PhytoChemia

Date : 2026-11-09

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26J06-PTH01
Customer Identification : Tea Tree (Melaleuca) - Australia - T20117
Type : Essential Oil
Source : *Melaleuca alternifolia ct. Terpinen-4-ol (Tea Tree)*
Customer : Plant Therapy

Checked and approved by:

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

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 from the first version issued on 2026-10-07 to correct the customer identification.

Méthode certifiée ISO 17025:2017 Certified Method

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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 : Jean-Christophe Fortin, M. Sc.
Date : 2026-10-07

Physicochemical data

Physical aspect : Clear liquid
Analyst : Cindy Caron B. Sc.
Date : 2026-10-07

Refractive index : 1.4774 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-10-07

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	0.27	Aliphatic alcohol
Isobutyral	0.03	Aliphatic aldehyde
Ethyl acetate	tr	Aliphatic ester
Isobutanol	tr	Aliphatic alcohol
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	0.02	Aliphatic aldehyde
Isoamyl alcohol	0.01	Aliphatic alcohol
2-Methylbutanol	tr	Aliphatic alcohol
(3*Z*)-Hexenol	0.06	Aliphatic alcohol
Hexanol	tr	Aliphatic alcohol
α-Thujene	0.80	Monoterpene
α-Pinene	2.29	Monoterpene
Camphene	0.01	Monoterpene
α-Fenchene	tr	Monoterpene
Sabinene	0.12	Monoterpene
β-Pinene	0.67	Monoterpene
3-Methyl-3-cyclohexenone	0.01	Aliphatic ketone
Myrcene	0.76	Monoterpene
α-Phellandrene	0.42	Monoterpene
Pseudolimonene	0.01	Monoterpene
(3*Z*)-Hexenyl acetate	0.01	Aliphatic ester
α-Terpinene	8.74	Monoterpene
Carvomenthene	0.01	Aliphatic alcohol
para-Cymene	3.08	Monoterpene
1,8-Cineole	2.82	Monoterpenic ether
Limonene	0.82	Monoterpene
(*E*)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	19.57	Monoterpene
cis-Sabinene hydrate	0.03	Monoterpenic alcohol
Terpinolene	3.22	Monoterpene
para-Cymenene	0.07	Monoterpene
trans-Sabinene hydrate	0.04	Monoterpenic alcohol
Linalool	0.07	Monoterpenic alcohol
end*o*-Fenchol	0.02	Monoterpenic alcohol
cis-*para*-Menth-2-en-1-ol	0.17	Monoterpenic alcohol
Cosmene isomer I	0.02	Monoterpene

1-Terpineol	0.02	Monoterpenic alcohol
trans-Pinocarveol	0.01	Monoterpenic alcohol
trans-*para*-Menth-2-en-1-ol	0.15	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Unknown	0.02	Unknown
δ-Terpineol	0.01	Monoterpenic alcohol
Terpinen-4-ol	43.95	Monoterpenic alcohol
para-Cymen-8-ol	0.06	Monoterpenic alcohol
Dill ether	0.01	Monoterpenic ether
α-Terpineol	3.15	Monoterpenic alcohol
cis-Piperitol	0.05	Monoterpenic alcohol
trans-Piperitol	0.12	Monoterpenic alcohol
ex*o*-2-Hydroxycineole	0.02	Monoterpenic alcohol
Nerol	0.03	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Piperitone	0.05	Monoterpenic ketone
cis-Carvenone oxide?	0.01	Monoterpenic ketone
trans-Ascaridole glycol	0.09	Monoterpenic alcohol
cis-Ascaridole glycol	0.06	Monoterpenic alcohol
Thymol	0.03	Monoterpenic alcohol
Carvacrol	0.02	Monoterpenic alcohol
Unknown	0.10	Monoterpenic alcohol
Bicycloelemene	0.01	Sesquiterpene
α-Cubebene	0.08	Sesquiterpene
Unknown	0.02	Unknown
Isoledene	0.06	Sesquiterpene
α-Copaene	0.08	Sesquiterpene
7-Cubebene	0.04	Sesquiterpene
7-Cubebene epimer?	0.01	Aliphatic alcohol
β-Cubebene	0.02	Sesquiterpene
β-Elemene	0.02	Sesquiterpene
α-Gurjunene	0.27	Sesquiterpene
Methyleugenol	0.03	Phenylpropanoid
β-Maaliene	0.01	Sesquiterpene
β-Caryophyllene	0.28	Sesquiterpene
γ-Maaliene	0.06	Sesquiterpene
β-Gurjunene	0.02	Sesquiterpene
α-Maaliene	0.06	Sesquiterpene
Aromadendrene	0.79	Sesquiterpene
Selina-5,11-diene	0.12	Sesquiterpene
Cadina-3,5-diene isomer I?	0.11	Sesquiterpene

trans-Muurola-3,5-diene	0.09	Sesquiterpene
α-Humulene	0.09	Sesquiterpene
all*o*-Aromadendrene	0.44	Sesquiterpene
Valerena-4,7(11)-diene	0.03	Sesquiterpene
γ-Gurjunene	0.04	Sesquiterpene
trans-Cadina-1(6),4-diene	0.21	Sesquiterpene
Selina-4,11-diene	0.02	Sesquiterpene
γ-Muurolene	0.03	Sesquiterpene
β-Selinene	0.08	Sesquiterpene
all*o*-Aromadendr-9-ene	0.08	Sesquiterpene
trans-Muurola-4(15),5-diene	0.06	Sesquiterpene
δ-Selinene	0.09	Sesquiterpene
Bicyclogermacrene	0.44	Sesquiterpene
α-Selinene	0.03	Sesquiterpene
Viridiflorene	0.79	Sesquiterpene
Epizonarene	0.05	Sesquiterpene
α-Muurolene	0.11	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
trans-Calamenene	0.09	Sesquiterpene
Zonarene	0.20	Sesquiterpene
δ-Cadinene	0.90	Sesquiterpene
trans-Cadina-1,4-diene	0.14	Sesquiterpene
α-Calacorene	0.02	Sesquiterpene
Epiglobulol	0.05	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Eudesma-5,7(11)-diene	0.02	Sesquiterpene
Maaliol	0.03	Sesquiterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene
Spathulenol	0.07	Sesquiterpenic alcohol
Globulol	0.22	Sesquiterpenic alcohol
Gleenol	0.02	Sesquiterpenic alcohol
Viridiflorol	0.12	Sesquiterpenic alcohol
Cubeban-11-ol	0.09	Sesquiterpenic alcohol
Ledol	0.03	Sesquiterpenic alcohol
Eudes*m*-5-en-11-ol analog	0.06	Sesquiterpenic alcohol
Rosifoliol	0.08	Sesquiterpenic alcohol
1-epi-Cubenol	0.12	Sesquiterpenic alcohol
Isospathulenol	0.07	Sesquiterpenic alcohol
Cubenol	0.08	Sesquiterpenic alcohol
α-Muurolol	0.02	Sesquiterpenic alcohol
α-Cadinol	tr	Sesquiterpenic alcohol

Methyl eudesmate	0.01	Phenolic ester
Consolidated total	99.44	

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

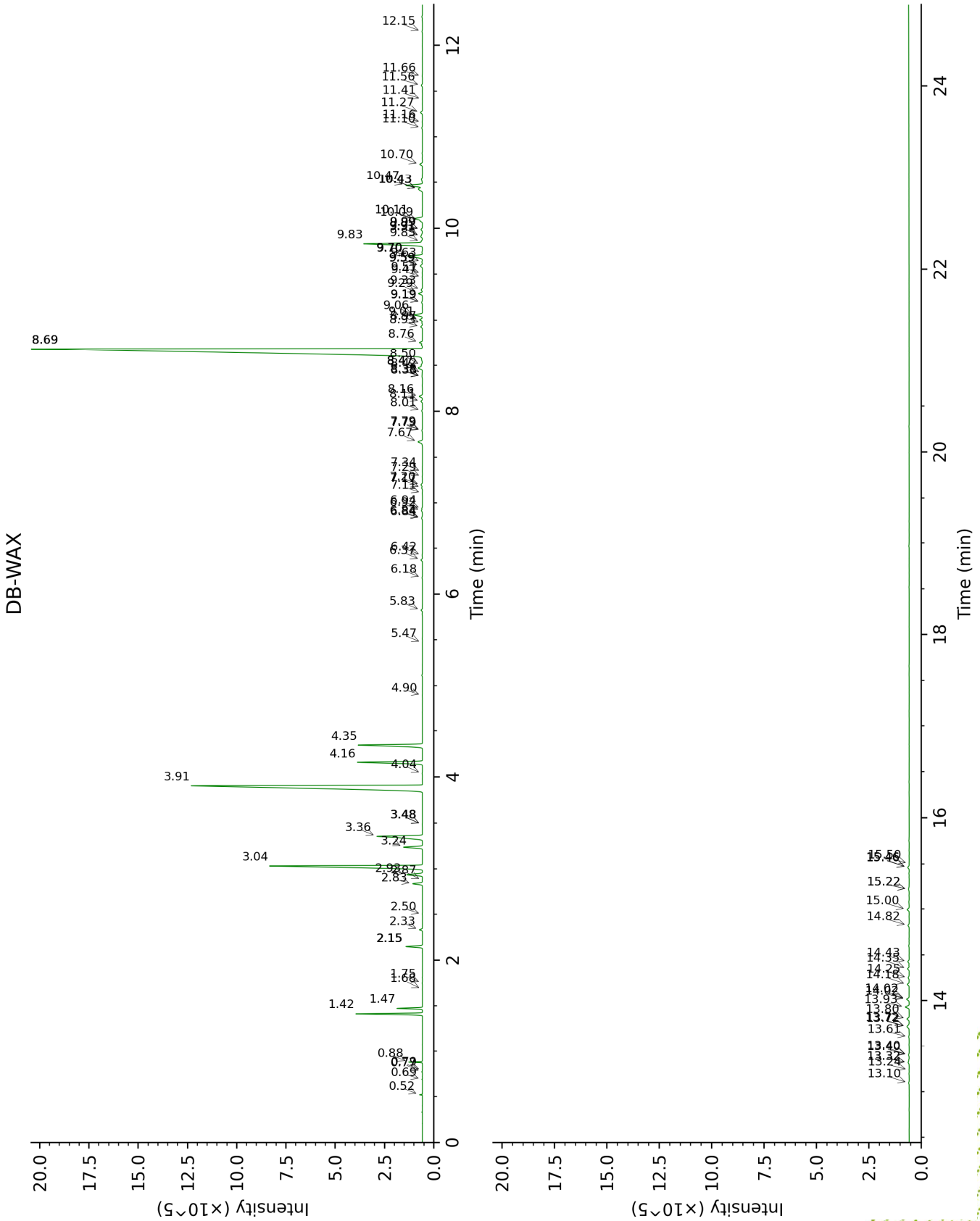
Note: no correction factor was applied

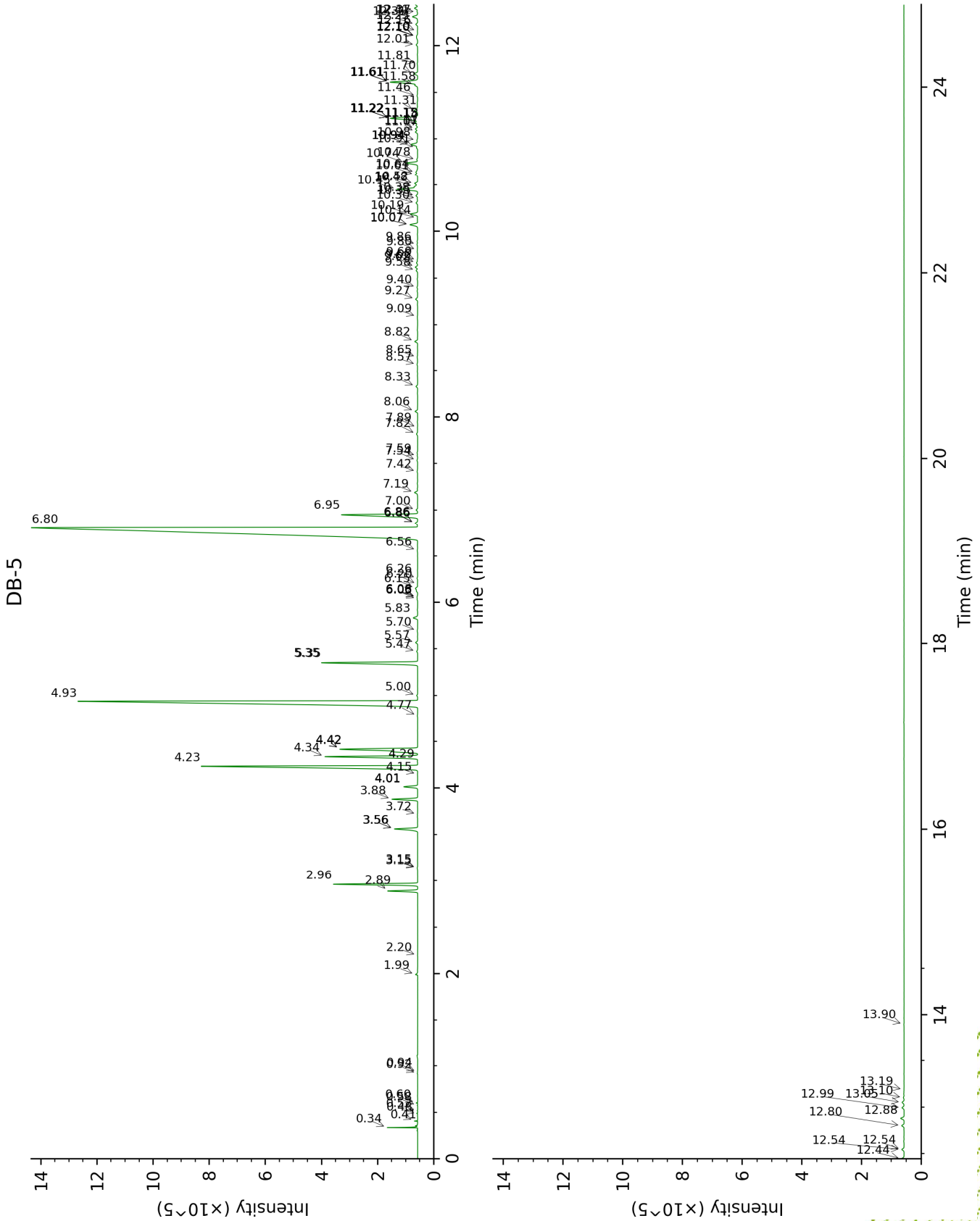
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

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DB-WAX
Time (min)
Intensity (×10^5)
12.15
11.66
11.56
11.41
11.27
10.70
9.83
8.69
8.76
8.50
8.16
8.01
7.79
7.67
6.42
6.18
5.83
5.47
4.90
4.35
4.16
4.04
3.91
3.48
3.36
3.24
3.04
2.93
2.87
2.83
2.50
2.33
2.15
1.75
1.68
1.47
1.42
0.88
0.79
0.69
0.52
15.46
15.22
15.00
14.82
13.93
13.80
13.72
13.61
13.24
13.10


DB-5
Time (min)
Intensity (×10^5)
6.80
6.95
5.35
4.93
4.42
4.34
4.23
4.29
4.15
4.01
3.88
3.72
3.56
3.15
2.96
2.89
2.20
1.99
0.34
0.41
13.90
13.19
13.10
13.05
12.99
12.88
12.80
12.54
12.54
12.44

Full analysis data

Ethanol	Column DB-WAX			Column DB-5		
	0.88	907.7	0.29	0.34	506.2	0.27
Isobutyral	0.52	782.1	0.05	0.41	540.3	0.03
Ethyl acetate	0.69	852.0	0.01	0.48	606.9	tr
Isobutanol	2.15*	1065.6	[0.66]	0.52	621.6	tr
Isovaleral	0.79	886.9	tr	0.58	643.1	0.01
2-Methylbutyral	0.77	880.5	0.01	0.60	653.2	0.02
Isoamyl alcohol	3.48*	1177.1	[0.01]	0.92	732.4	0.01
2-Methylbutanol	3.48*	1177.1	[0.01]	0.94	735.2	tr
(3*Z*)-Hexenol	5.82	1347.0	0.06	1.99	855.2	0.06
Hexanol	5.47	1321.6	tr	2.20	872.9	tr
α-Thujene	1.47	999.7	0.80	2.89	926.2	0.80
α-Pinene	1.42	991.7	2.28	2.96	931.2	2.29
Camphene	1.75	1026.7	0.01	3.15*	943.4	[0.01]
α-Fenchene	1.68	1020.0	tr	3.15*	943.4	[0.01]
Sabinene	2.33	1083.5	0.12	3.56*	971.5	[0.78]
β-Pinene	2.15*	1065.6	[0.66]	3.56*	971.5	[0.78]
3-Methyl-3-cyclohexenone	6.18	1372.3	0.02	3.72	982.1	0.01
Myrcene	2.93	1133.5	0.76	3.88	993.0	0.76
α-Phellandrene	2.83	1125.7	0.42	4.02*	1002.1	[0.43]
Pseudolimonene	2.87	1128.7	0.01	4.02*	1002.1	[0.43]
(3*Z*)-Hexenyl acetate	4.90	1283.0	0.01	4.15	1010.6	0.01
α-Terpinene	3.04	1141.5	8.70	4.23	1016.1	8.74
Carvomenthene	2.50	1099.5	0.01	4.29	1019.5	0.01
para-Cymene	4.16	1228.5	3.08	4.34	1022.7	3.08
1,8-Cineole	3.36	1166.9	2.82	4.42*	1027.7	[3.63]
Limonene	3.24	1157.6	0.82	4.42*	1027.7	[3.63]
(*E*)-β-Ocimene	4.04	1219.4	0.02	4.77	1050.4	0.02
γ-Terpinene	3.91	1209.6	19.47	4.93	1060.3	19.57
cis-Sabinene hydrate	6.94	1428.0	0.03	5.00	1064.7	0.03
Terpinolene	4.35	1242.3	3.22	5.35*	1087.3	[3.31]
para-Cymenene	6.37	1386.2	0.07	5.35*	1087.3	[3.31]
trans-Sabinene hydrate	8.01	1507.3	0.04	5.47	1095.0	0.04
Linalool	8.11	1515.2	0.08	5.57	1101.1	0.07
end*o*-Fenchol	8.42	1539.1	0.02	5.70	1109.3	0.02

cis-para-Menth-2-en-1-ol	8.16	1519.5	0.17	5.83	1118.2	0.17
Cosmene isomer I	6.42	1390.0	0.02	6.03	1131.2	0.02
1-Terpineol	8.38*	1536.2	[0.03]	6.06*	1132.8	[0.03]
trans-Pinocarveol	9.19*	1599.2	[0.05]	6.06*	1132.8	[0.03]
trans-para-Menth-2-en-1-ol	9.01	1584.6	0.14	6.15†	1138.8	0.10
Unknown PLOR I [m/z 109, 43 (73), 71 (54), 124 (51), 69 (37), 41 (35)...152 (5)]				6.20	1141.7	0.01
Unknown MEAL II [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.84*	1420.2	[0.06]	6.26	1145.8	0.02
δ-Terpineol	9.51	1624.9	0.02	6.56	1165.4	0.01
Terpinen-4-ol	8.69*	1559.9	[44.81]	6.80	1181.3	43.95
para-Cymen-8-ol	11.56	1795.4	0.06	6.86*	1184.7	[0.10]
Dill ether	7.34	1457.5	0.01	6.86*	1184.7	[0.10]
α-Terpineol	9.83	1650.8	3.15	6.95	1190.8	3.15
cis-Piperitol	9.59*	1631.3	[0.12]	7.00	1194.1	0.05
trans-Piperitol	10.43*	1699.0	[0.31]	7.19	1206.4	0.12
ex*o*-2-Hydroxycineole	11.66	1804.2	0.02	7.42	1221.8	0.02
Nerol	11.10	1756.0	0.04	7.54	1230.0	0.03
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	11.41	1782.6	0.01	7.59	1233.4	0.01
Piperitone	9.99*	1663.2	[0.08]	7.82	1249.4	0.05
cis-Carvenone oxide?				7.89	1254.0	0.01
trans-Ascaridole glycol	14.18	2033.8	0.10	8.06	1266.1	0.09
cis-Ascaridole glycol	14.82	2095.8	0.06	8.33	1284.4	0.06
Thymol	15.22*	2135.1	[0.05]	8.57	1300.5	0.03
Carvacrol	15.46*	2159.8	[0.08]	8.65	1306.0	0.02

Unknown MEAL I [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]	15.00	2113.1	0.11	8.82	1315.2	0.10
Bicycloelemene	7.11	1440.3	0.02	9.09	1334.1	0.01
α-Cubebene	6.84*	1420.2	[0.06]	9.27	1347.4	0.08
Unknown EUGL I [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	14.02*	2018.3	[0.14]	9.40	1356.5	0.02
Isoledene	6.92	1426.3	0.06	9.58	1369.2	0.06
α-Copaene	7.20	1447.1	0.08	9.62	1371.8	0.08
7-Cubebene	7.17	1444.6	0.04	9.66	1375.1	0.04
7-Cubebene epimer?	7.29	1453.6	0.02	9.69	1377.2	0.01
β-Cubebene	7.79*	1490.9	[0.04]	9.80	1384.9	0.02
β-Elemene	8.48*	1543.5	[0.28]	9.86	1389.1	0.02
α-Gurjunene	7.67	1481.8	0.27	10.07*	1404.2	[0.30]
Methyleugenol	13.40*	1960.6	[0.04]	10.07*	1404.2	[0.30]
β-Maaliene	7.79*	1490.9	[0.04]	10.14	1409.6	0.01
β-Caryophyllene	8.48*	1543.5	[0.28]	10.19	1412.7	0.28
γ-Maaliene	8.50	1545.7	0.07	10.30	1421.7	0.06
β-Gurjunene	8.38*	1536.2	[0.03]	10.35	1425.1	0.02
α-Maaliene	8.69*	1559.9	[44.81]	10.38	1427.6	0.06
Aromadendrene	8.69*	1559.9	[44.81]	10.45	1432.8	0.79
Selina-5,11-diene	8.76	1565.4	0.13	10.48	1434.7	0.12
Cadina-3,5-diene isomer I?				10.52	1437.5	0.11
trans-Muurola-3,5-diene	8.93	1578.7	0.08	10.61	1444.8	0.09
α-Humulene	9.33	1610.4	0.07	10.64	1446.9	0.09
all*o*-Aromadendrene	9.06	1588.6	0.43	10.74	1454.4	0.44
Valerena-4,7(11)-diene	8.97	1582.0	0.03	10.78	1457.3	0.03
γ-Gurjunene	9.19*	1599.2	[0.05]	10.91	1466.9	0.04
trans-Cadina-1(6),4-diene	9.29	1607.1	0.21	10.94*	1469.4	[0.28]
Selina-4,11-diene	9.47	1621.3	0.02	10.94*	1469.4	[0.28]
γ-Muurolene	9.63	1634.6	0.03	10.98	1472.8	0.03
β-Selinene	9.91*	1657.2	[0.13]	11.07	1479.5	0.08

all*o*-Aromadendr-9-ene	9.59*	1631.3	[0.12]	11.11	1482.0	0.08
trans-Muurola-4(15),5-diene	9.85	1652.4	0.05	11.15	1484.9	0.06
δ-Selinene	9.70*	1639.9	[0.87]	11.18	1487.2	0.09
Bicyclogermacrene	10.10	1672.9	0.44	11.22*	1490.6	[1.22]
α-Selinene	9.99*	1663.2	[0.08]	11.22*	1490.6	[1.22]
Viridiflorene	9.70*	1639.9	[0.87]	11.22*	1490.6	[1.22]
Epizonarene	9.91*	1657.2	[0.13]	11.22*	1490.6	[1.22]
α-Muurolene	10.09	1671.4	0.11	11.31	1496.9	0.11
γ-Cadinene	10.43*	1699.0	[0.31]	11.46	1509.0	0.03
trans-Calamenene	11.27	1770.3	0.11	11.58	1517.9	0.09
Zonarene	10.43*	1699.0	[0.31]	11.61*	1520.6	[1.11]
δ-Cadinene	10.47	1702.4	0.90	11.61*	1520.6	[1.11]
trans-Cadina-1,4-diene	10.70	1722.4	0.15	11.70	1527.6	0.14
α-Calacorene	12.15	1847.2	0.03	11.81	1536.4	0.02
Epiglobulol	13.32*	1952.9	[0.06]	12.01	1552.2	0.05
Unknown MEAL III [m/z 161, 109 (98), 82 (93), 43 (72), 105 (68), 93 (59), 69 (56), 119 (55)... 222 (7)]	13.32*	1952.9	[0.06]	12.10*	1559.3	[0.09]
Eudesma-5,7(11)-diene	11.16	1761.4	0.02	12.10*	1559.3	[0.09]
Maaliol	13.10	1932.4	0.03	12.10*	1559.3	[0.09]
Unknown MEAL IV [m/z 107, 163 (88), 59 (60), 93 (49), 43 (47), 81 (46... 204 (5)...]	13.24	1945.5	0.01	12.16	1563.8	0.01
Spathulenol	14.43	2057.6	0.07	12.23	1569.6	0.07
Globulol	13.93	2010.2	0.21	12.31	1576.1	0.22
Gleenol	13.61	1979.3	0.02	12.37	1580.8	0.02
Viridiflorol	14.02*	2018.3	[0.14]	12.41	1583.3	0.12
Cubeban-11-ol	13.72*	1989.8	[0.16]	12.44	1586.4	0.09
Ledol	13.40*	1960.6	[0.04]	12.54*	1594.3	[0.08]
Eudes*m*-5-en-11-ol analog	14.25	2040.7	0.06	12.54*	1594.3	[0.08]
Rosifoliol	14.35	2050.1	0.09	12.80	1615.1	0.08

1-epi-Cubenol	13.80	1997.6	0.13	12.88	1621.6	0.12
Isospathulenol	15.46*	2159.8	[0.08]	12.99	1631.1	0.07
Cubenol	13.72*	1989.8	[0.16]	13.05	1635.8	0.08
α-Muurolol	15.22*	2135.1	[0.05]	13.10	1640.2	0.02
α-Cadinol	15.50	2164.0	0.01	13.19	1647.3	tr
Methyl eudesmate				13.90	1706.4	0.01
Total reported		99.09%			99.39%	

*: 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