and Determination of the Oil Characteristics

The crushed seeds (400 g) of the yellow-flowered variety and (500 g) of the violet-flowered variety were extracted separately with petroleum ether (60-80 C) in a Soxhlet unit. Evaporation of the solvent under vacuum yielded the oils at 5% and 4.7%, respectively. Various physicochemical characteristics of the oils were determined and are given in Table I.

Preparation and GLC of Methyl Esters

The oils were saponified by refluxing with 0.5 *N* ethanolic potassium hydroxide for 1.5 hr, and the chemical characteristics of the mixed fatty acids were determined (Table I). The mixed fatty acids were esterified by treatment with methanol in the presence of concentrated sulphuric acid (7). Methyl esters obtained were analyzed by GLC on an AIMIL-NCL gas chromatograph using Reoplex 400 supported on Chromosorb W (60-80 mesh), 6 ft long and 1/4 in. outside diameter (1/6 in. inside diameter), 190 C with a flame ionization detector. The peak areas were measured by triangulation. The results are also given in Table I.

RESULTS AND DISCUSSION

The comparative proportions of the fatty acids as determined by GLC of the methyl esters of the oils are listed in Table I. However, no significant difference in the fatty acid composition of the two varieties has been observed.

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TABLE I

Characteristics of the Seed Oils of Yellow- and Violet-Flowered Varieties of *Sesbania sesban*

	Oil from yellow-flowered variety	Oil from violet-flowered variety
Oil %	5.0	4.7
Specific gravity (25 C)	0.9184	0.9200
n_D^{25}	1.4655	1.4671
Iodine value	115.9	119.5
Acid value	3.6	3.5
Saponification equivalent	293.3	292.4
Unsaponifiable matter (%)	1.3	1.4
Iodine value of mixed fatty acids	125.5	127.4
Saponification equivalent of mixed fatty acids	276.6	275.5
Fatty acid composition (% by wt by gas liquid chromatography)		
14:0	Trace	Trace
15:0	Trace	Trace
16:0	12.2	12.9
16:1	1.3	1.9
18:1	34.2	33.3
18:2	42.8	43.6
18:3	6.5	6.7
20:0	3.1	1.5

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