

Date : 2024-08-29

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24H16-PTH02

Customer Identification : Ravintsara - Madagascar - RG0107R

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

Date : 2024-08-29

PHYSICOCHEMICAL DATA

Refractive index : 1.4643 ± 0.0003 (20 °C)

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

Analyst : Cassandra Baker

Date : 2024-08-19

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	tr	Aliphatic alcohol
Isoamyl alcohol	0.01	Aliphatic alcohol
(3Z)-Hexenol	tr	Aliphatic alcohol
Hashishene	tr	Monoterpene
Tricyclene	0.02	Monoterpene
α -Thujene	0.68	Monoterpene
α -Pinene	7.12	Monoterpene
α -Fenchene	0.01	Monoterpene
Camphene	0.16	Monoterpene
Thuja-2,4(10)-diene	tr	Monoterpene
β -Pinene	3.10	Monoterpene
Sabinene	13.07	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	0.86	Monoterpene
Pseudolimonene	0.02	Monoterpene
α -Phellandrene	0.13	Monoterpene
Δ^3 -Carene	tr	Monoterpene
α -Terpinene	1.52	Monoterpene
<i>para</i> -Cymene	0.96	Monoterpene
1,8-Cineole	58.31	Monoterpenic ether
Limonene	1.33	Monoterpene
(Z)- β -Ocimene	0.03	Monoterpene
(E)- β -Ocimene	0.07	Monoterpene
γ -Terpinene	0.98	Monoterpene
<i>cis</i> -Sabinene hydrate	0.38	Monoterpenic alcohol
Terpinolene	0.21	Monoterpene
<i>trans</i> -Sabinene hydrate	0.41	Monoterpenic alcohol
Linalool	0.07	Monoterpenic alcohol
<i>cis-para</i> -Menth-2-en-1-ol	0.08	Monoterpenic alcohol
<i>cis-para</i> -Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
Camphor	0.01	Monoterpenic ketone
<i>trans-para</i> -Menth-2-en-1-ol	0.06	Monoterpenic alcohol
Unknown	0.01	Unknown
Unknown	0.01	Unknown
Borneol	0.05	Monoterpenic alcohol
δ -Terpineol	0.20	Monoterpenic alcohol
Terpinen-4-ol	3.21	Monoterpenic alcohol
Cryptone	0.02	Normonoterpenic ketone
α -Terpineol	4.20	Monoterpenic alcohol
<i>cis</i> -Piperitol	0.05	Monoterpenic alcohol

<i>trans</i> -Piperitol	0.03	Monoterpenic alcohol
Unknown	0.01	Unknown
Nerol	0.02	Monoterpenic alcohol
Citronellol	0.02	Monoterpenic alcohol
Carvone	0.01	Monoterpenic ketone
Unknown	0.03	Unknown
Geraniol	0.10	Monoterpenic alcohol
<i>trans</i> -Ascaridole glycol	0.02	Monoterpenic alcohol
<i>cis</i> -Ascaridole glycol	0.02	Monoterpenic alcohol
Unknown	0.01	Unknown
Unknown	0.03	Monoterpenic alcohol
α -Cubebene	tr	Sesquiterpene
Unknown	0.02	Unknown
α -Ylangene	0.01	Sesquiterpene
β -Elemene	0.03	Sesquiterpene
β -Caryophyllene	0.81	Sesquiterpene
Aromadendrene	0.02	Sesquiterpene
α -Humulene	0.56	Sesquiterpene
Germacrene D	0.27	Sesquiterpene
β -Selinene	0.04	Sesquiterpene
α -Selinene	0.04	Sesquiterpene
Bicyclogermacrene	0.10	Sesquiterpene
γ -Cadinene	0.01	Sesquiterpene
δ -Cadinene	0.01	Sesquiterpene
Germacrene B	0.02	Sesquiterpene
Spathulenol	0.02	Sesquiterpenic alcohol
Caryophyllene oxide	0.02	Sesquiterpenic ether
Humulene epoxide II	0.02	Sesquiterpenic ether
Isospathulenol	0.03	Sesquiterpenic alcohol
Neointermedeol	0.01	Sesquiterpenic alcohol
<i>meta</i> -Camphorene	0.01	Diterpene
Consolidated total	99.75	

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

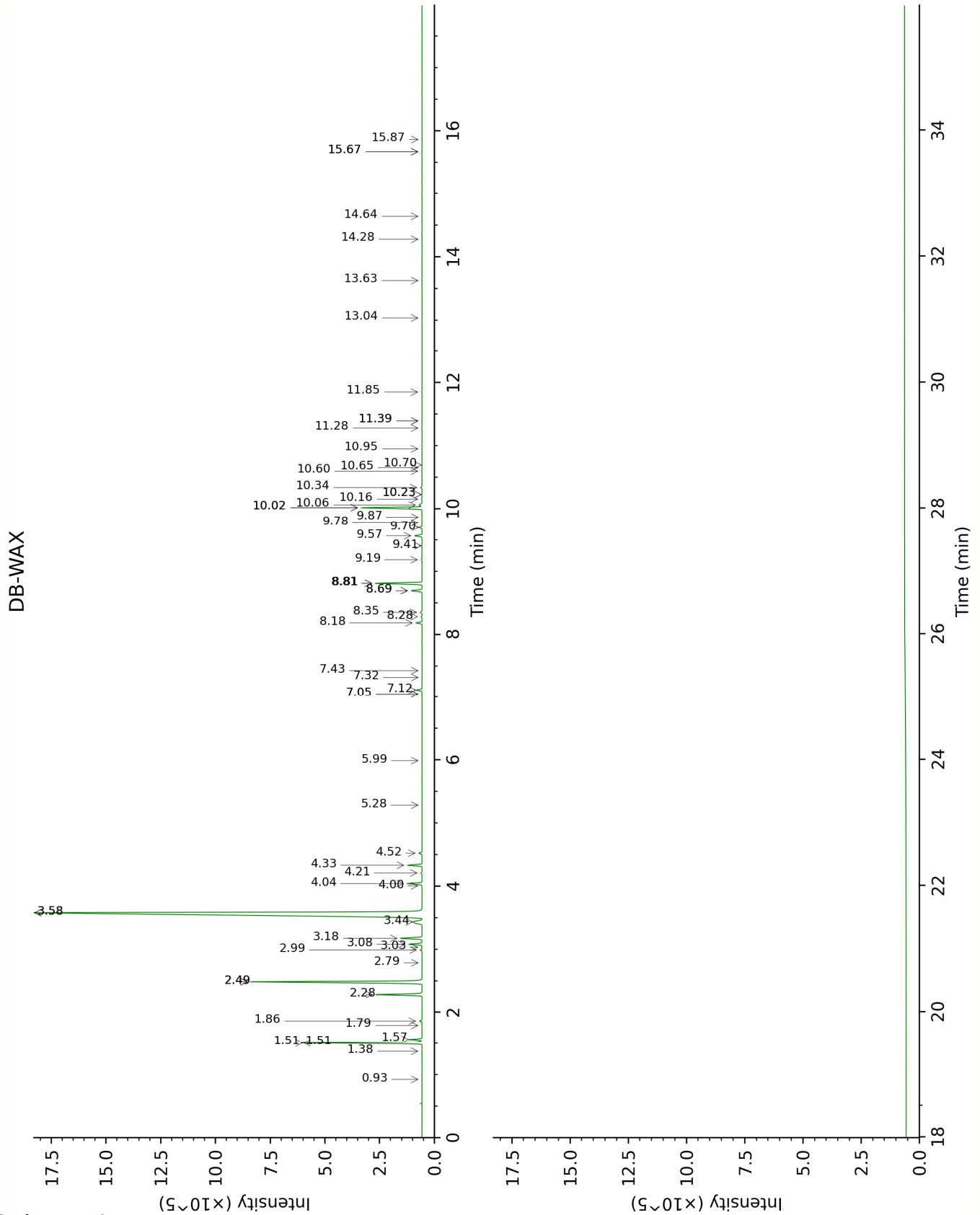
Note: no correction factor was applied

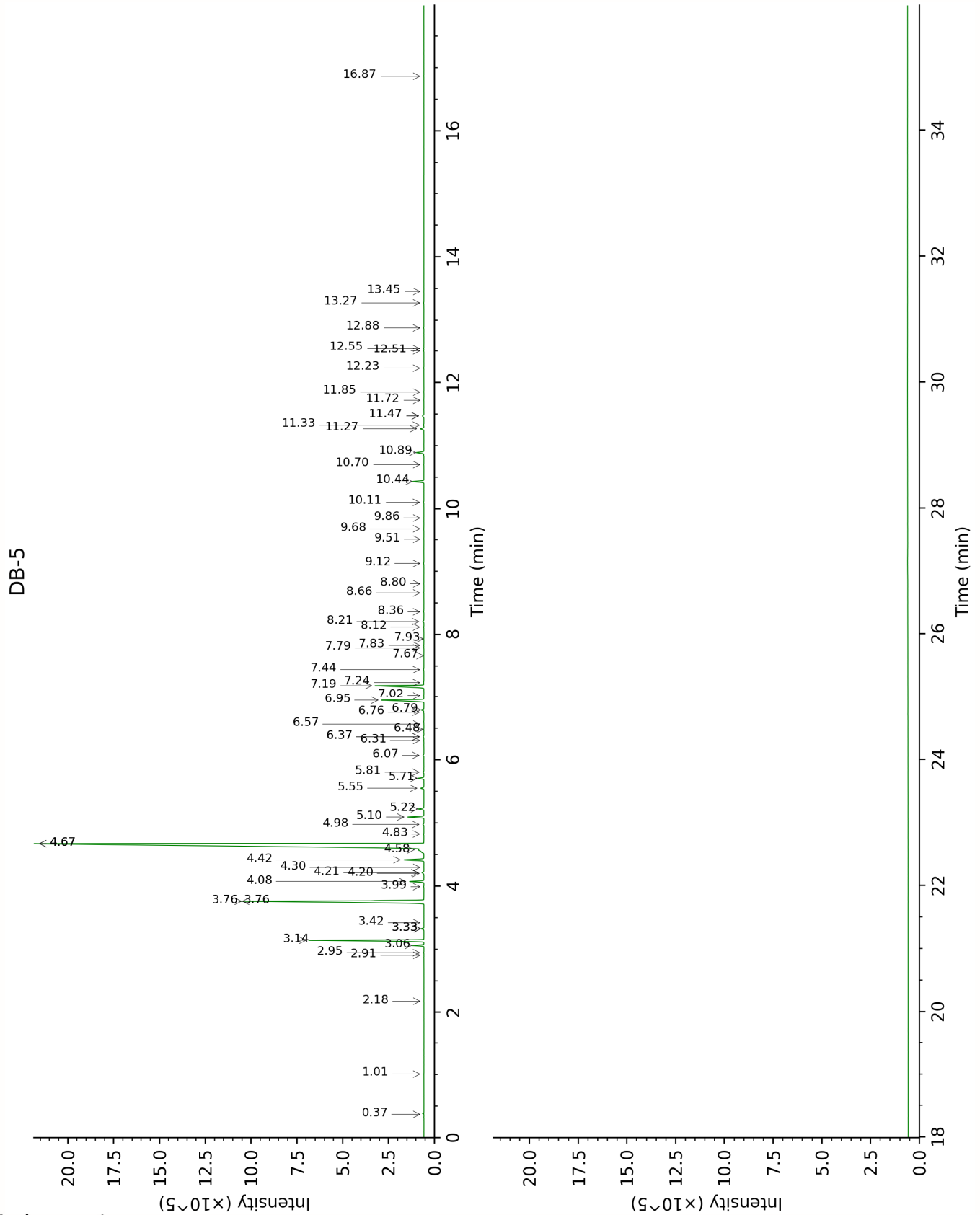
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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		
	0.93	904.1	tr	0.37	500.0	tr
Isoamyl alcohol	3.58*	1172.0	[58.32]	1.01	732.0	0.01
(3Z)-Hexenol	5.99	1345.5	0.02	2.18	857.9	tr
Hashishene	1.51*	993.5	[7.07]	2.91	915.2	tr
Tricyclene	1.38	972.6	0.02	2.95	917.9	0.02
α -Thujene	1.57	999.5	0.70	3.06	925.5	0.68
α -Pinene	1.51*	993.5	[7.07]	3.14	930.9	7.12
α -Fenchene	1.79	1020.8	0.01	3.33*	942.9	[0.18]
Camphene	1.86	1027.4	0.16	3.33*	942.9	[0.18]
Thuja-2,4(10)-diene	2.49*	1086.8	[13.05]	3.42	949.3	tr
β -Pinene	2.28	1067.5	3.10	3.76*	971.7	[16.16]
Sabinene	2.49*	1086.8	[13.05]	3.76*	971.7	[16.16]
6-Methyl-5-hepten-2-one	5.28	1295.2	0.01	3.99	986.9	0.02
Myrcene	3.08	1133.9	0.88	4.08	992.3	0.86
Pseudolimonene	3.03	1130.1	0.03	4.20	1000.7	0.02
α -Phellandrene	2.99	1126.8	0.12	4.22	1001.6	0.13
Δ^3 -Carene	2.79	1111.3	tr	4.30	1006.9	tr
α -Terpinene	3.18	1141.0	1.53	4.42	1014.4	1.52
<i>para</i> -Cymene	4.33	1227.2	0.96	4.58*†	1024.3	[0.87]
1,8-Cineole	3.58*	1172.0	[58.32]	4.68*†	1030.4	[59.86]
Limonene	3.44	1160.8	1.33	4.68*†	1030.4	[59.86]
(Z)- β -Ocimene	4.00	1203.7	0.02	4.83	1040.0	0.03
(E)- β -Ocimene	4.21	1218.4	0.08	4.98	1049.4	0.07
γ -Terpinene	4.04	1206.4	1.00	5.10	1056.8	0.98
<i>cis</i> -Sabinene hydrate	7.12	1426.9	0.38	5.22	1064.8	0.38
Terpinolene	4.52	1240.8	0.21	5.55	1085.3	0.21
<i>trans</i> -Sabinene hydrate	8.18	1506.0	0.41	5.71	1095.2	0.41
Linalool	8.28	1513.6	0.06	5.81	1101.3	0.07
<i>cis-para</i> -Menth-2-en-1-ol	8.35	1519.0	0.14	6.07	1118.2	0.08
<i>cis-para</i> -Mentha-2,8-dien-1-ol	9.78	1630.1	0.03	6.31	1133.2	0.02
Camphor	7.43	1449.7	0.01	6.37*	1137.0	[0.06]
<i>trans-para</i> -Menth-2-en-1-ol	9.18	1583.0	0.06	6.37*	1137.0	[0.06]
Unknown MEAL II [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	7.05*	1422.1	[0.02]	6.48	1144.3	0.01

Unknown CICA VIII [m/z 71, 85 (48), 43 (42), 57 (38), 58 (37), 41 (21), ... 155 (12)]				6.57	1149.8	0.01
Borneol	10.02*	1649.7	[4.26]	6.76	1161.8	0.05
δ-Terpineol	9.70	1624.0	0.21	6.80	1164.2	0.20
Terpinen-4-ol	8.81*	1554.3	[3.22]	6.95	1174.1	3.21
Cryptone	9.41	1600.4	0.02	7.02	1178.7	0.02
α-Terpineol	10.02*	1649.7	[4.26]	7.19	1189.3	4.20
cis-Piperitol	9.87	1637.5	0.02	7.24	1192.3	0.05
trans-Piperitol	10.60	1696.6	0.03	7.44	1205.6	0.03
Unknown CICA IV [m/z 43, 97 (72), 41 (44), 71 (27), 55 (26), 82 (25)...]				7.66	1220.5	0.01
Nerol	11.28	1754.1	0.03	7.79	1228.6	0.02
Citronellol	10.95	1726.4	0.02	7.83	1231.4	0.02
Carvone	10.23*	1666.5	[0.03]	7.93	1238.2	0.01
Unknown CALU IV [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	11.40*	1763.6	[0.02]	8.12	1250.7	0.03
Geraniol	11.85	1802.6	0.05	8.20	1256.5	0.10
trans-Ascaridole glycol				8.36	1266.9	0.02
cis-Ascaridole glycol				8.66	1286.8	0.02
Unknown CICA V [m/z 95, 110 (95), 67 (31), 43 (29), 122 (18), 41 (14)...]				8.80	1296.5	0.01
Unknown MEAL I [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]				9.12	1318.8	0.03
α-Cubebene	7.05*	1422.1	[0.02]	9.51	1345.8	tr
Unknown EUGL I [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	14.28	2023.0	0.01	9.68	1357.5	0.02
α-Ylangene	7.32	1441.7	0.01	9.86	1370.4	0.01
β-Elemene	8.69*	1545.2	[0.83]	10.10	1387.8	0.03
β-Caryophyllene	8.69*	1545.2	[0.83]	10.44	1411.6	0.81
Aromadendrene	8.81*	1554.3	[3.22]	10.70	1431.5	0.02

α-Humulene	9.57	1613.2	0.56	10.89	1445.6	0.56
Germacrene D	10.06	1653.2	0.27	11.27	1473.6	0.27
β-Selinene	10.16	1660.7	0.04	11.33	1477.9	0.04
α-Selinene	10.23*	1666.5	[0.03]	11.48*	1488.8	[0.14]
Bicyclogermacrene	10.34	1675.4	0.10	11.48*	1488.8	[0.14]
γ-Cadinene	10.66	1701.3	0.01	11.72	1507.4	0.01
δ-Cadinene	10.70	1704.8	0.01	11.85	1517.6	0.01
Germacrene B	11.40*	1763.6	[0.02]	12.23	1547.3	0.02
Spathulenol	14.64	2057.7	0.03	12.51	1569.0	0.02
Caryophyllene oxide	13.04	1907.6	0.02	12.55	1572.4	0.02
Humulene epoxide II	13.63	1961.7	0.02	12.88	1598.0	0.02
Isospathulenol	15.67*	2159.1	[0.02]	13.27	1630.4	0.03
Neointermedeol	15.86	2178.4	tr	13.45	1645.3	0.01
meta-Camphorene	15.67*	2159.1	[0.02]	16.87	1946.5	0.01
Total reported		99.59%			99.89%	

*: 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