

COMPOSITION OF STEMBARK ESSENTIAL OIL FROM *SALVIA MACROSIPHON* BOISS

FIROUZ MATLOUBI-MOGHADDAM*, GHOLAMREZA AMIN** and ELHAM SAFAVI-POORSOHI**

* Sharif University of Technology, Department of Chemistry, Tehran, Iran

** Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

(Dedicated to the memory of Professor Maktoob Alam from the University of Houston, Texas)

ABSTRACT

The essential oil of *Salvia macrosiphon* boiss (*Labiatae*) was prepared by steam distillation and analyzed by GC and coupled GC/MS. Twenty substances out of about thirty-three detected components were identified. The major constituents were sesquiterpenes (69.5%), α -Gurjunene (11%), β -Cubebene (10.6%), Germacrene-B (7%).

Key words: Essential oil, *Salvia macrosiphon*, Sesquiterpene, *Labiatae*, GC/MS

INTRODUCTION

The genus *Salvia* (*Labiatae*) contains more than 700 species, which, about 200 out of them exist in Iran. Plants belonging to this genus are pharmacologically active and have been used in folk medicine all around the world (1). As part of our continuing chemical and pharmacological investigation of Iranian *Salvia* species (2), this article describes the chemical investigation of the essential oil from *Salvia macrosiphon* Boiss. Only the flavanoid composition of this species has been reported (3).

MATERIALS & METHODS

Plant material: The flowering plant material was collected from the surrounding of Tehran in May 1994. Voucher specimens (No. 6512) have been deposited at the herbarium in Faculty of Pharmacy, Tehran University of Medical Sciences.

Isolation of the essential oil: The aerial parts (300 grams), of the freshly collected plant were finely chopped and steam distilled for four hours. The distillate was saturated with NaCl and extracted successively with petroleum-ether (b.p. 40-60) and dichloromethane. The combined organic phases were dried over Na₂SO₄ and the solvent was evaporated at room temperature to give a pale greenish essential oil, which was stored under refrigeration at -20°C until analyzed.

Method of analysis: Gas Chromatography was run on a Varian Saturn GC/MS II model, using a DB5 fused silica capillary column (30 m x 0.22 mm i.d.) and helium as carrier gas. A flame ionization detector was employed for detection. Temperature programming was performed at 40°C isothermal for two minutes, and then raised to 220°C at 4°C/min. Injection temperature was at 250°C. Peak areas were determined using an electronic integrator. For GC-MS analysis, the column conditions were used with EI of 70 eV. A finnigan INCOS DATA system was used for data acquisition.

RESULTS AND DISCUSSION

The steam distillation of the aerial parts of *Salvia macrosiphon* Boiss gave a pale greenish essential oil with a pleasant odor. Analysis led to the identification of twenty constituents out of thirty-three which are listed in Table 1, together with their Kovat's number and percentage composition (% of peak area on GC). The compounds were identified by comparison of retention times, Kovat's number, as well as their mass spectra using the finnigan mass spectra library system. Sesquiterpenes (69.5%) was the main composition of the essential oil. In conclusion, *Salvia macrosiphon* contains the sesquiterpenoids as the main constituents, which might be of chemotaxonomical importance.

Table 1. Main Components (%) of *Salvia Macrosiphon* Boiss

Peak No.	Compound	Kovat's No.	Percent
1	trans- β -Ocimene	1066	2.0
2	Linalool	1103	1.8
3	α -Terpineol	-	trace
4	cis-Verbenyl acetate	1193	2.4
5	Hexyl-2-methyl butyrate	1216	2.4
6	Eugenol	1305	2.8
7	β -Elemene	1339	2.5
8	Cyperene	1360	11
9	γ -Gurjunene	1394	3.2
10	β -Cubebene	1406	10.6
11	δ -Selinene	1410	2.8
12	Germacrene-B	1413	7.0
13	β -Selinene	1417	6.7
14	α -Farnesene	1418	6.5
15	(-)-Spathulenol	1477	3.2
16	α -Gurjunene	1481	2.0
17	α -Cadinol	1507	3.6
18	Globulol	1509	2.6
19	(+)-Aromandendrene	1524	5.8
20	Caryophyllene oxide	1853	2.0

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