Date : 2024-04-26

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24D12-PTH04
Customer Identification : Rosalina - Australia - R20110R
Type : Essential Oil
Source : *Melaleuca ericifolia ct. Linalool*
Customer : Plant Therapy

Checked an 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

ISO 17025:2017 CERTIFIED METHOD
MÉTHODE CERTIFIÉE

Laboratoire PhytoChemia

628 Boulevard du Saguenay Ouest, Saguenay (Qc) G7J 1H4 | www.phytochemia.com

Essential Oil, *Melaleuca ericifolia ct. Linalool*
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*G*AS *C*HROMATOGRAPHIC *A*NALYSIS

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 : 2024-04-26

*P*HYSICOCHEMICAL *DATA*

Refractive index : 1.4644 ± 0.0003 (20 ℃)

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

Analyst : Cindy Caron B. Sc.

Date : 2024-04-12

*C*ONCLUSION

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
Isoamyl alcohol	0.01	Aliphatic alcohol
(3*Z*)-Hexenol	0.01	Aliphatic alcohol
Hashishene	0.03	Monoterpene
α-Thujene	0.18	Monoterpene
α-Pinene	12.76	Monoterpene
Camphene	0.05	Monoterpene
α-Fenchene	0.02	Monoterpene
Benzaldehyde	0.01	Simple phenolic
Sabinene	0.05	Monoterpene
β-Pinene	0.34	Monoterpene
6-Methyl-5-hepten-2-one	tr	Aliphatic ketone
Myrcene	0.40	Monoterpene
α-Phellandrene	0.19	Monoterpene
Pseudolimonene	0.01	Monoterpene
Δ3-Carene	0.02	Monoterpene
α-Terpinene	0.87	Monoterpene
para-Cymene	1.28	Monoterpene
Limonene	9.13	Monoterpene
1,8-Cineole	21.56	Monoterpenic ether
(*Z*)-β-Ocimene	0.05	Monoterpene
(*E*)-β-Ocimene	0.06	Monoterpene
γ-Terpinene	2.94	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Octanol	0.03	Aliphatic alcohol
trans-Linalool oxide (fur.)	0.14	Monoterpenic alcohol
Terpinolene	0.36	Monoterpene
para-Cymenene	0.02	Monoterpene
Isobutyl tiglate	0.06	Aliphatic ester
Linalool	43.79	Monoterpenic alcohol
end*o*-Fenchol	0.02	Monoterpenic alcohol
cis-para-Menth-2-en-1-ol	0.02	Monoterpenic alcohol
α-Campholenal	0.01	Monoterpenic aldehyde
trans-Pinocarveol	0.01	Monoterpenic alcohol
Camphor	0.02	Monoterpenic ketone
trans-para-Menth-2-en-1-ol	0.02	Monoterpenic alcohol
Unknown	0.02	Unknown
Unknown	0.02	Oxygenated monoterpene
Terpinen-4-ol	4.18	Monoterpenic alcohol
α-Terpineol	0.40	Monoterpenic alcohol

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trans-Piperitol	0.02	Monoterpenic alcohol
α-Cubebene	0.01	Sesquiterpene
α-Copaene	0.01	Sesquiterpene
α-Gurjunene	0.03	Sesquiterpene
β-Caryophyllene	0.03	Sesquiterpene
γ-Maaliene	0.01	Sesquiterpene
Aromadendrene	0.07	Sesquiterpene
Selina-5,11-diene	0.01	Sesquiterpene
trans-Muurola-3,5-diene	0.01	Sesquiterpene
α-Humulene	0.01	Sesquiterpene
allo-Aromadendrene	0.04	Sesquiterpene
Selina-4,11-diene	0.02	Sesquiterpene
β-Selinene	0.01	Sesquiterpene
allo-Aromadendr-9-ene	0.01	Sesquiterpene
δ-Selinene	0.01	Sesquiterpene
Viridiflorene	0.06	Sesquiterpene
Bicyclogermacrene	0.05	Sesquiterpene
α-Muurolene	0.01	Sesquiterpene
δ-Cadinene	0.08	Sesquiterpene
trans-Calamenene	0.01	Sesquiterpene
trans-Cadina-1,4-diene	0.02	Sesquiterpene
Spathulenol	0.01	Sesquiterpenic alcohol
Globulol	0.02	Sesquiterpenic alcohol
Viridiflorol	0.01	Sesquiterpenic alcohol
Cubeban-11-ol	0.01	Sesquiterpenic alcohol
Ledol?	0.01	Oxygenated sesquiterpene
Rosifoliol	0.01	Sesquiterpenic alcohol
1-epi-Cubenol	0.01	Sesquiterpenic alcohol
Cubenol	0.01	Sesquiterpenic alcohol
Consolidated total	**99.78**	

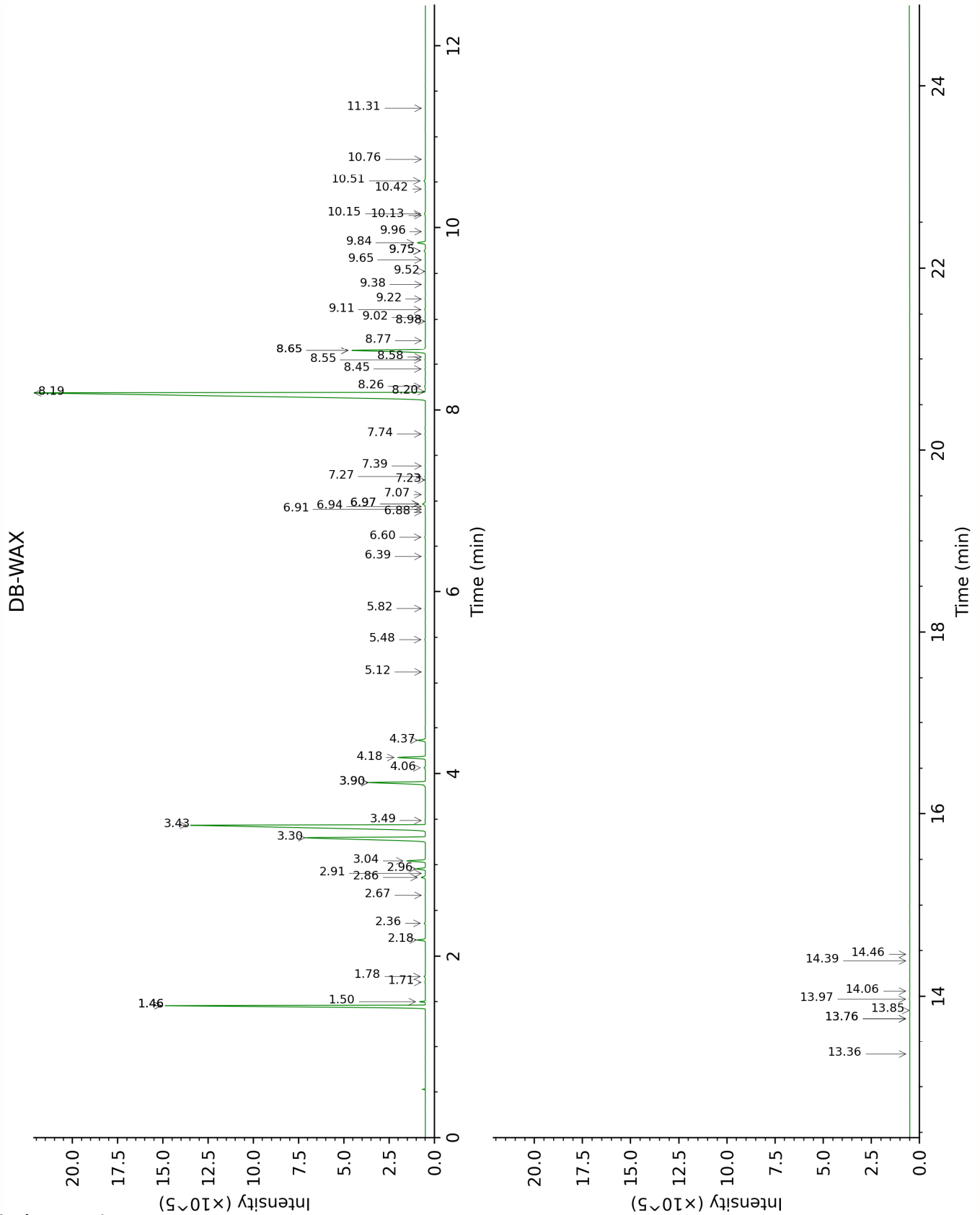tr: The compound has been detected below 0.005% of the total signal
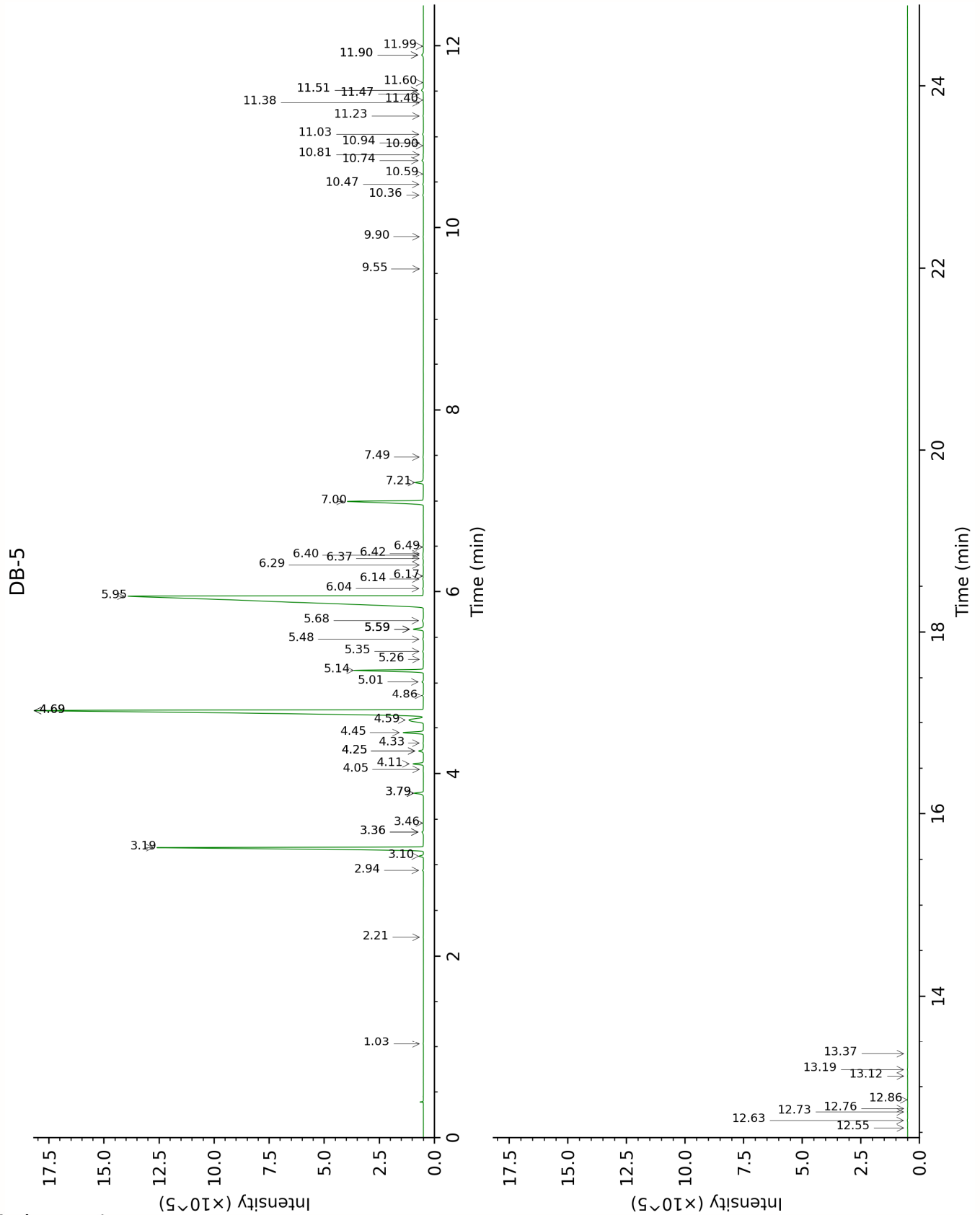
Note: no correction factor was applied

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)

Intensity (×10^5)

Time (min)

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DB-5

Time (min)

Intensity (×10^5)

11.99
11.90
11.60
11.51   11.47
11.38   11.40
11.23
11.03
10.94   10.90
10.81
10.74
10.47   10.59
10.36
9.90
9.55
7.49
7.21
7.00
6.49
6.40   6.37   6.42
6.29
6.14   6.17
6.04
5.95
5.68
5.59
5.48
5.35
5.26
5.14
5.01
4.86
4.69
4.59
4.45
4.25   4.33
4.05   4.11
3.79
3.46
3.36
3.19
3.10
2.94
2.21
1.03

Time (min)

Intensity (×10^5)

13.37
13.19   13.12
12.86
12.73   12.76
12.63
12.55

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FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Isoamyl alcohol						
	3.49	1175.8	0.02	1.03	733.1	0.01
(3*Z*)-Hexenol	5.82	1344.2	0.02	2.21	859.0	0.01
Hashishene	1.46*	997.6	[12.72]	2.94	916.5	0.03
α-Thujene	1.50	1004.1	0.18	3.10	926.8	0.18
α-Pinene	1.46*	997.6	[12.72]	3.19	932.9	12.76
Camphene	1.78	1031.9	0.05	3.36*	944.2	[0.08]
α-Fenchene	1.71	1025.9	0.02	3.36*	944.2	[0.08]
Benzaldehyde	7.39	1459.6	0.02	3.46	950.7	0.01
Sabinene	2.36	1086.5	0.05	3.79*	972.2	[0.38]
β-Pinene	2.18	1069.4	0.34	3.79*	972.2	[0.38]
6-Methyl-5-hepten-2-one	5.12	1294.2	0.01	4.05	989.4	tr
Myrcene	2.96	1135.7	0.41	4.11	993.4	0.40
α-Phellandrene	2.86	1128.7	0.19	4.25*	1002.7	[0.21]
Pseudolimonene	2.91	1131.9	0.01	4.25*	1002.7	[0.21]
Δ3-Carene	2.67	1113.8	0.01	4.34	1008.3	0.02
α-Terpinene	3.04	1142.3	0.87	4.45	1015.5	0.87
para-Cymene	4.18	1226.9	1.29	4.59	1024.1	1.28
Limonene	3.30	1161.5	9.13	4.69*	1030.6	[30.87]
1,8-Cineole	3.43	1171.8	21.56	4.69*	1030.6	[30.87]
(*Z*)-β-Ocimene	3.90*	1207.3	[3.00]	4.86	1041.0	0.05
(*E*)-β-Ocimene	4.06	1218.8	0.06	5.01	1050.7	0.06
γ-Terpinene	3.90*	1207.3	[3.00]	5.14	1058.6	2.94
cis-Sabinene hydrate	6.97*	1428.3	[0.16]	5.26	1066.2	0.01
cis-Linalool oxide (fur.)	6.60	1400.7	0.03	5.35	1071.7	0.03
Octanol	8.26	1526.1	0.04	5.48	1080.0	0.03
trans-Linalool oxide (fur.)	6.97*	1428.3	[0.16]	5.59*	1086.8	[0.50]
Terpinolene	4.37	1240.3	0.36	5.59*	1086.8	[0.50]
para-Cymenene	6.39	1385.4	0.02	5.59*	1086.8	[0.50]
Isobutyl tiglate	5.48	1319.6	0.03	5.68	1092.7	0.06
Linalool	8.19	1520.4	43.66	5.95	1109.6	43.79
end*o*-Fenchol	8.45	1541.0	0.02	6.04	1115.0	0.02
cis-para-Menth-2-en-1-ol	8.20	1521.5	0.02	6.14	1121.6	0.02
α-Campholenal	7.07	1436.1	0.02	6.17	1123.7	0.01
trans-Pinocarveol	9.22	1602.0	0.02	6.29	1131.4	0.01
Camphor	7.27	1450.9	0.02	6.37	1136.0	0.02
trans-para-Menth-2-en-1-ol	9.02	1586.0	0.02	6.40	1138.3	0.02
Unknown MEAL II	6.88	1421.4	0.01	6.42	1139.4	0.02

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[m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)…]						
Unknown CICA III [m/z 109, 41 (49), 124 (41), 43 (31), 95 (28), 84 (22)… 152 (7)]	6.91	1424.0	0.01	6.49	1143.9	0.02
Terpinen-4-ol	8.65*	1557.1	[4.26]	7.00	1176.4	4.18
α-Terpineol	9.84	1652.6	0.41	7.21	1189.6	0.40
trans-Piperitol	10.42	1701.4	0.01	7.48	1207.5	0.02
α-Cubebene	6.94	1426.2	0.01	9.55	1347.8	0.01
α-Copaene	7.23	1448.1	tr	9.90	1372.6	0.01
α-Gurjunene	7.74	1485.9	0.03	10.36	1404.6	0.03
β-Caryophyllene	8.55	1548.9	0.03	10.47	1413.3	0.03
γ-Maaliene	8.58	1551.4	0.01	10.59	1422.3	0.01
Aromadendrene	8.65*	1557.1	[4.26]	10.74	1433.3	0.07
Selina-5,11-diene	8.77	1566.1	0.01	10.81	1438.0	0.01
trans-Muurola-3,5-diene	8.98	1582.8	0.01	10.90	1445.4	0.01
α-Humulene	9.38	1614.8	0.01	10.94	1447.7	0.01
allo-Aromadendrene	9.11	1592.9	0.04	11.03	1454.7	0.04
Selina-4,11-diene	9.52	1626.6	0.02	11.23	1469.6	0.02
β-Selinene	9.96	1662.7	0.01	11.38	1480.4	0.01
allo-Aromadendr-9-ene	9.65	1637.0	0.01	11.40	1482.7	0.01
δ-Selinene	9.75*	1645.1	[0.07]	11.47	1487.6	0.01
Viridiflorene	9.75*	1645.1	[0.07]	11.51*	1490.6	[0.12]
Bicyclogermacrene	10.15	1678.9	0.05	11.51*	1490.6	[0.12]
α-Muurolene	10.13	1677.4	0.01	11.60	1496.9	0.01
δ-Cadinene	10.51	1708.8	0.08	11.90*	1520.1	[0.11]
trans-Calamenene	11.32	1769.0	0.01	11.90*	1520.1	[0.11]
trans-Cadina-1,4-diene	10.76	1729.9	0.01	12.00	1527.7	0.02
Spathulenol	14.46	2062.2	0.01	12.55	1571.2	0.01
Globulol	13.97	2013.8	0.03	12.63	1577.6	0.02
Viridiflorol	14.06	2022.5	0.01	12.73	1585.0	0.01
Cubeban-11-ol	13.76*	1993.4	[0.02]	12.76	1587.9	0.01
Ledol?	13.36	1956.0	0.01	12.86	1595.5	0.01
Rosifoliol	14.39	2055.1	0.01	13.12	1616.4	0.01
1-epi-Cubenol	13.85	2002.0	0.01	13.19	1622.3	0.01
Cubenol	13.76*	1993.4	[0.02]	13.36	1636.7	0.01
Total reported		99.63%			99.96%	

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*: 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

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