J. Essent. Oil Res., **11**, 403-405 (Jul/Aug 1999)

121

Volatile Constituents from the Fruits of *Astydamia latifolia* (L. fil.) Baillon Grown in the Canary Islands

María José Pérez-Alonso, Arturo Velasco-Negueruela,*
Jesús Palá-Paúl and Pablo Ramos-Vázquez
Departamento de Biología Vegetal I (Botánica), Facultad de Biología
Universidad Complutense, 28040-Madrid, Spain

Pedro Luis Pérez de Paz
Departamento de Biología Vegetal, Facultad de Farmacia, Universidad de La Laguna
E-3807 La Laguna, Santa Cruz de Tenerife Islas Canarias, Spain

María Concepción García Vallejo
Área de Industrias Forestales del CIFOR-INIA, Apartado 8111, 28080 Madrid, Spain

Abstract

A steam distilled oil obtained from the fruits of *Astydamia latifolia* grown in Tenerife, Canary Islands, was analyzed by GC and GC/MS. Twenty-six components were characterized representing 98.6% of the oil. The oil contained β-phellandrene (15.0%), γ-terpinene (6.0%), myristicin (39.6%) and dillapiole (16.9%) as major constituents.

Key Word Index

Astydamia latifolia, Apiaceae, essential oil composition, β-phellandrene, myristicin, dillapiole.

Introduction

Astydamia latifolia (L. fil.) Baillon syn. *Crithmum latifolium* L. fil. commonly known as "servilleta" (table napkin), "lechuga de mar" (sea lettuce), "acelga de mar" (sea salt-wort) and "perejil de mar" (sea parsley) belongs to the Apiaceae family and is an endemic to the Canary Islands, Madeira Archipelago and Mauritania (1) living in the sea-shore together with *C. maritimum*. In continuation of our work (2-4) on endemic aromatic plants of the Canary Islands we report in this paper on the composition of the oil from the fruits of *A. latifolia*. According to our knowledge the oil has not been analyzed before.

Experimental

Plant material: *Astydamia latifolia* was collected in El Tablado, Güimar, Tenerife, Canary Islands. A voucher specimen TFC 40.536 was deposited at the Herbarium of the Faculty of Pharmacy, La Laguna University, Tenerife, Canary Islands. Plant material was identified by Prof. Dr. Pedro Luis Pérez de Paz.

*Address for correspondence

Received: March 1998
Accepted: March 1998

Table I. Chemical composition of the oil from the fruits of *Astydamia latifolia*

Compound	Percentage	RI	Compound	Percentage	RI
α-thujene	0.7	927	γ-terpinene	6.0	1052
α-pinene	4.2	938	terpinolene	0.2	1086
camphene	0.1	953	linalool	0.5	1090
sabinene	1.9	971	allo-ocimene	0.1	1122
β-pinene	2.5	981	terpinen-4-ol	2.3	1171
myrcene	1.0	983	α-terpineol	0.1	1183
α-phellandrene	0.4	1004	methyl thymol	t	1229
α-terpinene	0.6	1015	thymol	t	1280
p-cymene	2.5	1017	carvacrol	t	1290
(Z)-β-ocimene	3.0	1023	myristicin	39.6	1498
β-phellandrene	15.0	1027	elemicin	0.5	1524
limonene	0.2	1030	spathulenol	0.1	1574
(E)-β-ocimene	0.2	1036	dillapiole	16.9	1599

t = trace (< 0.1%); RI = Retention Index

Oil Isolation: Air-dried fruits were hydrodistilled in an all glass apparatus according to the method recommended in the Spanish Pharmacopoeia, 1996. The oil was dried over anhydrous sodium sulfate and stored at 4°C in the dark. The yield was 1.15% based on dried weight of sample.

Analyses: Analytical GC was carried out on a Varian 3300 gas chromatograph fitted with a Silicone MFE1 capillary column (50 m x 0.25 mm), film thickness 0.25 μm; carried gas N_2, flow rate 1.5 mL/min, split mode, temperature programed 95°-240°C at 4°C/min. Injector temperature 250°C, detector used FID, detector temperature 300°C. Injection volume for all samples was 0.1 μL. GC/MS analyses were carried out on a Hewlett Packard 5890 gas chromatograph fitted with a phase bonded poly (5% diphenyl, 95% dimethylsiloxane) silicone PTE5 capillary column (30 m x 0.25 mm), film thickness 0.25 μm and FID. Carrier gas He, flow rate 1.5 mL/min. Temperature program regimen was 70°C (2 min) and then programmed to 250°C at 2°C/min. Injector temperature 250°C. The chromatograph was coupled to a HP 5971 A mass selective detector (70 eV). All constituents were identified by comparing their retention indices with those of authentic standards available in the author's laboratory. The latter were either purchased, synthesized or identified in oils of known composition. The fragmentation patterns of mass spectra were compared with those stored in the spectrometer data base using the NBS54K.L and WILEY.L built in libraries and with those reported in the literature (5,6)

Results and Discussion

The components of the oil, the percentage of each constituent and the retention index are summarized in Table I. The components are arranged in order to GC elution on the Silicone columns. The oil was characterized by the presence of a high content of β-phellandrene (15.0%), γ-terpinene (6.0%), myristicin (39.6%) and dillapiole (16.9%). It is worth noting that *C. maritimum* (sea fennel), usually growing with *A. latifolia* on the rocks of the seashore, has been found to contain an oil to a certain extent qualitatively similar. For example, the major constituents reported in the literature (7-10) were: p-cymene (6.4-12.3%), γ-terpinene (22.4-37.0%), methyl thymol (9.6-11.6%) and dillapiole (33.6-40.1%). The oil of *A. latifolia* appears to be an important source of myristicin and dillapiole. Dillapiole is used at present in the pharmaceutical and cosmetics industries.

References

1. P. L. Pérez de Paz and I. Medina Medina, *Catálogo de las Plantas Medicinales de la Flora Canaria. Aplicaciones Populares.* Instituto de Estudios Canarios, La Laguna (1988).
2. P. L. Pérez de Paz, M. J. Pérez-Alonso, A. Velasco-Negueruela, M. Gil Pinilla, C. García Vallejo and J. L. Esteban, *Variación morfológica y aceites esenciales de Cedronella canariensis (L.) Webb and Berthel. (Labiatae).* Anales Jard. Bot. Madrid, **54**, 303-307 (1996).
3. A. Velasco Negueruela, M. J. Pérez Alonso and P. L. Pérez de Paz, *The volatiles of two Bystropogon species from Canary Islands (Spain).* Planta Med., **58**(5), 389-484 (1992).
4. M. J. Pérez-Alonso, A. Velasco-Negueruela, M. Gil Pinilla, P. L. Pérez de Paz, C. García Vallejo and J. L. Esteban, *The volatiles of five Micromeria species endemic to the Canary Islands.* Biochem. Syst. Ecol., **24**(6), 571-575 (1996).
5. R. P. Adams, *Identification of Essential Oils Components by Gas Chromatography/Mass Spectroscopy.* Allured Publ. Corp., Carol Stream, IL (1995).
6. L. M. Libey, A. *Paradox data base for GC/MS data on components of essential oils and other volatiles.* J. Essent. Oil Res., **3**, 192-194 (1991).
7. J. G. Barroso, L. G. Pedro and M.S.S. Pais, *Analysis of the volatile oil of Crithmum maritimum L.* J. Essent. Oil Res., **3**, 313-316 (1991).
8. L. Coiffard and Y. Roeck-Holtzhouer, *Composition de l'huile de Criste marine.* Parfum. Cosmet. Arômes, **100**, 66-69 (1991).
9. J. G. Barroso, L. G. Pedro, A. C. Figueiredo and M.S.S. Pais, *Seasonal variation in the composition of the Essential Oil of Crithmum maritimum L.* Flav. Fragr. J., **7**, 147-150 (1992).
10. A. Velasco Negueruela, M. J. Pérez Alonso and J. A. López-Sáez, *Una planta Española de interés etnobotánico y medicinal: Crithmum maritimum L.* Communication B1, Abstract Jornadas I Centenario, Prof. T. M. Losa España, Burgos (1993).