

Date : 2025-05-08

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25D24-PTH04

Customer Identification : Ravintsara - Madagascar - RG0108R

Type : Essential Oil

Source : *Cinnamomum camphora*

Customer : Plant Therapy

Checked and approved by:

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

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

Date : 2025-05-08

PHYSICOCHEMICAL DATA

Refractive index : 1.4644 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-04-25

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
Ethanol	0.01	Aliphatic alcohol
Isoamyl alcohol	0.01	Aliphatic alcohol
(3Z)-Hexenol	tr	Aliphatic alcohol
Hashishene	tr	Monoterpene
Tricyclene	0.02	Monoterpene
α -Thujene	0.67	Monoterpene
α -Pinene	6.91	Monoterpene
Camphene	0.14	Monoterpene
α -Fenchene	0.01	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
β -Pinene	3.20	Monoterpene
Sabinene	12.79	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	0.86	Monoterpene
2-Carene	tr	Monoterpene
α -Phellandrene	0.12	Monoterpene
Pseudolimonene	0.03	Monoterpene
α -Terpinene	1.26	Monoterpene
<i>para</i> -Cymene	1.17	Monoterpene
Limonene	1.34	Monoterpene
1,8-Cineole	58.25	Monoterpenic ether
(Z)- β -Ocimene	0.03	Monoterpene
(E)- β -Ocimene	0.10	Monoterpene
γ -Terpinene	0.87	Monoterpene
<i>cis</i> -Sabinene hydrate	0.33	Monoterpenic alcohol
<i>para</i> -Cymenene	0.01	Monoterpene
Terpinolene	0.19	Monoterpene
<i>trans</i> -Sabinene hydrate	0.35	Monoterpenic alcohol
Linalool	0.07	Monoterpenic alcohol
Unknown	0.01	Monoterpenic alcohol
endo-Fenchol	0.01	Monoterpenic alcohol
<i>cis-para</i> -Menth-2-en-1-ol	0.09	Monoterpenic alcohol
1-Terpineol	0.01	Monoterpenic alcohol
<i>cis-para</i> -Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
<i>trans-para</i> -Menth-2-en-1-ol	0.06	Monoterpenic alcohol
<i>cis</i> - β -Terpineol	0.02	Monoterpenic alcohol
Unknown	0.03	Unknown
Unknown	0.02	Unknown
Borneol	0.05	Monoterpenic alcohol
δ -Terpineol	0.21	Monoterpenic alcohol

Unknown	0.01	Oxygenated monoterpene
Terpinen-4-ol	3.22	Monoterpenic alcohol
Cryptone	0.01	Normoterpenic ketone
<i>para</i> -Cymen-8-ol	0.02	Monoterpenic alcohol
α -Terpineol	4.28	Monoterpenic alcohol
<i>cis</i> -Piperitol	0.04	Monoterpenic alcohol
<i>trans</i> -Piperitol	0.03	Monoterpenic alcohol
Unknown	0.03	Unknown
Nerol	0.02	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Carvone	0.01	Monoterpenic ketone
Unknown	0.01	Unknown
<i>trans</i> -Ascaridole glycol	0.03	Monoterpenic alcohol
Safrole	0.03	Phenylpropanoid
Unknown	0.02	Unknown
Unknown	0.03	Monoterpenic alcohol
α -Cubebene	0.01	Sesquiterpene
Unknown	0.02	Unknown
Eugenol	0.02	Phenylpropanoid
α -Ylangene	0.01	Sesquiterpene
α -Copaene	0.01	Sesquiterpene
β -Elemene	0.04	Sesquiterpene
β -Caryophyllene	0.95	Sesquiterpene
Aromadendrene	0.03	Sesquiterpene
6,9-Guaiadiene	0.01	Sesquiterpene
α -Humulene	0.70	Sesquiterpene
allo-Aromadendrene	0.01	Sesquiterpene
β -Santalene	0.01	Sesquiterpene
γ -Muurolene	0.01	Sesquiterpene
Germacrene D	0.25	Sesquiterpene
β -Selinene	0.05	Sesquiterpene
α -Selinene	0.04	Sesquiterpene
Bicyclogermacrene	0.12	Sesquiterpene
Viridiflorene	0.04	Sesquiterpene
Germacrene A	0.02	Sesquiterpene
γ -Cadinene	0.01	Sesquiterpene
δ -Cadinene	0.01	Sesquiterpene
Germacrene B	0.03	Sesquiterpene
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.03	Sesquiterpenic ether
Guaiol	0.02	Sesquiterpenic alcohol
Humulene epoxide II	0.02	Sesquiterpenic ether
Isospathulenol	0.03	Sesquiterpenic alcohol
Neointermedeol	0.01	Sesquiterpenic alcohol
<i>meta</i> -Camphorene	0.01	Diterpene

<i>para</i> -Camphorene	0.01	Diterpene
Consolidated total	99.70	

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

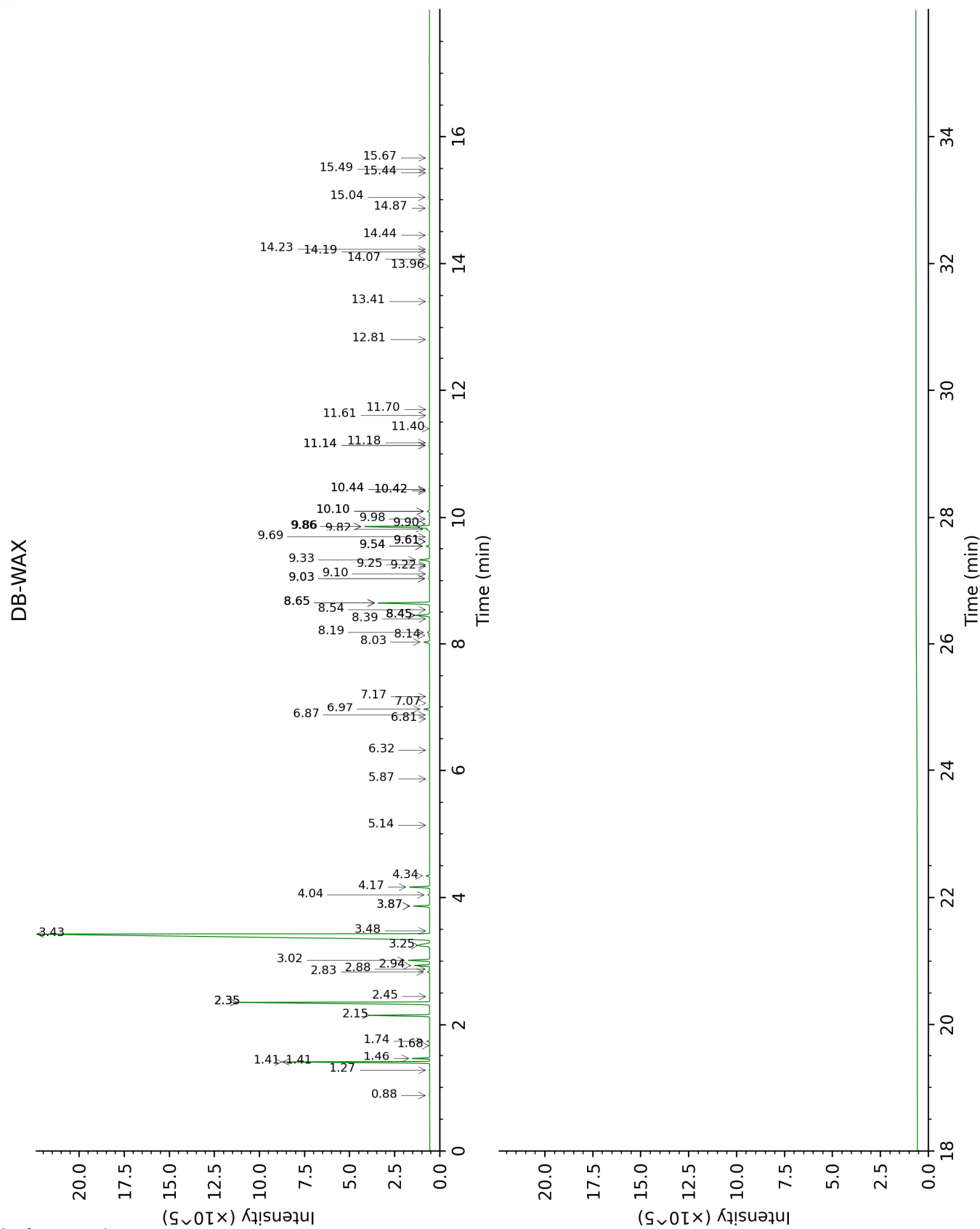
Note: no correction factor was applied

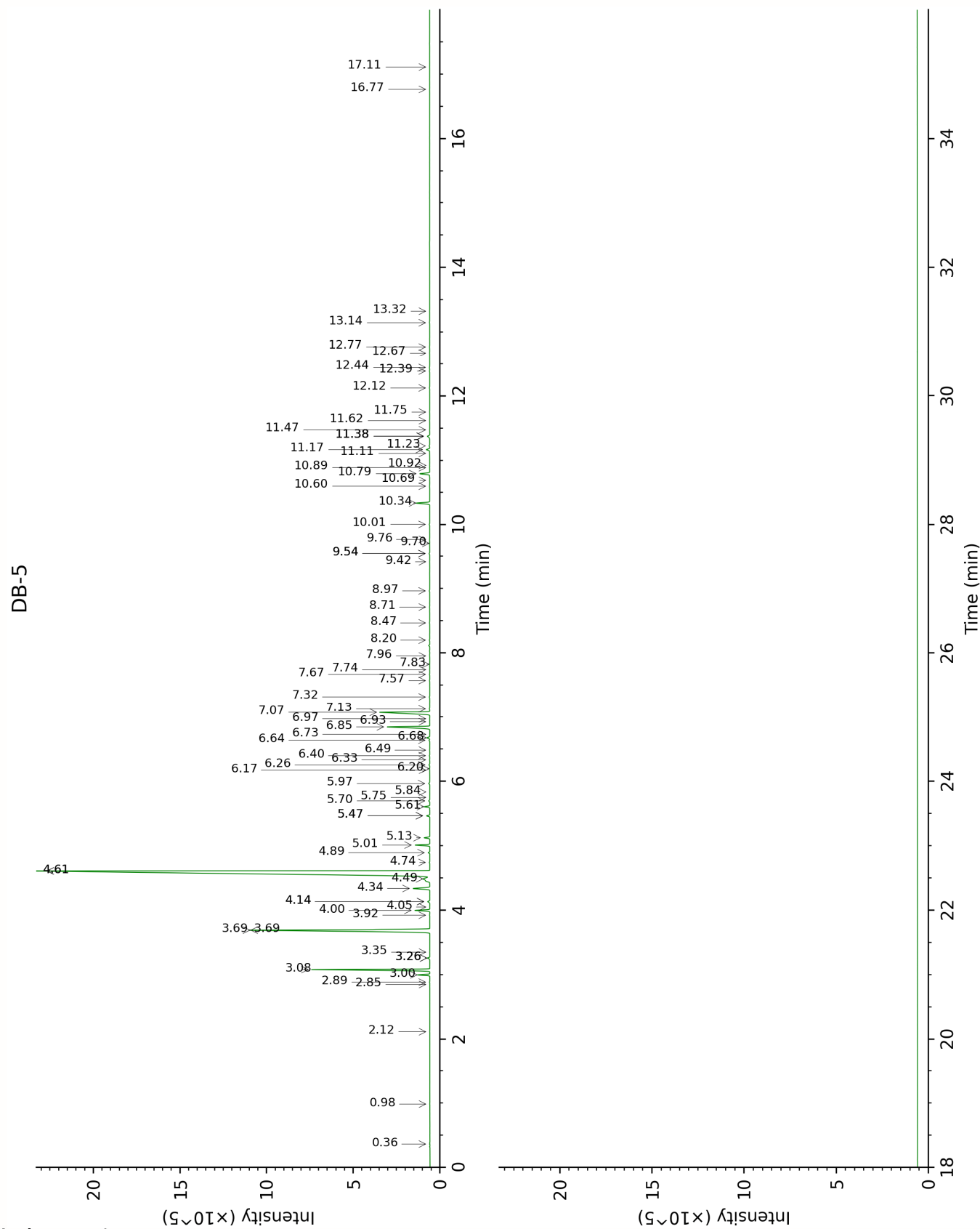
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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

Ethanol	Column DB-WAX			Column DB-5		
	0.88	907.0	0.01	0.36	502.6	0.01
Isoamyl alcohol	3.48	1177.0	0.01	0.98	733.0	0.01
(3Z)-Hexenol	5.87	1351.8	0.01	2.12	857.5	tr
Hashishene	1.41*	992.8	[6.91]	2.85	916.0	tr
Tricyclene	1.28	971.5	0.02	2.89	918.5	0.02
α -Thujene	1.46	998.7	0.67	3.00	926.0	0.67
α -Pinene	1.41*	992.8	[6.91]	3.08	931.5	6.91
Camphene	1.74	1026.5	0.14	3.26*	943.5	[0.15]
α -Fenchene	1.68	1019.8	0.01	3.26*	943.5	[0.15]
Thuja-2,4(10)-diene	2.35*	1087.2	[12.79]	3.35	949.6	0.01
β -Pinene	2.15	1067.0	3.20	3.69*	972.4	[15.99]
Sabinene	2.35*	1087.2	[12.79]	3.69*	972.4	[15.99]
6-Methyl-5-hepten-2-one	5.14	1300.0	0.01	3.92	988.0	0.02
Myrcene	2.94	1134.2	0.85	4.00	993.1	0.86
2-Carene	2.45	1095.9	tr	4.05	996.5	tr
α -Phellandrene	2.83	1126.2	0.12	4.14*	1002.2	[0.15]
Pseudolimonene	2.88	1129.8	0.03	4.14*	1002.2	[0.15]
α -Terpinene	3.02	1140.6	1.26	4.34	1015.2	1.26
<i>para</i> -Cymene	4.17	1228.8	1.12	4.49	1024.6	1.17
Limonene	3.25	1159.1	1.34	4.61*	1032.4	[59.51]
1,8-Cineole	3.43	1173.0	58.25	4.61*	1032.4	[59.51]
(Z)- β -Ocimene	3.87*	1206.8	[0.90]	4.74	1040.7	0.03
(E)- β -Ocimene	4.04	1219.7	0.10	4.90	1050.4	0.10
γ -Terpinene	3.87*	1206.8	[0.90]	5.01	1057.9	0.87
<i>cis</i> -Sabinene hydrate	6.97	1430.8	0.34	5.13	1065.1	0.33
<i>para</i> -Cymenene	6.32	1383.7	0.01	5.47*	1086.7	[0.20]
Terpinolene	4.34	1241.6	0.19	5.47*	1086.7	[0.20]
<i>trans</i> -Sabinene hydrate	8.03	1509.7	0.35	5.61	1095.7	0.35
Linalool	8.14	1517.6	0.06	5.70	1101.4	0.07
Unknown ORMA I [m/z 119, 109 (94), 43 (61), 95 (56), 91 (48), 77 (32), 152 (32), 137 (31), 134 (24)]	8.54	1548.6	0.01	5.75	1104.8	0.01
endo-Fenchol	8.45*	1542.0	[0.97]	5.84	1110.3	0.01
<i>cis-para</i> -Menth-2-en-1-ol	8.19	1521.4	0.14	5.97	1118.7	0.09
1-Terpineol	8.40	1537.5	0.01	6.18	1132.3	0.01

<i>cis-para</i> -Mentha-2,8-dien-1-ol	9.54*	1626.9	[0.21]	6.20	1133.7	0.02
<i>trans-para</i> -Menth-2-en-1-ol	9.03*	1586.2	[0.06]	6.26	1137.6	0.06
<i>cis</i> - β -Terpineol	9.10	1591.7	0.02	6.34	1142.6	0.02
Unknown MEAL II [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.87	1424.1	0.03	6.40	1146.8	0.03
Unknown CICA VIII [m/z 71, 85 (48), 43 (42), 57 (38), 58 (37), 41 (21), ... 155 (12)]				6.48	1152.4	0.02
Borneol	9.86*	1652.6	[4.37]	6.64	1162.3	0.05
δ -Terpineol	9.54*	1626.9	[0.21]	6.68	1164.8	0.21
Unknown AFGI I [m/z 109, 79 (18), 81 (15), 91 (12), 77 (10)... 152 (3)]				6.73	1168.3	0.01
Terpinen-4-ol	8.65*	1556.8	[3.23]	6.85	1175.8	3.22
Cryptone	9.22	1601.4	0.01	6.93	1181.1	0.01
<i>para</i> -Cymen-8-ol	11.61	1798.0	0.02	6.97	1184.1	0.02
α -Terpineol	9.86*	1652.6	[4.37]	7.07	1190.6	4.28
<i>cis</i> -Piperitol	9.61*	1632.7	[0.04]	7.13	1194.1	0.04
<i>trans</i> -Piperitol	10.44*	1699.8	[0.05]	7.32	1206.6	0.03
Unknown CICA IV [m/z 43, 97 (72), 41 (44), 71 (27), 55 (26), 82 (25)...]				7.57	1224.0	0.03
Nerol	11.14*	1758.0	[0.05]	7.67	1230.6	0.02
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	11.40	1780.3	0.01	7.74	1235.6	0.01
Carvone	10.10*	1671.8	[0.16]	7.83	1241.4	0.01
Unknown CALU IV [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	11.18	1761.6	0.01	7.96	1250.1	0.01
<i>trans</i> -Ascaridole glycol	14.23	2036.7	0.03	8.20	1266.8	0.03
Safrole	11.70	1806.4	0.01	8.47	1285.1	0.03
Unknown CICA VI [m/z 112, 97 (93),	13.96	2011.3	0.02	8.72	1301.9	0.02

83 (60), 43 (46), 41 (20), 69 (19)...						
Unknown MEAL I [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]	15.04	2116.1	0.04	8.97	1315.8	0.03
α -Cubebene	6.81	1419.6	0.01	9.42	1348.0	0.01
Unknown EUGL I [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...	14.07	2021.8	0.02	9.54*	1357.1	[0.04]
Eugenol	14.87	2099.0	0.02	9.54*	1357.1	[0.04]
α -Ylangene	7.07	1438.5	0.01	9.70	1368.4	0.01
α -Copaene	7.18	1446.1	0.01	9.76	1372.6	0.01
β -Elemene	8.45*	1542.0	[0.97]	10.01	1390.1	0.04
β -Caryophyllene	8.45*	1542.0	[0.97]	10.34	1414.1	0.95
Aromadendrene	8.65*	1556.8	[3.23]	10.60	1433.8	0.03
6,9-Guaiadiene	8.65*	1556.8	[3.23]	10.69	1440.5	0.01
α -Humulene	9.33	1609.6	0.70	10.80	1448.4	0.70
allo-Aromadendrene	9.03*	1586.2	[0.06]	10.89	1455.3	0.01
β -Santalene	9.25	1603.5	0.02	10.92	1458.1	0.01
γ -Murolene	9.61*	1632.7	[0.04]	11.11	1472.0	0.01
Germacrene D	9.82	1649.1	0.20	11.17	1476.4	0.25
β -Selinene	9.90	1656.0	0.04	11.23	1480.7	0.05
α -Selinene	9.98	1662.1	0.04	11.38*	1491.9	[0.21]
Bicyclogermacrene	10.10*	1671.8	[0.16]	11.38*	1491.9	[0.21]
Viridiflorene	9.69	1638.6	0.04	11.38*	1491.9	[0.21]
Germacrene A	10.42*	1697.7	[0.01]	11.48	1499.4	0.02
γ -Cadinene	10.42*	1697.7	[0.01]	11.62	1510.4	0.01
δ -Cadinene	10.44*	1699.8	[0.05]	11.75	1520.8	0.01
Germacrene B	11.14*	1758.0	[0.05]	12.12	1550.4	0.03
Spathulenol	14.44	2057.7	0.03	12.39	1571.2	0.03
Caryophyllene oxide	12.81	1904.6	0.03	12.44	1575.6	0.03
Guaiol	14.18	2032.8	0.02	12.67	1593.7	0.02
Humulene epoxide II	13.41	1959.4	0.02	12.77	1601.3	0.02
Isospathulenol	15.49	2161.0	0.02	13.14	1632.3	0.03
Neointermedeol	15.67	2179.0	0.01	13.32	1647.2	0.01
meta-Camphorene	15.44	2155.6	0.01	16.77	1952.7	0.01
para-Camphorene				17.11	1985.6	0.01
Total reported		99.43%			99.61%	

*: 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