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NOTE

Composition of Essential Oil of *Carthamus glaucus* Bieb. subsp. glaucus

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The essential oil of water distilled aerial parts of *Carthamus glaucus* Bieb. subsp. glaucus (*Compositae*) was analyzed by GC/MS. 23 Components were characterized representing 87.3 % of total component in oil sample. The major components were linalool (38.5 %), longifolene (6.8 %) and caryophyllene oxide (6.2 %).

Key Words: *Carthamus glaucus*, *Compositae*, Essential oil, Linalool, Longifolene, Caryophyllene oxide.

The genus *Carthamus* (*Compositae*) is represented in the flora of Turkey by 8 species, is usually spiny branched annuals rarely pereannial[1]. Among this species *Carthamus glaucus*, *Carthamus persicus* and *Carthamus tinctorus* are traditionaly used as a medicinal plant[2,3]. *C. tinctorus* is used a food colorant, dye and flavouring agent in orient countries[4]. There are only a few phytochemical and biological activity reports on some *Carthamus species*[5-9]. Essential oil studies on *Carthamus* species quite scarce[10]. This is the first report on the chemical composition of the essential oil of *Carthamus glaucus* subsp. glaucus.

Plant material *C. glaucus* Bieb. subsp. glaucus was collected in Elazig in June 2002. Air dried flowering aerial parts of the plant were subjected water distillation using a Cockings and Middleton's apparatus[11].

The oils were analyzed on a Agillent 6890 GCD system. An Innowax (polyethylene glycol phase) FSC column (30 m × 0.25 mm i.d., film tickness 0.32 μm) was used with helium as the carrier gas. Injector temperature was 250 ºC. Split flow was 1 mL/min. The GC oven temperature was kept at 60 ºC for 10 min and programmed to 220 ºC at a rate of 4 ºC/min and then kept constant at 220 ºC for 10 min to 240 ºC at a rate of 1 ºC/min. MS were taken at 70 eV and a mass range of 35-425. Component identification was carried out by spectrometric electronic libraries (Wiley, Nist 98.1 and Nist1.L) and published retention indices[12]. Retention indices (RI) were

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calculated using GC data of a saturated aliphatic hydrocarbon homologous series within C_8 to C_{22}, performed in the same column and conditions as used in the GC analysis for the essential oils.

The steam distillation described of the aerial parts of *C. glaucus* subsp. glaucus gave yellowish oils with a yield of 0.8 %. 23 Compounds were identified in the essential oil and the composition is given in Table-1.

TABLE-1
PERCENTAGE COMPOSITION OF THE OIL OF
C. glaucus Bieb. subsp. *glaucus*.

RI	Compound	Percentage
1275	Terpinolene	1.8
1430	E-3-caren	2.1
1515	Camphor	0.8
1553	Linalool	38.5
1580	β-Caryophyllene	4.0
1574	Longifolene	6.8
1595	Bornyl acetate	0.6
1615	Caryophyllene	2.4
1625	Myrtenal	1.6
1640	α-Cedrene	1.8
1665	Alloaromadendrene	1.2
1698	Borneol	3.0
1722	α-Farnesene	2.1
1759	*trans*-Carvyl acetate	1.0
1775	β-Sesquiphellandrene	0.7
1790	γ-Cadinene	1.2
1995	Caryophyllene oxide	6.2
2022	α-Bisabolol	1.3
2030	Caryophyllene alcohol	2.2
2150	Spathulenol	2.1
2200	Thymol	3.8
2231	Valerianol	0.8
2235	α-Eudesmol	1.3
	Total identified	87.3

In the oil of *C. glaucus* subsp. glaucus 23 component were characterized representing 87.3 % of the oil with 38.5 % linalool, 6.8 % longifolene and 6.2 % caryopyllene oxide as major contituents.

Result also showed that the monoterpene hydrocarbons constituted the major portion of the oil linalool (38.5 %), thymol (3.8 %), borneol (3 %), caren (2.1 %) and terpinolene (1.8 %) as major constituents.

Sesquiterpene hydrocarbons (33.4 %) were found to contain longifolene (6.8 %), caryophyllene oxide (6.2 %), β-caryophyllene (4 %) and caryophyllene (2.4 %) as major constituents.

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