

Date : 2026-02-11

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 26A06-PTH11

Customer Identification : Rhododendron - Nepal - RJ0110R

Type : Essential Oil

Source : *Rhododendron anthopogon*

Customer : Plant Therapy

Checked and approved by:

Sylvain Mercier, M. Sc., Chimiste 2014-005

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia. This report is digitally signed, it is only considered valid if the digital signature is intact. The results only describe the samples that were submitted to the assays. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

This report is an update of the version first issued on 2026-01-06 to make a correction in the sample identification section.



Laboratoire
PhytoChemia

GAS CHROMATOGRAPHIC ANALYSIS

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID

***ISO**

Results : See analysis summary (next page)

Analyst : Alexis St-Gelais, Ph. D., Chimiste 2013-174

Date : 2026-01-06

PHYSICOCHEMICAL DATA

Refractive index : 1.4779 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2026-01-06

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
2-Methylbutyral	tr	Aliphatic aldehyde
Toluene	0.01	Simple phenolic
Octane	0.01	Alkane
5-Methyl-3-hexanone	0.02	Aliphatic ketone
4-Methyl-3-hexanone	0.01	Aliphatic ketone
Bornylene	tr	Monoterpene
Hashishene	0.01	Monoterpene
Tricyclene	0.07	Monoterpene
α -Thujene	0.23	Monoterpene
α -Pinene	38.26	Monoterpene
5-Methyl-3-heptanone	0.02	Aliphatic ketone
α -Fenchene	0.07	Monoterpene
Camphene	0.35	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
6-Methyl-2-heptanone	tr	Aliphatic ketone
β -Pinene	16.55	Monoterpene
Sabinene	0.22	Monoterpene
Octen-3-ol	0.03	Aliphatic alcohol
Myrcene	1.08	Monoterpene
α -Phellandrene	0.03	Monoterpene
Pseudolimonene	0.01	Monoterpene
Δ^3 -Carene	0.02	Monoterpene
α -Terpinene	0.12	Monoterpene
<i>para</i> -Cymene	0.51	Monoterpene
Limonene	13.41	Monoterpene
β -Phellandrene	0.13	Monoterpene
1,8-Cineole	0.01	Monoterpenic ether
(<i>Z</i>)- β -Ocimene	3.71	Monoterpene
2-Heptyl acetate	0.02	Aliphatic ester
(<i>E</i>)- β -Ocimene	0.53	Monoterpene
γ -Terpinene	3.50	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.01	Monoterpenic alcohol
Octanol	0.01	Aliphatic alcohol
α -Pinene oxide analog	0.01	Monoterpenic ether
<i>para</i> -Cymenene	0.01	Monoterpene
Terpinolene	0.28	Monoterpene
α -Pinene oxide	0.03	Monoterpenic ether
<i>trans</i> -Sabinene hydrate	0.02	Monoterpenic alcohol
Linalool	0.21	Monoterpenic alcohol
Verbenol analog?	0.04	Monoterpenic alcohol

endo-Fenchol	0.05	Monoterpenic alcohol
Octen-3-yl acetate	0.02	Aliphatic ester
allo-Ocimene	0.19	Monoterpene
cis-Limonene oxide	0.03	Monoterpenic ether
trans-Pinocarveol	0.03	Monoterpenic alcohol
2-Octyl acetate	0.01	Aliphatic ester
Camphene hydrate	0.04	Monoterpenic alcohol
Borneol	0.04	Monoterpenic alcohol
Ethyl benzoate	0.01	Phenolic ester
Terpinen-4-ol	0.18	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α -Terpineol	0.35	Monoterpenic alcohol
Myrtenol	0.03	Monoterpenic alcohol
(3Z,5E)-2,6-Dimethylocta-3,5,7-trien-2-ol?	0.01	Monoterpenic alcohol
(3E,5E)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.03	Monoterpenic alcohol
trans-Carveol	0.02	Monoterpenic alcohol
Citronellol	0.03	Monoterpenic alcohol
2-Nonyl acetate	0.01	Aliphatic ester
Unknown	0.03	Unknown
Geraniol	0.01	Monoterpenic alcohol
trans-Ascaridole glycol	0.01	Monoterpenic alcohol
Bornyl acetate	0.12	Monoterpenic ester
α -Cubebene	0.18	Sesquiterpene
Citronellyl acetate	0.15	Monoterpenic ester
Cyclosativene II	0.01	Sesquiterpene
α -Ylangene	0.06	Sesquiterpene
α -Copaene	0.39	Sesquiterpene
β -Bourbonene	0.08	Sesquiterpene
β -Cubebene	0.01	Sesquiterpene
7-epi-Sesquithujene	0.02	Sesquiterpene
β -Elemene	0.08	Sesquiterpene
α -Funebrene	0.04	Sesquiterpene
α -Gurjunene	0.13	Sesquiterpene
β -Caryophyllene	1.43	Sesquiterpene
β -Copaene	0.10	Sesquiterpene
α -Maaliene	0.03	Sesquiterpene
Aromadendrene	0.21	Sesquiterpene
Selina-5,11-diene	0.02	Sesquiterpene
cis-Muurola-3,5-diene	0.05	Sesquiterpene
Unknown	0.16	Sesquiterpene
α -Humulene	0.26	Sesquiterpene
allo-Aromadendrene	0.28	Sesquiterpene
cis-Muurola-4(15),5-diene	0.15	Sesquiterpene
(E)- β -Farnesene	0.31	Sesquiterpene
trans-Cadina-1(6),4-diene	0.38	Sesquiterpene

γ -Muurolene	0.96	Sesquiterpene
α -Amorphene	0.14	Sesquiterpene
β -Selinene	0.24	Sesquiterpene
α -Curcumene	0.03	Sesquiterpene
γ -Amorphene	0.13	Sesquiterpene
α -Selinene	0.44	Sesquiterpene
Valencene	0.22	Sesquiterpene
Unknown	0.13	Sesquiterpene
α -Muurolene	1.49	Sesquiterpene
(3E,6E)- α -Farnesene	0.14	Sesquiterpene
γ -Cadinene	1.66	Sesquiterpene
β -Curcumene	0.03	Sesquiterpene
Zonarene	0.36	Sesquiterpene
δ -Cadinene	4.10	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.18	Sesquiterpene
α -Cadinene	0.30	Sesquiterpene
α -Calacorene	0.06	Sesquiterpene
Isocaryophyllene epoxide B	0.02	Sesquiterpenic ether
Palustrol	0.02	Sesquiterpenic alcohol
β -Calacorene	0.02	Sesquiterpene
(E)-Nerolidol	0.06	Sesquiterpenic alcohol
Germacrene D-4-ol	0.02	Sesquiterpenic alcohol
Spathulenol	0.09	Sesquiterpenic alcohol
Caryophyllene oxide isomer	0.02	Sesquiterpenic ether
Caryophyllene oxide	0.09	Sesquiterpenic ether
Unknown	0.03	Oxygenated sesquiterpene
Viridiflorol	0.01	Sesquiterpenic alcohol
Ledol	0.07	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
1,10-diepi-Cubenol	0.07	Sesquiterpenic alcohol
1-epi-Cubenol	0.14	Sesquiterpenic alcohol
γ -Eudesmol	0.04	Sesquiterpenic alcohol
τ -Muurolol	0.36	Sesquiterpenic alcohol
τ -Cadinol	0.35	Sesquiterpenic alcohol
α -Muurolol	0.14	Sesquiterpenic alcohol
β -Eudesmol	0.08	Sesquiterpenic alcohol
α -Eudesmol	0.08	Sesquiterpenic alcohol
α -Cadinol	0.43	Sesquiterpenic alcohol
<i>cis</i> -Calamenen-10-ol	0.01	Sesquiterpenic alcohol
<i>trans</i> -Calamenen-10-ol	0.01	Sesquiterpenic alcohol
Cadalene	0.02	Sesquiterpene
α -Bisabolol	0.06	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene

Consolidated total	98.39	
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tr: The compound has been detected below 0.005% of the total signal

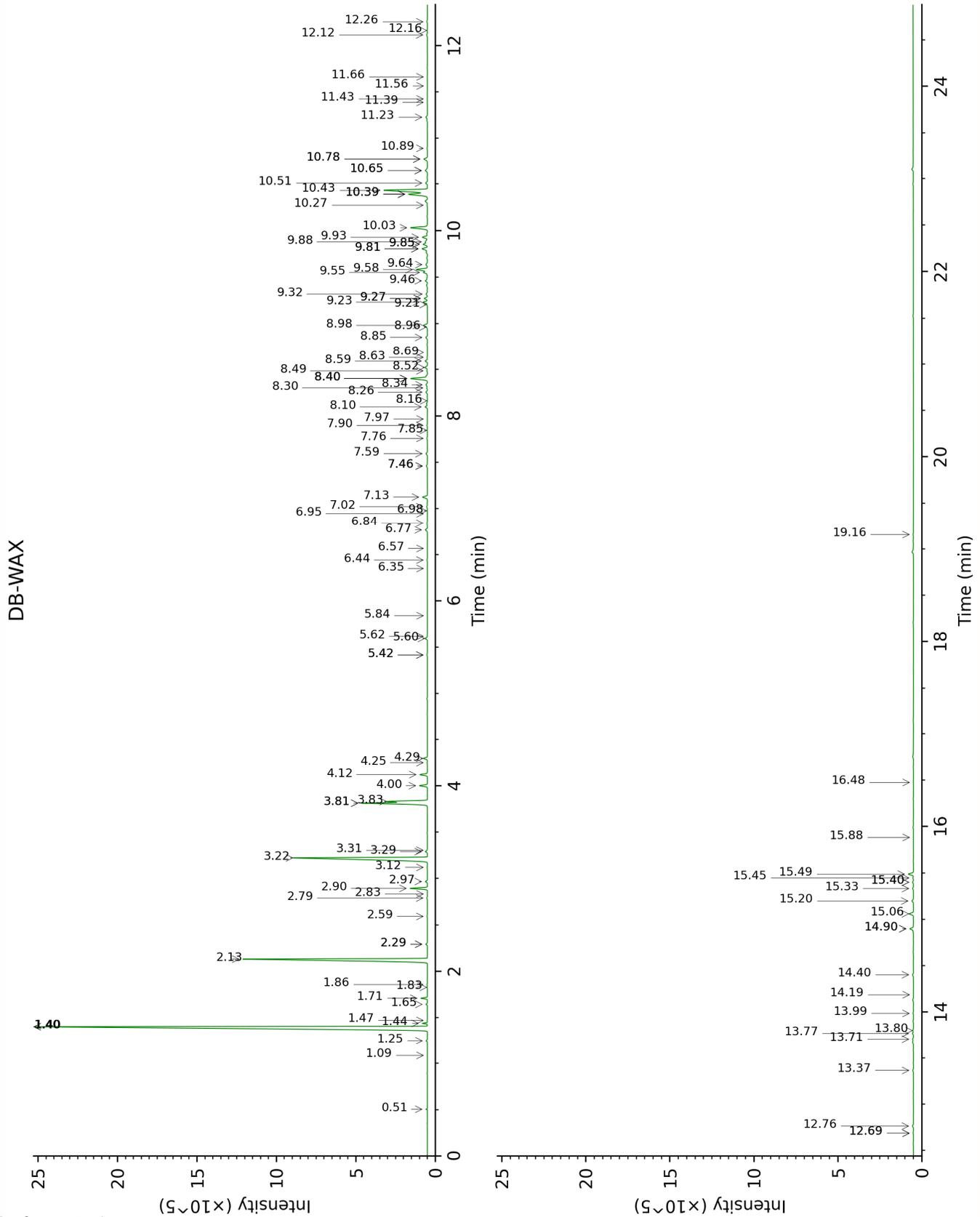
Note: no correction factor was applied

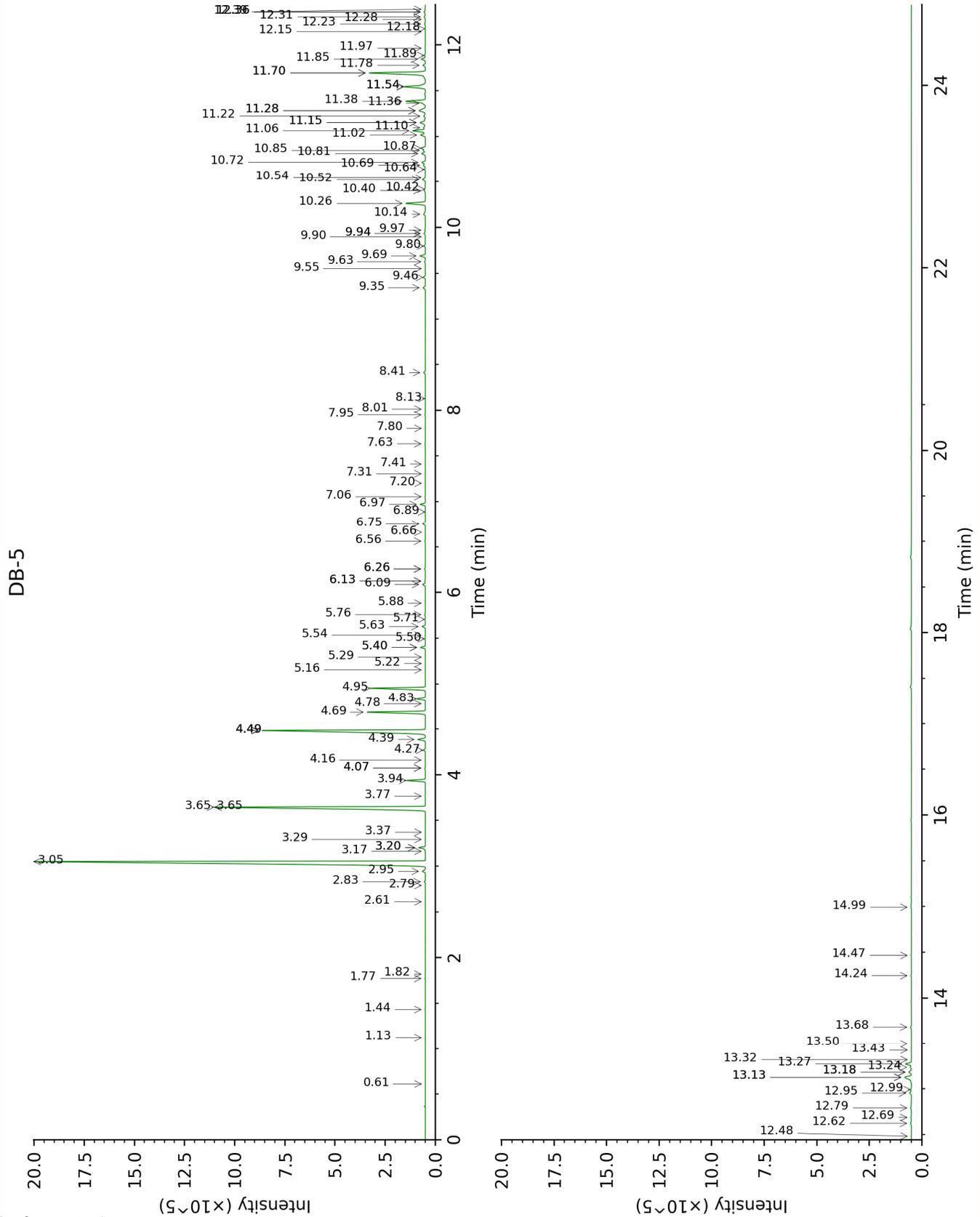
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm is set to prioritize data from the most standard DB-5 column, and smallest values so as to avoid overestimating individual content. This process is semi-automatic. Advanced users are invited to consult the "Full analysis data" table after the chromatograms in this report to access the full untreated data and perform their own calculations if needed.

Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

2-Methylbutyral	Column DB-WAX			Column DB-5		
				0.61	651.1	tr
Toluene	1.47	1002.7	0.01	1.13	759.3	0.01
Octane	0.51	784.0	0.03	1.44	804.1	0.01
5-Methyl-3-hexanone	1.86	1041.0	0.03	1.77	833.2	0.02
4-Methyl-3-hexanone	1.83	1038.1	0.02	1.82	837.2	0.01
Bornylene	1.09	944.2	tr	2.61	904.4	tr
Hashishene	1.40*	995.8	[38.09]	2.79	916.3	0.01
Tricyclene	1.25	971.0	0.06	2.83	919.0	0.07
α -Thujene	1.44	999.5	0.22	2.95	926.7	0.23
α -Pinene	1.40*	995.8	[38.09]	3.05	933.8	38.26
5-Methyl-3-heptanone	3.12	1152.0	0.01	3.16	941.4	0.02
α -Fenchene	1.64	1019.9	0.07	3.20*	944.0	[0.43]
Camphene	1.71	1026.4	0.35	3.20*	944.0	[0.43]
Thuja-2,4(10)-diene	2.29*	1084.4	[0.10]	3.30	950.1	0.01
6-Methyl-2-heptanone	3.81*†	1206.1	[4.56]	3.37	955.3	tr
β -Pinene	2.13	1068.3	16.55	3.65*	973.7	[16.77]
Sabinene	2.29*	1084.4	[0.10]	3.65*	973.7	[16.77]
Octen-3-ol	6.84	1423.9	0.03	3.77	981.8	0.03
Myrcene	2.90	1134.2	1.07	3.94	993.4	1.08
α -Phellandrene	2.79	1126.0	0.03	4.07*	1002.5	[0.05]
Pseudolimonene	2.83	1129.5	0.01	4.07*	1002.5	[0.05]
Δ^3 -Carene	2.59	1110.5	0.02	4.16	1008.1	0.02
α -Terpinene	2.97	1140.0	0.12	4.27	1014.9	0.12
<i>para</i> -Cymene	4.12	1228.7	0.51	4.39	1022.4	0.51
Limonene	3.22	1160.1	13.41	4.48*	1028.6	[13.67]
β -Phellandrene	3.29	1165.5	0.13	4.48*	1028.6	[13.67]
1,8-Cineole	3.31	1166.6	0.01	4.48*	1028.6	[13.67]
(Z)- β -Ocimene	3.81*†	1206.1	[4.56]	4.69	1041.4	3.71
2-Heptyl acetate	4.25	1238.2	0.02	4.78	1047.3	0.02
(E)- β -Ocimene	4.00	1220.0	0.53	4.83	1050.7	0.53
γ -Terpinene	3.83†	1207.5	2.60	4.95	1058.5	3.50
<i>cis</i> -Linalool oxide (fur.)	6.57	1403.4	0.01	5.16	1071.2	0.01
Octanol	8.16	1522.4	0.01	5.22	1075.7	0.01
α -Pinene oxide analog	5.42*	1321.4	[0.04]	5.30	1080.2	0.01
<i>para</i> -Cymenene	6.35	1387.8	0.01	5.40*	1086.9	[0.30]
Terpinolene	4.30	1241.6	0.28	5.40*	1086.9	[0.30]

α -Pinene oxide	5.42*	1321.4	[0.04]	5.50	1092.9	0.03
<i>trans</i> -Sabinene hydrate	7.97	1507.3	0.01	5.54	1095.5	0.02
Linalool	8.10	1517.3	0.17	5.63	1101.4	0.21
Verbenol analog?	8.30	1533.0	0.05	5.71	1106.4	0.04
endo-Fenchol	8.40*†	1540.9	[1.47]	5.76	1109.9	0.05
Octen-3-yl acetate	5.84	1351.5	0.01	5.88	1118.0	0.02
allo-Ocimene	5.60	1334.1	0.17	6.09	1131.2	0.19
<i>cis</i> -Limonene oxide	6.44	1394.3	0.03	6.13*	1133.7	[0.06]
<i>trans</i> -Pinocarveol	9.21	1603.0	0.03	6.13*	1133.7	[0.06]
2-Octyl acetate	5.62	1335.7	0.01	6.26*	1142.3	[0.06]
Camphene hydrate	8.49	1547.2	0.04	6.26*	1142.3	[0.06]
Borneol	9.81*	1651.2	[0.50]	6.56	1162.0	0.04
Ethyl benzoate	9.27*	1608.3	[0.26]	6.66	1168.4	0.01
Terpinen-4-ol	8.59	1555.4	0.18	6.75	1174.5	0.18
<i>para</i> -Cymen-8-ol	11.56	1797.8	0.01	6.89	1183.3	0.01
α -Terpineol	9.81*	1651.2	[0.50]	6.97	1188.7	0.35
Myrtenol	10.89	1741.0	0.03	7.06	1194.2	0.03
(3 <i>Z</i> ,5 <i>E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol?	11.23	1769.2	0.14	7.20	1203.7	0.01
(3 <i>E</i> ,5 <i>E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	11.42	1785.8	0.02	7.31	1210.7	0.03
<i>trans</i> -Carveol	11.39	1782.7	0.02	7.41	1218.0	0.02
Citronellol	10.78*	1731.2	[0.33]	7.63	1233.1	0.03
2-Nonyl acetate	6.98	1433.9	0.01	7.80	1244.7	0.01
Unknown RHAN I [m/z 68, 43 (71), 82 (59), 67 (52), 95 (24), 81 (24)...]	7.46*	1469.4	[0.09]	7.95	1254.8	0.03
Geraniol	11.66	1806.5	0.02	8.01	1259.0	0.01
<i>trans</i> -Ascaridole glycol	14.19	2037.0	0.01	8.13	1267.0	0.01
Bornyl acetate	8.26	1529.6	0.12	8.41	1286.4	0.12
α -Cubebene	6.77	1418.2	0.17	9.34	1348.7	0.18
Citronellyl acetate	9.46	1623.6	0.17	9.46	1356.7	0.15
Cyclosativene II	6.95	1431.5	0.01	9.55	1363.5	0.01
α -Ylangene	7.02	1437.2	0.05	9.63	1368.7	0.06

α -Copaene	7.13	1444.8	0.40	9.69	1373.2	0.39
β -Bourbonene	7.46*	1469.4	[0.09]	9.80	1380.9	0.08
β -Cubebene	7.76	1491.4	0.04	9.90	1388.1	0.01
7-epi-Sesquithujene	7.85	1497.9	0.02	9.94*	1390.6	[0.10]
β -Elemene	8.40*†	1540.9	[1.47]	9.94*	1390.6	[0.10]
α -Funebrene	7.90	1502.0	0.04	9.97	1393.2	0.04
α -Gurjunene	7.60	1479.3	0.12	10.14	1405.5	0.13
β -Caryophyllene	8.40*†	1540.9	[1.47]	10.26	1414.4	1.43
β -Copaene	8.34	1535.7	0.14	10.40	1424.9	0.10
α -Maaliene	8.63	1558.5	0.03	10.42	1426.1	0.03
Aromadendrene	8.52	1550.0	0.21	10.52	1434.0	0.21
Selina-5,11-diene	8.69	1562.5	0.02	10.54	1435.4	0.02
<i>cis</i> -Muurola-3,5-diene	8.96	1584.0	0.04	10.64	1442.6	0.05
Unknown BOCA IV [m/z 91, 161 (92), 105 (85), 119 (63), 133 (53), 79 (49), 204 (46)]	8.85	1575.4	0.13	10.69	1446.1	0.16
α -Humulene	9.27*	1608.3	[0.26]	10.72	1448.4	0.26
allo-Aromadendrene	8.98	1585.4	0.34	10.81	1455.7	0.28
<i>cis</i> -Muurola-4(15),5-diene	9.32	1612.1	0.11	10.85	1458.2	0.15
(<i>E</i>)- β -Farnesene	9.55	1630.8	0.34	10.87	1460.2	0.31
<i>trans</i> -Cadina-1(6),4-diene	9.23	1605.1	0.35	11.02	1470.9	0.38
γ -Muurolene	9.58	1633.3	0.96	11.06	1474.4	0.96
α -Amorphene	9.64	1637.6	0.15	11.10	1476.8	0.14
β -Selinene	9.85*	1655.1	[0.37]	11.15*	1481.1	[0.50]
α -Curcumene	10.65*	1720.7	[0.21]	11.15*	1481.1	[0.50]
γ -Amorphene	9.85*	1655.1	[0.37]	11.22	1486.3	0.13
α -Selinene	9.93	1661.2	0.44	11.28*	1490.8	[0.68]
Valencene	9.88	1657.2	0.22	11.28*	1490.8	[0.68]
Unknown SWGL III [m/z 161, 105 (77), 204 (73), 119 (65), 189 (57), 91 (53)]	10.39*	1698.7	[1.80]	11.36	1496.8	0.13
α -Muurolene	10.03	1669.4	1.45	11.38	1498.5	1.49
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	10.51	1708.8	0.14	11.54*	1510.8	[1.84]

γ -Cadinene	10.39*	1698.7	[1.80]	11.54*	1510.8	[1.84]
β -Curcumene	10.27	1688.9	0.03	11.54*	1510.8	[1.84]
Zonarene	10.39*	1698.7	[1.80]	11.70*	1522.6	[4.46]
δ -Cadinene	10.43	1702.3	4.10	11.70*	1522.6	[4.46]
<i>trans</i> -Cadina-1,4-diene	10.65*	1720.7	[0.21]	11.78	1529.3	0.18
α -Cadinene	10.78*	1731.2	[0.33]	11.85	1534.5	0.30
α -Calacorene	12.12	1846.4	0.07	11.89	1537.7	0.06
Isocaryophyllene epoxide B	12.16	1850.6	0.02	11.97	1544.0	0.02
Palustrol	12.26	1858.8	0.05	12.15	1558.2	0.02
β -Calacorene	12.69*	1896.9	[0.03]	12.18	1560.7	0.02
(<i>E</i>)-Nerolidol	13.80	2000.0	0.06	12.23	1564.9	0.06
Germacrene D-4-ol	13.71	1991.0	0.08	12.28	1568.8	0.02
Spathulenol	14.40	2057.8	0.08	12.31	1571.0	0.09
Caryophyllene oxide isomer	12.69*	1896.9	[0.03]	12.36*	1575.2	[0.11]
Caryophyllene oxide	12.76	1904.1	0.09	12.36*	1575.2	[0.11]
Unknown HEBR VI [m/z 109, 43 (95), 81 (81), 93 (76), 69 (75), 95 (74), 107 (71)... 204 (22), 220 (6)]				12.39	1577.6	0.03
Viridiflorol	13.99	2017.8	0.03	12.48	1584.6	0.01
Ledol	13.36	1959.3	0.06	12.62	1595.8	0.07
Unknown RHAN III [m/z 149, 43 (95), 93 (84), 177 (66), 109 (62), 67 (60)...220 (11)]				12.69	1600.9	0.04
1,10-diepi-Cubenol	13.77	1996.9	0.09	12.79	1609.3	0.07
1-epi-Cubenol				12.95	1622.8	0.14
γ -Eudesmol	14.90*	2106.1	[0.30]	12.99	1625.9	0.04
τ -Muurolol	15.06	2122.2	0.36	13.13*	1637.1	[0.71]
τ -Cadinol	14.90*	2106.1	[0.30]	13.13*	1637.1	[0.71]
α -Muurolol	15.20	2136.0	0.14	13.18*	1641.9	[0.21]
β -Eudesmol	15.40*	2156.2	[0.07]	13.18*	1641.9	[0.21]
α -Eudesmol	15.33	2149.4	0.07	13.24	1646.2	0.08
α -Cadinol	15.49	2164.9	0.42	13.27	1649.3	0.43
<i>cis</i> -Calamenen-10-ol	16.48	2266.8	0.01	13.32	1653.2	0.01

<i>trans</i> -Calamenen-10-ol				13.43	1662.0	0.01
Cadalene	15.40*	2156.2	[0.07]	13.50	1668.0	0.02
α -Bisabolol	15.45	2160.8	0.04	13.68	1683.3	0.06
Unknown RHAN IV [m/z 91, 175 (93), 105 (76), 79 (73), 133 (69), 107 (60)...218 (33)]	15.88	2205.1	0.01	14.24	1731.1	0.04
Unknown RHAN V [m/z 91, 177 (75), 79 (68), 105 (65), 93 (62), 159 (60)...220 (16)]				14.47	1750.4	0.02
Unknown SCMO VIII [m/z 43, 41 (72), 95 (69), 81 (66), 67 (55), 55 (52), 79 (52), 69 (50)... 238 (1)]	19.16	2564.2	0.02	14.99	1796.3	0.05
Total reported		97.40%			98.78%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is taken into account in the consolidated total

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index