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RESEARCH NOTE

Composition of the Essential Oil of *Salvia cedronella* Boiss. from Turkey

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Abstract

Water-distilled essential oil from the aerial parts of *Salvia cedronella*, endemic in Turkey, was analyzed by GC/MS. One hundred and sixteen components were characterized representing 89.5% of the total components detected with 1,8-cineole (12.4%) and caryophyllene oxide (10.1%) as major constituents.

Key Word Index

Salvia cedronella, Labiatae, essential oil composition, 1,8-cineole, caryophyllene oxide.

Plant Name

Salvia cedronella Boiss. (1).

Source

Plant material was collected from Denizli: Acipayam, Alaaddin village in Turkey on 16 May 1995. A voucher specimen has been deposited at the Herbarium of the Faculty of Pharmacy, Anadolu University in Eskisehir, Turkey (ESSE 11957).

Plant Part

Air dried aerial parts were subjected to hydrodistillation for 3 h using a Clevenger-type apparatus to produce oil in 0.11% yield.

Previous Work

None.

Present Work

The oil was analyzed by GC/MS using a Hewlett-Packard GCD system. Innovax FSC column

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Received: December 1996

(60 m x 0.25 mm) was used with helium as the carrier gas. GC oven temperature was kept at 60°C for 10 min and programmed to 220°C at a rate of 4°C/min, and then kept constant at 220°C for 10 min and programmed to 240°C at a rate of 1°C/min. Split flow was adjusted at 50 mL/min. The injector and detector temperatures were at 250°C. MS were taken at 70 eV. Mass range was from m/z 35 to 425. Library search was carried out using Wiley GC/MS Library and TBAM Library of Essential Oil Constituents. Relative percentage amounts were calculated from TIC by the computer. The compounds identified in the oils are as follows:

| | |
|--|---|
| α -pinene (4.5%) | methyl carvacrol + hotrienol (0.2%) |
| α -thujene (0.3%) | 2-methyl-6-methylene-3,7-octadien-2-ol (0.1%) |
| camphene (0.2%) | cis-p-menth-2-en-1-ol + β -cyclocitral (0.2%) |
| β -pinene (2.1%) | myrtenal (0.2%) |
| sabinene (1.9%) | sabinaketone (0.1%) |
| myrcene (0.3%) | γ -elemene (0.2%) |
| α -terpinene (0.2%) | (E)-2-decenal (0.1%) |
| limonene (0.8%) | aromadendrene (0.1%) |
| 1,8-cineole (12.4%) | cis-verbenol (0.1%) |
| β -phellandrene (<0.1%) | trans-pinocarveol (1.1%) |
| (E)-2-hexenal (0.1%) | (E)- β -farnesene (0.1%) |
| (Z)- β -ocimene (<0.1%) | δ -terpineol (0.5%) |
| γ -terpinene (0.6%) | trans-verbenol (1.2%) |
| (E)- β -ocimene (<0.1%) | p-mentha-1,8-dien-4-ol (0.1%) |
| p-cymene (0.8%) | γ -muurolene + α -terpineol (1.1%) |
| terpinolene (0.1%) | borneol (1.4%) |
| 6-methyl-3-heptanol (0.2%) | verbenone (<0.1%) |
| nonanal (0.1%) | germacrene D (1.5%) |
| trans-linalool oxide (furanoid) (<0.1%) | trans-p-menth-2-en-1,8-diol (0.3%) |
| 1-octen-3-ol (0.5%) | α -muurolene (0.2%) |
| eucarvone (0.1%) | α -selinene (0.1%) |
| α -cubebene (0.2%) | carvone (0.3%) |
| trans-sabinene hydrate (0.9%) | cis-piperitol (0.1%) |
| (E,Z)-2,4-heptadienal (0.1%) | α -farnesene* (<0.1%) |
| α -campholenal (0.5%) | (E)-2-undecenal (0.1%) |
| α -copaene + (E,E)-2,4-heptadienal (0.1%) | δ -cadinene (0.7%) |
| decanal (<0.1%) | γ -cadinene (1.6%) |
| chrysanthenone (<0.1%) | cis-sabinol (1.2%) |
| α -bourbonene (0.2%) | cadina-1,4-diene (0.1%) |
| camphor (2.7%) | myrtenol (0.5%) |
| β -bourbonene (0.2%) | p-mentha-1(7),8-dien-2-ol (0.1%) |
| α -gurjunene (0.1%) | p-mentha-1,5-dien-7-ol (0.2%) |
| β -cubebene + linalool (1.8%) | (E,E)-2,4-decadienal (0.1%) |
| cis-sabinene hydrate (0.8%) | 2-phenylethyl acetate (0.1%) |
| octanol (<0.1%) | β -damascenone (<0.1%) |
| linalyl acetate (0.1%) | trans-carveol (0.3%) |
| trans-p-menth-2-en-1-ol (1.2%) | germacrene B + calamenene* (0.9%) |
| pinocarvone (0.3%) | p-cymen-8-ol (0.1%) |
| bornyl acetate (0.1%) | (E)-geranyl acetone (0.2%) |
| β -elemene (0.1%) | epicubebol (0.7%) |
| terpinen-4-ol + β -caryophyllene (4.2%) | α -calacorene I† (<0.1%) |

| | |
|--|---------------------------------------|
| cubebol (2.7%) | nonanoic acid (0.1%) |
| β -ionone (0.1%) | T-cadinol (2.1%) |
| 1-endo-bourbonanol [†] (0.1%) | thymol (2.4%) |
| isocaryophyllene oxide (0.3%) | T-muurolol (0.2%) |
| caryophyllene oxide (10.1%) | carvacrol (1.6%) |
| ledol (0.8%) | α -eudesmol (0.2%) |
| humulene epoxide II (1.1%) | β -eudesmol (0.9%) |
| cubenol (0.5%) | caryophylladienol [†] (1.5%) |
| 1-epi-cubenol (0.3%) | hexadecanol (1.9%) |
| β -oplophenone (0.2%) | caryophyllenol II [†] (2.0%) |
| cumin alcohol (0.1%) | abietatriene (0.1%) |
| hexahydrofarnesyl acetone (0.1%) | 2-phenylethyl benzoate (0.1%) |
| spathulenol (1.1%) | nonacosane (0.6%) |
| (Z)-3-hexenyl benzoate (0.2%) | hexadecanoic acid (0.2%) |

[†]Tentative identification from MS data:

α -calacorene I: 200(M⁺, C₁₅H₂₀, 16%), 158(14), 157(100), 156(17), 142(44), 141(23), 115(8);

1-endo-bourbonanol: C₁₅H₂₆O, MW 222; m/z 207(6), 161(11), 123(22), 105(7), 91(8), 81(100), 67(8), 43(18);

caryophylladienol: 220(M⁺, C₁₅H₂₄O₂), 136(100), 109(26), 105(27), 93(27), 91(36), 79(40), 67(25), 69(46), 55(34), 43(28), 41(57);

caryophyllenol II: 220(M⁺, C₁₅H₂₄O₂), 4%), 205(7), 187(17), 177(18), 164(15), 161(14), 159(27), 149(33), 135(31), 133(29), 131(46), 123(39), 122(20), 121(43), 119(26), 117(20), 110(21), 109(69), 108(38), 107(63), 106(25), 105(61), 95(62), 93(85), 92(63), 91(87), 81(64), 79(74), 77(51), 69(50), 67(46), 55(69), 53(35), 43(71), 41(100), 39(43);

*correct isomer not identified

Reference

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