Date : 2024-04-11

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 24C26-PTH03
Customer Identification : Ravintsara - Madagascar - RG0106R
Type : Essential Oil
Source : *Cinnamomum camphora*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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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 : 2024-04-10

Physicochemical data

Refractive index : 1.4655 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2024-03-26

Conclusion

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

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Analysis Summary - Consolidated Contents

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

Identification	%	Class
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
Isoamyl alcohol	0.01	Aliphatic alcohol
2-Methylbutanol	0.01	Aliphatic alcohol
(3*Z*)-Hexenol	0.01	Aliphatic alcohol
Hashishene	tr	Monoterpene
Tricyclene	0.01	Monoterpene
α-Thujene	0.86	Monoterpene
α-Pinene	4.74	Monoterpene
α-Fenchene	0.02	Monoterpene
Camphene	0.16	Monoterpene
β-Pinene	3.39	Monoterpene
Sabinene	11.16	Monoterpene
6-Methyl-5-hepten-2-one	tr	Aliphatic ketone
Dehydro-1,8-cineole	0.02	Monoterpenic ether
Myrcene	1.43	Monoterpene
α-Phellandrene	0.09	Monoterpene
α-Terpinene	0.97	Monoterpene
para-Cymene	0.10	Monoterpene
1,8-Cineole	55.99	Monoterpenic ether
Limonene	0.77	Monoterpene
(*Z*)-β-Ocimene	0.06	Monoterpene
(*E*)-β-Ocimene	0.27	Monoterpene
γ-Terpinene	1.53	Monoterpene
cis-Sabinene hydrate	0.98	Monoterpenic alcohol
Terpinolene	0.40	Monoterpene
trans-Sabinene hydrate	0.83	Monoterpenic alcohol
Linalool	0.05	Monoterpenic alcohol
endo-Fenchol	0.01	Monoterpenic alcohol
cis-para-Menth-2-en-1-ol	0.12	Monoterpenic alcohol
cis-para-Mentha-2,8-dien-1-ol	0.01	Monoterpenic alcohol
trans-Limonene oxide	0.01	Monoterpenic ether
trans-para-Menth-2-en-1-ol	0.09	Monoterpenic alcohol
Unknown	0.01	Unknown
Borneol	0.10	Monoterpenic alcohol
δ-Terpineol	0.69	Monoterpenic alcohol
Terpinen-4-ol	2.72	Monoterpenic alcohol
Cryptone	0.01	Normonoterpenic ketone
α-Terpineol	8.33	Monoterpenic alcohol
cis-Piperitol	0.06	Monoterpenic alcohol

trans-Piperitol	0.05	Monoterpenic alcohol
5-Oxolinalool	0.01	Monoterpenic alcohol
Nerol	0.08	Monoterpenic alcohol
Citronellol	0.01	Monoterpenic alcohol
Carvone	0.01	Monoterpenic ketone
trans-Ascaridole glycol	0.01	Monoterpenic alcohol
cis-Ascaridole glycol	0.04	Monoterpenic alcohol
δ-Elemene isomer	0.02	Sesquiterpene
α-Cubebene	0.02	Sesquiterpene
Eugenol	0.03	Phenylpropanoid
α-Ylangene	0.02	Sesquiterpene
α-Copaene	0.01	Sesquiterpene
β-Bourbonene	0.01	Sesquiterpene
Methyleugenol	0.02	Phenylpropanoid
β-Caryophyllene	0.53	Sesquiterpene
Aromadendrene	0.04	Sesquiterpene
6,9-Guaiadiene	0.02	Sesquiterpene
α-Humulene	0.72	Sesquiterpene
Germacrene D	0.26	Sesquiterpene
β-Selinene	0.16	Sesquiterpene
Viridiflorene	0.03	Sesquiterpene
Bicyclogermacrene	0.30	Sesquiterpene
α-Selinene	0.15	Sesquiterpene
Germacrene A	0.03	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
δ-Cadinene	0.04	Sesquiterpene
Germacrene B	0.08	Sesquiterpene
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.03	Sesquiterpenic ether
Globulol	0.02	Sesquiterpenic alcohol
Viridiflorol	0.05	Sesquiterpenic alcohol
Guaiol	0.03	Sesquiterpenic alcohol
Humulene epoxide II	0.03	Sesquiterpenic ether
Isospathulenol	0.02	Sesquiterpenic alcohol
Neointermedeol	0.02	Sesquiterpenic alcohol
Consolidated total	**98.97**	

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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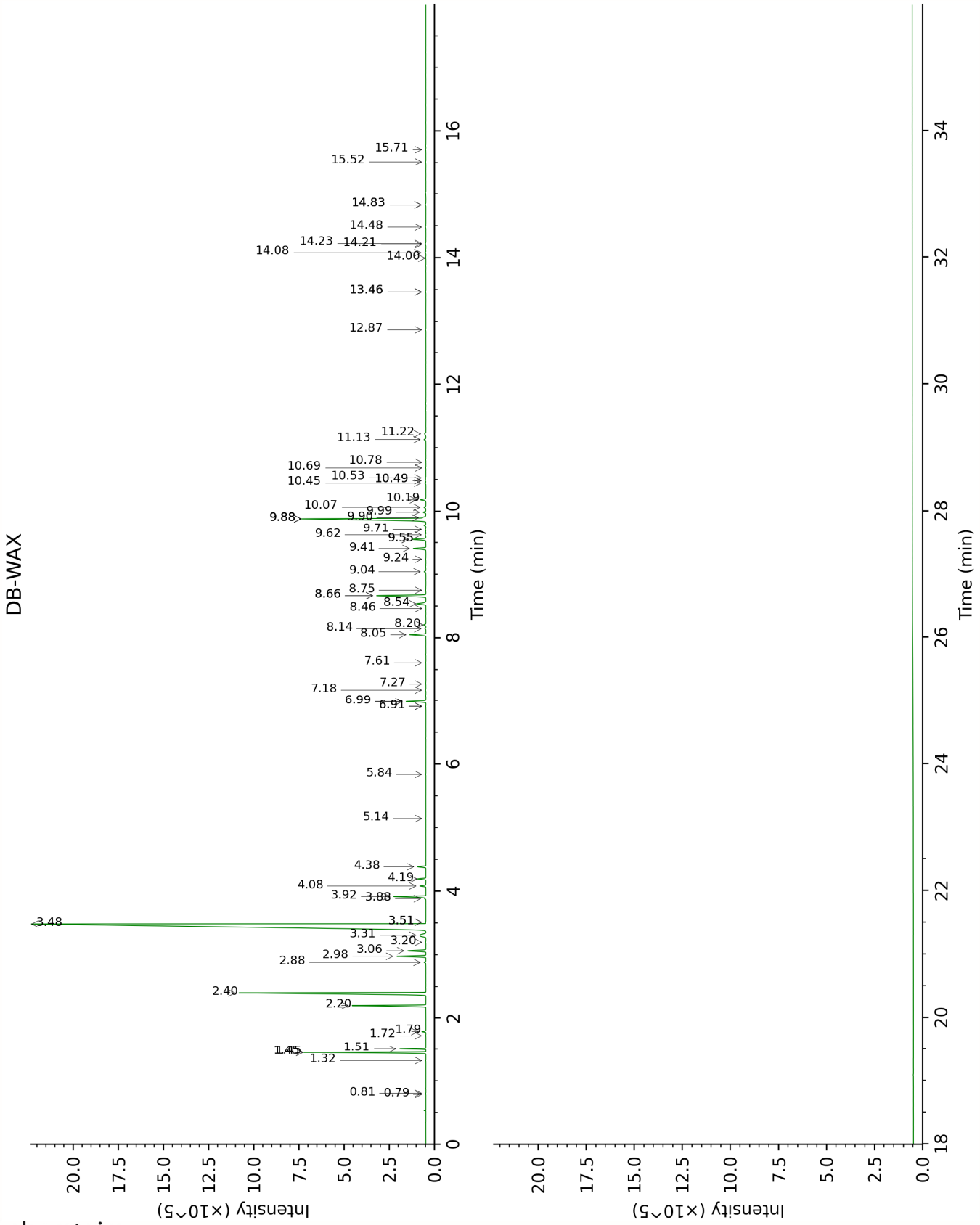
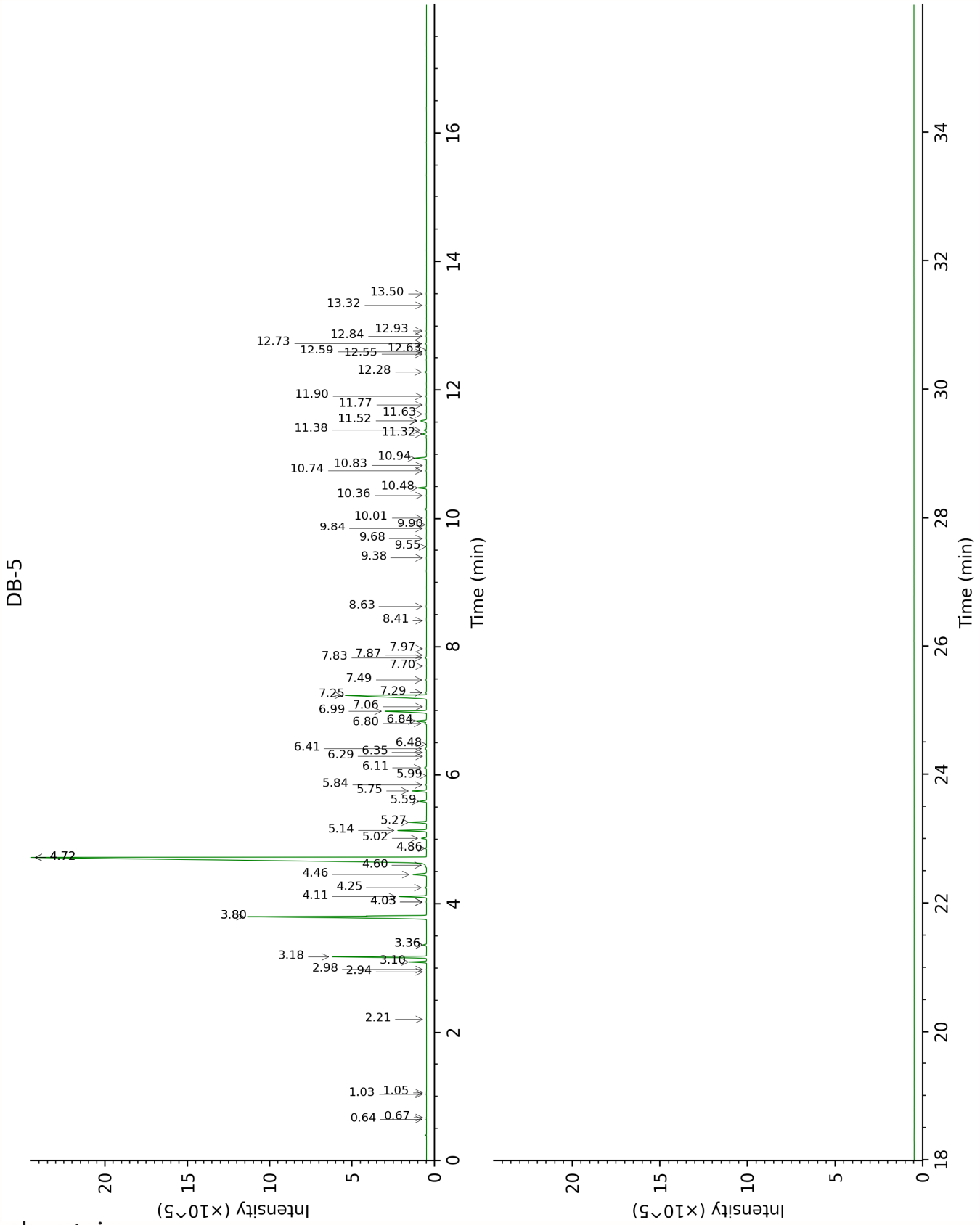

DB-WAX
Time (min)
Intensity (×10^5)
15.71
15.52
14.83
14.48
14.23
14.21
14.08
14.00
13.46
12.87
11.13
11.22
10.78
10.69
10.53
10.49
10.45
10.19
10.07
9.99
9.90
9.88
9.71
9.62
9.55
9.41
9.24
9.04
8.75
8.66
8.54
8.46
8.20
8.14
8.05
7.61
7.27
7.18
6.99
6.91
5.84
5.14
4.38
4.19
4.08
3.92
3.88
3.51
3.48
3.31
3.20
3.06
2.98
2.88
2.40
2.20
1.79
1.72
1.51
1.45
1.32
0.81
0.79


DB-5
Intensity (×10^5)
Time (min)
4.72
3.80
4.60
4.46
4.25
4.11
4.03
3.36
3.18
3.10
2.98
2.94
2.21
13.50
13.32
12.93
12.84
12.73
12.63
12.59
12.55
12.28
11.90
11.77
11.63
11.52
11.38
11.32
10.94
10.83
10.74
10.48
10.36
10.01
9.90
9.84
9.68
9.55
9.38
8.63
8.41
7.97
7.87
7.83
7.70
7.49
7.29
7.25
7.06
6.99
6.84
6.80
6.48
6.41
6.35
6.29
6.11
5.99
5.84
5.75
5.59
5.27
5.14
5.02
4.86
1.05
1.03
0.67
0.64

FULL ANALYSIS DATA

Isovaleral	Column DB-WAX			Column DB-5		
	0.81	884.4	0.01	0.64	640.8	0.01
2-Methylbutyral	0.79	878.6	tr	0.67	650.9	tr
Isoamyl alcohol	3.51*	1175.5	[0.02]	1.03	732.7	0.01
2-Methylbutanol	3.51*	1175.5	[0.02]	1.05	735.9	0.01
(3*Z*)-Hexenol	5.84	1343.7	0.02	2.21	858.5	0.01
Hashishene	1.45*	994.3	[4.73]	2.94	916.3	tr
Tricyclene	1.32	974.7	0.01	2.98	918.8	0.01
α-Thujene	1.51	1002.6	0.86	3.10	926.4	0.86
α-Pinene	1.45*	994.3	[4.73]	3.18	931.7	4.74
α-Fenchene	1.72	1024.1	0.02	3.36*	943.8	[0.18]
Camphene	1.79	1030.3	0.16	3.36*	943.8	[0.18]
β-Pinene	2.20	1068.9	3.39	3.80*	972.6	[14.57]
Sabinene	2.40	1087.6	11.16	3.80*	972.6	[14.57]
6-Methyl-5-hepten-2-one	5.14	1293.6	tr	4.03*	987.7	[0.03]
Dehydro-1,8-cineole	3.20	1151.6	0.02	4.03*	987.7	[0.03]
Myrcene	2.98	1134.8	1.44	4.11	993.3	1.43
α-Phellandrene	2.88	1127.6	0.09	4.25	1002.4	0.09
α-Terpinene	3.06	1141.4	0.98	4.46	1015.3	0.97
para-Cymene	4.19	1225.8	0.39	4.60	1024.3	0.10
1,8-Cineole	3.48	1173.3	55.99	4.72*	1031.9	[57.26]
Limonene	3.31	1160.0	0.77	4.72*	1031.9	[57.26]
(*Z*)-β-Ocimene	3.88	1203.7	0.05	4.86	1040.7	0.06
(*E*)-β-Ocimene	4.08	1217.9	0.28	5.02	1050.4	0.27
γ-Terpinene	3.92	1206.1	1.54	5.14	1058.0	1.53
cis-Sabinene hydrate	6.99*	1427.5	[0.99]	5.27	1066.0	0.98
Terpinolene	4.38	1239.5	0.39	5.59	1086.3	0.40
trans-Sabinene hydrate	8.05	1507.1	0.83	5.75	1096.4	0.83
Linalool	8.14	1514.5	0.05	5.84	1102.2	0.05
endo-Fenchol	8.46	1539.5	tr	5.99	1111.4	0.01
cis-para-Menth-2-en-1-ol	8.20	1519.2	0.12	6.11	1119.1	0.12
cis-para-Mentha-2,8-dien-1-ol	9.55*	1626.1	[0.72]	6.29	1130.5	0.01
trans-Limonene oxide				6.35	1134.3	0.01
trans-para-Menth-2-en-1-ol	9.04	1585.1	0.09	6.41	1138.0	0.09
Unknown MEAL II [m/z 109, 124 (45),	6.91*	1421.7	[0.01]	6.48	1142.5	0.01

119 (41), 43 (35), 91 (28), 95 (25)...]						
Borneol	9.88*	1653.7	[8.56]	6.80	1163.1	0.10
δ-Terpineol	9.55*	1626.1	[0.72]	6.84	1165.4	0.69
Terpinen-4-ol	8.66*	1555.4	[2.76]	6.99	1175.1	2.72
Cryptone	9.24	1600.6	0.02	7.06	1179.6	0.01
α-Terpineol	9.88*	1653.7	[8.56]	7.25	1191.6	8.33
cis-Piperitol	9.62	1632.0	0.04	7.29	1194.2	0.06
trans-Piperitol	10.45	1700.3	0.05	7.49	1206.9	0.05
5-Oxolinalool	10.69	1720.6	0.02	7.70	1221.3	0.01
Nerol	11.22	1757.2	0.08	7.83	1229.8	0.08
Citronellol	10.78	1728.3	tr	7.87	1232.7	0.01
Carvone	10.07	1668.7	0.12	7.97	1239.5	0.01
trans-Ascaridole glycol	14.23	2034.7	0.03	8.41	1268.4	0.01
cis-Ascaridole glycol	14.83*	2093.9	[0.05]	8.63	1283.1	0.04
δ-Elemene isomer	6.99*	1427.5	[0.99]	9.38	1335.2	0.02
α-Cubebene	6.91*	1421.7	[0.01]	9.55	1347.3	0.02
Eugenol	14.83*	2093.9	[0.05]	9.68	1356.2	0.03
α-Ylangene	7.18	1441.5	0.02	9.84	1367.3	0.02
α-Copaene	7.27	1448.8	0.01	9.90	1371.7	0.01
β-Bourbonene	7.61	1473.8	0.01	10.01	1379.5	0.01
Methyleugenol	13.46*	1961.6	[0.03]	10.36	1404.0	0.02
β-Caryophyllene	8.54	1545.4	0.62	10.48	1412.9	0.53
Aromadendrene	8.66*	1555.4	[2.76]	10.74	1432.6	0.04
6,9-Guaiadiene	8.75	1562.2	0.02	10.83	1438.7	0.02
α-Humulene	9.41	1614.1	0.72	10.94	1447.2	0.72
Germacrene D	9.88*	1653.7	[8.56]	11.32	1475.1	0.26
β-Selinene	9.90	1655.1	0.17	11.38	1479.6	0.16
Viridiflorene	9.71	1639.1	0.03	11.52*	1490.3	[0.49]
Bicyclogermacrene	10.19	1678.6	0.30	11.52*	1490.3	[0.49]
α-Selinene	9.99	1662.3	0.15	11.52*	1490.3	[0.49]
Germacrene A	10.49*	1703.7	[0.05]	11.63	1498.2	0.03
γ-Cadinene	10.49*	1703.7	[0.05]	11.77	1508.8	0.03
δ-Cadinene	10.53	1707.2	0.04	11.90	1519.4	0.04
Germacrene B	11.13	1759.4	0.10	12.28	1548.9	0.08
Spathulenol	14.48	2059.8	0.03	12.55	1570.6	0.03
Caryophyllene oxide	12.87	1905.4	0.03	12.59	1573.5	0.03
Globulol	14.00	2012.0	0.01	12.63	1576.7	0.02
Viridiflorol	14.08	2020.5	0.05	12.73	1584.4	0.05
Guaiol	14.21	2032.8	0.02	12.84	1593.2	0.03
Humulene epoxide II	13.46*	1961.6	[0.03]	12.93	1599.8	0.03

Isospathulenol	15.52	2163.3	0.03	13.32	1632.1	0.02
Neointermedeol	15.71	2182.9	0.02	13.50	1646.6	0.02
Total reported		99.31%			99.51%	

*: 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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