

ESSENTIAL OIL COMPOSITION OF *Rhabdosciadium aucheri* FROM IRAN

F. Egtesadi, M. Mehrdad, and A. Sonboli*

UDC 547.913

Rhabdosciadium aucheri Boiss. (*Apiaceae*) is an endemic species growing wild in western parts of Iran [1]. The oil constituents of *R. strausii* have recently been investigated and β -elemene and germacrene-D were found to be the main components, representing 37.9% and 32.2% of the total oil, respectively [2].

As far as our literature survey could ascertain, the essential oil composition of *R. aucheri* has not been previously investigated. Here, to the best of our knowledge, the essential oil composition of *R. aucheri* was characterized for the first time. The composition of the essential oil of *R. aucheri* is reported in Table 1, where the compounds are listed in order of their elution on a DB-1 column. The oil yield was 0.1% (w/w) based on the dry weight of plant. Twenty-nine constituents were identified, representing 93.1% of the total oil. Monoterpene and sesquiterpene hydrocarbons were found to be the major group of constituents accounting for 48.7% and 30.8% of total oil. From monoterpene hydrocarbons, β -pinene (34.0%) and limonene (6.5%) were characterized as principal components. Among sesquiterpene hydrocarbons, β -elemene (13.4%) and γ -elemene (5.1%) were identified as the main constituents. Oxygenated monoterpenes and sesquiterpenes comprised 6.1% and 6.2% of the oil, respectively. Other compounds constituted 1.3% of the essential oil.

Plant Material. Aerial parts of *Rhabdosciadium aucheri* were collected at full flowering stage on July 20, 2004 from Iran: Azarbaijan, Takab, Zaresheoran village, at an altitude of 2500 m. A voucher specimen of the plant has been deposited at the herbarium of Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Tehran, Iran.

Essential Oil Isolation. Air-dried aerial parts (100 g) of the plant were powdered and then subjected to hydrodistillation for 3.5 hours.

GC and GC-MS Analysis. The oil was analyzed by GC and GC-MS. GC analysis was performed using a Thermoquest gas chromatograph with a flame ionization detector (FID). The analysis was carried out using a fused silica capillary DB-1 column (60 m \times 0.25 mm i.d.; film thickness 0.25 μ m). The operating conditions were as follows: injector and detector temperatures, 250°C and 300°C, respectively; nitrogen as carrier gas at a flow rate of 1 mL/min; oven temperature programme, 60–250°C at the rate of 5°C/min, and finally held isothermally for 10 min. GC-MS analysis was performed using a Thermoquest gas chromatograph equipped with the above-mentioned column and coupled to a TRACE mass; helium as carrier gas, ionization voltage 70 eV; ion source temperature, 200°C; interface temperature, 250°C. Mass range was from m/z 43–456. Gas chromatographic conditions were as given for GC. Identification of the individual components of the oil was based on GC retention indices and computer matching of mass spectra with the Wiley 7 and NIST libraries of GC-MS system [2].

Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Evin, P.O. Box 19835-389, Tehran, Iran, e-mail: a-sonboli@cc.sbu.ac.ir. Published in *Khimiya Prirodnykh Soedinenii*, No. 4, p. 393, July-August, 2006. Original article submitted August 8, 2005.

TABLE 1. Percentage Composition of the Essential Oil of *Rhabdosciadium aucheri* (Identification method: RI, MS)

Compound	RI ^a	%	Compound	RI ^a	%
<i>n</i> -Heptanal	884	0.5	β -Chamigrene	1480	0.6
α -Pinene*	936	4.7	Germacrene-D	1487	3.2
Camphene	950	0.4	β -Selinene	1494	2.3
Sabinene	971	0.4	α -Selinene	1503	3.3
β -Pinene*	980	34.0	β -Bisabolene	1506	0.3
β -Myrcene	984	2.1	<i>cis</i> -Nerolidol	1533	0.6
Limonene*	1027	6.5	Germacrene-B	1568	2.2
Terpinolene*	1085	0.6	Spathulenol	1577	1.3
<i>trans</i> -Pinocarveol	1131	0.4	Caryophyllene oxide	1584	1.2
α -Terpineol	1179	0.3	α -Santalol	1651	2.5
Myrtenol	1186	0.7	β -Santalol	1712	0.6
Citronellol	1211	0.8	Monoterpene hydrocarbons		48.7
<i>trans</i> -2-Decenal	1241	0.8	Oxygenated monoterpenes		6.1
Bornyl acetate	1276	3.6	Sesquiterpene hydrocarbons		30.8
Citronellyl acetate	1333	0.3	Oxygenated sesquiterpenes		6.2
β -Elemene	1397	13.4	Other		1.3
β -Caryophyllene*	1428	0.4	Total		93.1
γ -Elemene	1436	5.1			

^aRetention indices relative to *n*-alkanes C₆-C₂₄ on DB-1 Column.

*CoI, co-injection with an authentic sample.

REFERENCES

1. V. Mozaffarian, *A Dictionary of Iranian plant names*, Farhang Moaser, Tehran, Iran, 1996.
2. A. R. Fakhari, A. Sonboli, and R. Heydari, *Chem. Nat. Comp.*, **41**, 413 (2005).