COMUNICACION CORTA

Essential oil of *Hyptis verticillata* Jacq. from Cuba

Jorge A. Pino, Avilio Bello,* Armando Urquiola* and Rolando Marbot.**

Instituto de Investigaciones para la Industria Alimenticia, Carretera del Guatao, km 3½, Ciudad de La Habana, Código Postal 19200. *Instituto Superior Pedagógico de Pinar del Río. **Centro Nacional de Investigaciones Científicas, Ciudad de La Habana, Cuba.

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About 40 *Hyptis* species, which belongs to the botanical family Labiatae, are known to grow in the warmer zones of America, West Africa and West India. One of those, *Hyptis verticillata*, is an odoriferous plant and occurs as a natural weed on Cuba.[1] This species is reported to be effective in alleviating colds, marasmus and gout in Caribbena folk medicine.[2,3] Besides, it shows promising antibacterial and anti-inflammatory properties,[4] as well as acaricidal and pesticide activities.[5] A review of the literature reveals that the volatiles of this plant have only been studied in Brazil.[4,5]

The plant material was collected in Cuba´s Westernmost province, Pinar del Río. A voucher specimen of the plant has been deposited at the herbarium of the Higher Institute of Teaching of Pinar del Río. Identity of the plant has been confirmed by one of the authors (A.U.).

Leaves were harvested and air-dried for 7 d . The oil was obtained by hydrodistillation for 5 h in a Clevenger-type apparatus.

GC/MS analyses were performed with a Hewlett-Packard model 5890 series II or model 6890 series II GC coupled to an HP 5972 or HP 5973 mass spectrometer. They were fitted with a CP-SIL-5CB Chrompack fused silica column (50 m X 0.32 mm, 0.4 μm film thickness) or an AT-WAX Alltech fused silica column (60 m X 0.32 mm, 0.25 μm film thickness). Temperature programming was performed from 60 °C (10 min) to 280 °C at 3 °C/min and held for 60 min in the apolar column and from 65 °C (10 min) to 250 °C at 2 °C/min and held for 60 min in the polar column; injector temperature was 250 °C; transfer line, 250 °C and carrier gas (helium) flow, 1 mL/min . The constituents were identified by matching their spectra with those recorded in the MS library and confirmed, in many cases, by comparison of their mass spectra and retention indices with those of authentic compounds on both columns.

Oil yield was 1,0 %, which is a relatively essential oil content in comparison with other species.

Thirty-six compounds identified in the leaf oil (Table 1). Many of them were reported earlier,[4] but in different amounts. In contrast to the findings of a previous study[4] in which α-pinene (65.2 % of the oil), β-pinene (8.5 %) and thymol (1.6 %) were found to be the major compounds. The oil evaluated in the present study is dominated by cadin-4,10(15)-dien-3-one (14.8 %) and isocaryophyllene epoxide (14.4 %). These compositional differences allow to consider this species as a new chemotype. Some compounds could not be identified and the major ions of their mass spectra are given.

The findings of another chemotype suggests a new evaluation of the biological activities of this species.

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Table 1. Chemical composition of *Hyptis verticillata* oil.

Compound	Retention index		Area
	RI_1	RI_2	percentage
acetic acid	543	1 434	t
(Z)-3-hexen-1-ol	828	1 367	t
1-octen-3-ol	960	1 440	0,1
linalool	1 079	1 530	0,2
methyl salicylate	1 158	1 739	t
α-terpineol	1 167	1 679	t
(Z)-3-hexenyl 2-methylutanoate	1 213	1 462	t
δ-elemene	1 332	–	t
α-cubebene	1 348	1 449	t
(E)-β-damascenone	1 362	1 798	t
α-ylangene	1 367	1 220	0,1
α-copaene	1 370	1 476	0,8
β-bourbonene	1 377	1 503	0,6
β-elemene	1 382	1 573	0,5
α-gurjunene	1 401	1 531	0,1
(E)-β-caryophyllene	1 406	1 577	1,2
α-humulene	1 439	1 646	0,6
aromadendrene	1 429	1 589	1,8
(E)-β-ionone	1 457	–	t
β-cubebene	1 465	1 524	0,1
germacrene D	1466	1 684	0,2
unknown 1	1 471	–	1,3
β-selinene	1 476	1 695	0,5
viridiflorene	1 481	1 663	0,7
unknown 2	1 486	–	3,9
γ-cadinene	1 488	1 766	1,6
trans-calamenene	1 511	1 802	0,4
δ-cadinene	1 512	1 733	2,1
unknown 3	1 514	–	1,2
α-calacorene	1 522	2 015	1,6
α-cadinene	1 528	1 766	t
isocaryophyllene epoxide	1 557	1 794	14,4
β-calacorene	1 558	1 685	0,8
spathulenol	1 559	1 838	4,6
β-caryophyllene epoxide	1 569	1953	0,6
unknown 4	1 588	1841	4,8
unknown 5	1 616	1886	4,1
cubenol	1 619	2015	0,9
α-cadinol	1 642	2180	0,6
unknown 6	1 620	1 930	4,4
unknown 7	1 641	1 968	4,8
cadin-4,10(15)-dien-3-one	1 718	2 134	14,8
(E)-phytol	2 101	2 557	0,4

RI_1 and RI_2 Retention indices on CP-SIL-5CB and AT-WAX capillary column.
t Trace (< 0,1 %).

Mass spectra of unknown compounds **m/z**(rel. int.)
unknown 1 220 [M+] 41(100), 150(79), 55(73), 93(67), 69(61), 151(60), 91(55).
unknown 2 220 [M+] 41(100), 55(75), 150(67), 81(58), 69(56), 93(55), 151(53).
unknown 3 222 [M+] 207(100), 43(97), 105(71), 91(70), 161(68), 41(64), 79(54).
unknown 4 236 [M+] 41(100), 55(85), 39(79), 79(75), 67(63), 93(40), 177(37).
unknown 5 220 [M+] 81(100), 82(99), 41(79), 55(59), 140(54), 97(47), 107(45).
unknown 6 236 [M+] 82(100), 41(84), 39(67), 55(61), 81(60), 67(49), 140(40).
unknown 7 236 [M+] 82(100), 41(56), 81(56), 39(50), 55(47), 140(37), 107(33).