CONSTITUENTS OF THE ESSENTIAL OIL OF *CHIMONANTHUS FRAGRANCE LINDLE*

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ABSTRACT

The constituent of the essential oil of *Chimonanthus fragrance* Lindle *(Calycanthaceae)* were characterized by GLC and GC/MS. Twenty components representing 97% of the oil composition of which fifteen were sesquiterpenes were identified. The major components were β–Elemene, β–Caryophyllene, γ-Cadinene, γ-Bisabolene, β-Elemenone and α-Eudesmol.

Key Words: *Chimonanthus fragrance*, Essential oil, *Calycanthaceae*, GC/MS

INTRODUCTION

Chimananthus fragrance Lindle *(Calycanthaceae)* is distributed in different parts of Shiraz. It is renowned in folk medicine for treatment of burns (1). Except one report on the constituents of the essential oil in China (2), no study of the volatile constituents of this plant in Iran could be found in the literature.

In this study the composition of the oil which was obtained by steam distillation of the flowers is reported.

MATERIALS AND METHODS

Plant materials: The plant materials were collected in February 1998 from Shiraz. The plant was identified by Amin, G. and was deposited in the Herbarium of the Faculty of Pharmacy, Tehran Medical Sciences University.

The flowers were air dried at room temperature in the shade and hydrodistilled by using a clevenger type apparatus for 5 hours. The yield of oil was 0.12% and the color of the oil was yellow. The oil was dissolved in n-hexane (Merck), dried over anhydrous sodium sulphate and stored at 4-6° C.

GC: The GC analysis was carried out using a Varian GC 3600 chromatograph with DB1 (fused silica 30m X 0.32 mm i.d.) and flame ionization detector. Temperature programming was performed from 70°C to 230°C at 2°/min, and injector temp. was 230°C.

GC/MS: A Varian GC 3400 was interfaced with a quadropole mass spectrometer (Finnigan Mat TSQ 70). A fused silica capillary column (DB1 30m X 0.32mm i.d.) was used in the GC analysis with hellium as the carrier gas. Kovats indices were calculated by using retention times of N-alkanes (C_8-C_{18}) that were injected after the essential oil at the same temperature and under the same conditions (3,4). Identification of the components of the oil was carried out by comparison of their retention indices and MS spectra data with those reported in the literatures (5-9).

Table 1. The Constituents of the essential oil of *Chimonanthus fragrance*

Peak No.	Constituents	RI	% in Oil
1	α–Pinene	935	0.1
2	α–Phellandrene	999	0.02
3	Limonene	1025	0.01
4	β–Phellandrene	1030	0.01
5	Trans-β–Ocimene	1042	0.3
6	n-Nonanol	1133	1.4
7	α–Copaene	1379	1.6
8	β–Elemene	1390	12.5
9	β–Caryophyllene	1424	16.3
10	γ–Elemene	1428	3.2
11	α–Humulene	1462	2.9
12	γ–Cadinene	1520	11.4
13	γ–Bisabolene	1533	8.3
14	Selina-3,7(11) diene	1541	6.1
15	Unknown	1544	3.9
16	β–Elemenone	1594	10.1
17	α–Eudesmol	1640	12.5
18	α–Cadinol	1645	5.6
19	Guiol acetate	1715	1.9
20	α–Elemodiol	1736	2.0

RESULTS AND DISCUSSION

Table 1 shows the percentage composition of the essential oil of *Chimonanthus fragrance*. Sesquiterpenes were the main constituents of the oil of which the major components were β–Elemene, β–Caryophyllene, γ-Cadinene, γ-Bisabolene, β-Elemenone and α-Eudesmol. One of the sesquiterpenes could not be identified by RI and mass spectra.

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The essential oil of *Chimonanthus fragrance* has a flavor odor and can be considered as a flavoring agent or in fragrance industrial in further investigations.

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