Chemistry of Natural Compounds, Vol. 45, No. 4, 2009

ESSENTIAL OIL COMPOSITION OF THE LEAVES OF *Campomanesia pubescens*

Jose R. M. Silva,[1*] Claudia A. L. Cardoso,[2] and Nilva Re-Poppi[1]

UDC 547.913

Campomanesia pubescens (Myrtaceae) is a native species found in Brazil [1]. The fruits are used to make liqueurs, juices, and sweets. The infusion leaves are used in folk medicine in the treatment of diarrhea and bladder diseases [2].

Pharmacological studies of the leaves of *C. xanthocarpa* reported antiulcerogenic activity [3] and help in reducing blood cholesterol [4].

Chemical studies of the leaves of this *Campomanesia* species have revealed the presence of quercetin, myricetin, and rutin by HPLC [5].

Studies of the seeds of *C. lineatifolia* reported the isolation of three yellow pigments named champanones [6]. Terpenoids, alcohols, carboxylic acids, esters, C_{13}-norisoprenoids, furanic compounds, and β-triketones were identified in volatile extracts from pulp, peels, leaves, and seeds of *C. lineatifolia* [7].

Essential oils of the leaves of species of the genus *Campomanesia* such as *C.* guazumifolia, *C. xanthocarpa*, and *C. rhombea* were found to be rich in sesquiterpenes, while in *C. aurea* oil monoterpenes were predominant [8]. Other studies of *C. xanthocarpa* [9] and *C. phaea* [10] also showed high amounts of sesquiterpenes.

Studies of the fruit essential oil of *C. adamantium* revealed that ocimene, 3-carene and limonene were the major constituents [11]. Recent studies of the fruits of *Campomanesia adamantium* showed 30 components in the essential oil [12]. Other studied showed 40 components in the fruit essential oil of *C. adamantium* with predominance of α-pinene, limonene, and β-(*Z*)-ocimene [13].

This present paper describes the compounds identified from the essential oil of the leaves of *C. pubescens*.

The essential oil compositions are presented in Table 1. Sixty-one components were identified in the leaf essential oil, representing 94.8% of the total oil. The monoterpenes constitute the dominant fraction in the oil (60.3%), and it was particularly rich in monoterpene hydrocarbons (87.3% of this fraction). The sesquiterpenes fraction showed 34.5% of the total oil. The classification of the oil compounds based on functional groups is presented at the end of Table 1. The major constituents identified (representing 53.5% of the oil) were limonene (22.4%), α-pinene (13.3%), sabinene (9.5%), bicyclogermacrene (4.4%), and linalool (3.9%).

Studies of the leaves in other species of *Campomanesia* showed that they are rich in sesquiterpenes, except *C. aurea* that is rich in monoterpenes [8, 10]. In the fruit of *C. adamantium* the predominant compounds were monoterpenes such as α-pinene and limonene [13], which were the major constituents in the leaf essential oil of *C. pubescens*.

This work represents our contribution to a better knowledge of the *Campomanesia* genus.

ACKNOWLEDGMENT

The authors wish to thank Marcos Sobral for identifying the plant material, and FUNDECT for its financial support.

1) Universidade Federal de Mato Grosso do Sul, Departamento de Quimica, Caixa Postal 649, 79070-900, Campo Grande/MS, Brazil, e-mail: jrmarconato@gmail.com; 2) Universidade Estadual de Mato Grosso do Sul, Curso de Quimica, Caixa Postal 351, 79804-970, Dourados/MS, Brazil. Published in Khimiya Prirodnykh Soedinenii, No. 4, pp. 478–479, July–August, 2009. Original article submitted December 6, 2007.

TABLE 1. Composition of the Essential Oil of *Campomanesia pubescens*

Compound[a]	KI[b] (calc.)	Peak area, %	Compound[a]	KI[b] (calc.)	Peak area, %
α-Thujene	931	0.6	Seychelene	1463	0.4
α-Pinene	937	13.3	γ-Muurolene	1479	0.7
α-Fenchene	952	0.4	Germacrene D	1482	2.6
Sabinene	979	9.5	β-Selinene	1487	0.3
Myrcene	992	1.0	Viridiflorene	1492	0.2
α-Phellandrene	1005	0.3	Bicyclogermacrene	1497	4.4
δ-3-Carene	1011	0.2	*trans*-β-Guaiene	1501	0.3
α-Terpinene	1019	0.3	Germacrene A	1506	0.1
o-Cymene	1027	1.6	β-Bisabolene	1508	0.1
Limonene	1031	22.4	γ-Cadinene	1515	0.5
1,8-Cineole	1034	0.6	δ-Cadinene	1525	1.6
E-β-Ocimene	1052	0.3	Cadina-1,4-diene	1534	Tr.
γ-Terpinene	1062	0.9	α-Cadinene	1540	0.1
Terpinolene	1089	1.8	Germacrene B	1558	0.4
Linalool	1100	3.9	*epi*-Longipinanol	1562	0.3
endo-Fenchol	1114	0.4	*E*-Nerolidol	1565	1.5
Borneol	1168	0.4	Spathulenol	1579	2.1
Terpin-4-ol	1179	0.6	Globulol	1584	3.8
p-Cymen-8-ol	1186	0.1	Viridiflorol	1592	1.2
α-Terpineol	1191	1.4	Guaiol	1598	0.2
Perilla aldehyde	1275	0.1	β-Himachalene Oxide	1609	0.2
Perilla alcohol	1298	0.2	1,10-di-*epi*-Cubenol	1616	0.3
δ-Elemene	1339	0.3	1-epi-Cubenol	1627	0.4
α-Cubebene	1353	Tr.[c]	α-Acorenol	1629	0.6
α-Ylangene	1373	0.1	γ-Eudesmol	1633	0.4
α-Copaene	1378	0.4	*epi*-α-Cadinol	1642	2.0
β-Elemene	1393	0.7	α-Muurolol	1648	0.5
α-Gurjunene	1411	0.2	α-Cadinol	1655	2.4
E-Caryophyllene	1421	3.1	Monoterpene hydrocarbons		52.6
β-Gurjunene	1431	0.2	Oxygenated Monoterpenes		7.7
γ-Elemene	1436	0.1	Sesquiterpene hydrocarbons		18.6
Aromadendrene	1441	0.8	Oxygenated Sesquiterpenes		15.9
α-Humulene	1456	1.0	Total identified		94.8

[a]Compounds listed in order of elution on ZB-5 column.

[b]Kovats index.

[c]Trace (<0.1%).

REFERENCES

1. H. Lorenzi, L. Bacher, M. Lacerda, and S. Sartori, *Frutas Brasileiras e Exoticas Cultivadas: (de consumo in natura)*, Instituto Plantarum de Estudos da Flora, Sao Paulo, 2006.
2. M. G. Piva, *O Caminho das Plantas Medicinais: Estudo Etnobotanico*, Mondrian, Rio de Janeiro, 2002.
3. B. E. O. Markman, E. M. Bacchi, and E. T. M. Kato, *J. Ethnopharmacol.*, **94**, 55 (2004).
4. M. W. Biavatti, C. Farias, F. Curtius, L. M. Brasil, S. Hort, L. Schuster, S. N. Leite, and S. R. T. Prado, *J. Ethnopharmacol*., **93**, 385, (2004).
5. G. Schmeda-Hirschmann, *Fitoterapia*, **66**, 373 (1995).
6. A. Bonilla, C. Duque, C. Garzon, Y. Takaishi, K. Yamaguchi, N. Hara, and Y. Fujimoto, *Phytochemistry*, **66**, 1736 (2005).
7. C. Osorio, M. Alarcon, C. Moreno, A. Bonilla, J. Barrios, C. Garzon, and C. Duque, *J. Agric. Food Chem*, **54**, 509 (2006).

8. R. P. Limberger, M. A. Apel, M. Sobral, P. R. H. Moreno, A. T. Henriques, and C. Menut, *J. Essent. Oil Res.*, **13**, 113 (2001).
9. C. Menut, P. Verin, J. M. Bessiere, and G. Lamaty, in: *Prodeedings of 27th International Symposium on Essential Oils*, Vienna, Austria, September 8–11, 1996, p. 171.
10. R. T. Adati and V. O. Ferro, *J. Essent. Oil Res*, **18**, 691 (2006).
11. M. I. Vallilo, O. T. Aguiar, J. Fiumarelli, H. A. Martins Junior, A. Sassine, and O. V. Bustillos, *Arq. Inst. Biol*., **71**, 115 (2004).
12. M. I. Vallilo, O. V. Bustillos, and O. T. Aguiar, *Rev. Inst. Flor.*, **18**, 15 (2006).
13. M. I. Vallilo, L. C. A. Lamardo, M. L. Gaberlotti, E. Oliveira, and P. R. H. Moreno, *Cienc. Tecnol. Aliment*., **26**, 805 (2006).