Date : 2026-08-21

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26D20-PTH06
Customer Identification : Peppermint - India - P50119
Type : Essential Oil
Source : *Mentha x piperita*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. 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 2026-04-23 to update the customer identification.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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

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 : 2026-04-21

Physicochemical data

Refractive index : 1.4597 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-04-21

Conclusion

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

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

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	tr	Aliphatic alcohol
Hexanol	0.01	Aliphatic alcohol
trans-2,5-Diethyltetrahydrofuran	0.02	Furan
α-Thujene	0.04	Monoterpene
α-Pinene	0.80	Monoterpene
trans-3-Methylcyclohexanol	0.02	Aliphatic alcohol
Camphene	tr	Monoterpene
3-Methylcyclohexanone	0.07	Aliphatic ketone
β-Pinene	1.10	Monoterpene
Sabinene	0.32	Monoterpene
cis-para-Menthane	0.07	Monoterpene
cis-Carane	0.04	Monoterpene
Octen-3-ol	0.02	Aliphatic alcohol
trans-para-Menthane	0.01	Monoterpene
Octan-3-one	0.04	Aliphatic ketone
Myrcene	0.23	Monoterpene
Octan-3-ol	0.16	Aliphatic alcohol
α-Phellandrene	0.02	Monoterpene
Pseudolimonene	0.03	Monoterpene
Δ3-Carene	0.02	Monoterpene
1,4-Cineole	0.01	Monoterpenic ether
α-Terpinene	0.09	Monoterpene
Carvomenthene	0.01	Aliphatic alcohol
para-Cymene	0.27	Monoterpene
Limonene	2.46	Monoterpene
1,8-Cineole	5.09	Monoterpenic ether
2-Ethylhexanol	0.02	Aliphatic alcohol
(*Z*)-β-Ocimene	0.06	Monoterpene
(*E*)-β-Ocimene	0.04	Monoterpene
γ-Terpinene	0.10	Monoterpene
cis-Sabinene hydrate	0.10	Monoterpenic alcohol
para-Mentha-3,8-diene	0.01	Monoterpene
cis-Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Octanol	0.05	Aliphatic alcohol
Terpinolene	0.05	Monoterpene
para-Cymenene	0.03	Monoterpene
Linalool	0.16	Monoterpenic alcohol
2-Methylbutyl 2-methylbutyrate	0.02	Aliphatic ester

β-Thujone	0.02	Monoterpenic ketone
Amyl isovalerate	0.02	Aliphatic ester
cis-para-Menth-2-en-1-ol	0.03	Monoterpenic alcohol
Camphor	0.02	Monoterpenic ketone
trans-Sabinol	0.05	Monoterpenic alcohol
trans-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Isopulegol	0.10	Monoterpenic alcohol
cis-α-Dihydroterpineol	0.01	Monoterpenic alcohol
Menthone	24.34	Monoterpenic ketone
Isomenthone	3.93	Monoterpenic ketone
Menthofuran	0.99	Monoterpenic ether
neo-Menthol	3.17	Monoterpenic alcohol
Menthol	42.61	Monoterpenic alcohol
Terpinen-4-ol	0.28	Monoterpenic alcohol
Isomenthol	0.44	Monoterpenic alcohol
para-Cymen-8-ol	0.02	Monoterpenic alcohol
neoiso-Menthol	0.16	Monoterpenic alcohol
α-Terpineol	0.22	Monoterpenic alcohol
Dihydrocarveol	0.03	Monoterpenic alcohol
Methylchavicol	0.01	Phenylpropanoid
Unknown	[0.01]	Unknown
Dihydroanethole	[0.01]	Phenylpropanoid
4,7-Dimethylbenzofuran?	0.03	Furan
Unknown UNKN CCCXCVIII [m/z 43, 99 (91), 81 (48), 86 (45), 126 (36)...]	0.06	Unknown
trans-Carveol	0.01	Monoterpenic alcohol
Citronellol	0.01	Monoterpenic alcohol
Pulegone	0.66	Monoterpenic ketone
Carvone	0.05	Monoterpenic ketone
Piperitone	0.16	Monoterpenic ketone
neo-Menthyl acetate	0.12	Monoterpenic ester
2-Ethylmenthone?	0.01	Aliphatic ketone
Dihydroedulan I	0.04	Terpenic ether
Thymol	0.04	Monoterpenic alcohol
Menthyl acetate	4.69	Monoterpenic ester
Dihydroedulan II	0.03	Terpenic ether
Isomenthyl acetate	0.07	Monoterpenic alcohol
Bicycloelemene	0.01	Sesquiterpene
Menthofurolactone isomer II	0.02	Monoterpenic lactone
Menthofurolactone	0.03	Aliphatic alcohol
α-Ylangene	0.03	Sesquiterpene
α-Copaene	0.03	Sesquiterpene
β-Bourbonene	0.08	Sesquiterpene
β-Elemene	0.04	Sesquiterpene
Longifolene	0.02	Sesquiterpene

Isocaryophyllene	0.02	Sesquiterpene
β-Caryophyllene	3.09	Sesquiterpene
β-Ylangene	0.02	Sesquiterpene
β-Copaene	0.01	Sesquiterpene
Unknown	0.01	Sesquiterpene
α-Humulene	0.04	Sesquiterpene
(*E*)-β-Farnesene	0.11	Sesquiterpene
γ-Muurolene	0.03	Sesquiterpene
Germacrene D	0.34	Sesquiterpene
Menthalactone	0.04	Monoterpenic lactone
Bicyclogermacrene	0.07	Sesquiterpene
Viridiflorene	0.15	Sesquiterpene
Germacrene A	0.03	Sesquiterpene
γ-Cadinene	0.02	Sesquiterpene
δ-Cadinene	0.03	Sesquiterpene
Isocaryophyllene epoxide B	0.01	Sesquiterpenic ether
Spathulenol	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	0.12	Sesquiterpenic ether
Caryophyllene oxide isomer	0.04	Sesquiterpenic ether
Viridiflorol	0.05	Sesquiterpenic alcohol
Consolidated total	**98.55**	

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

Note: no correction factor was applied

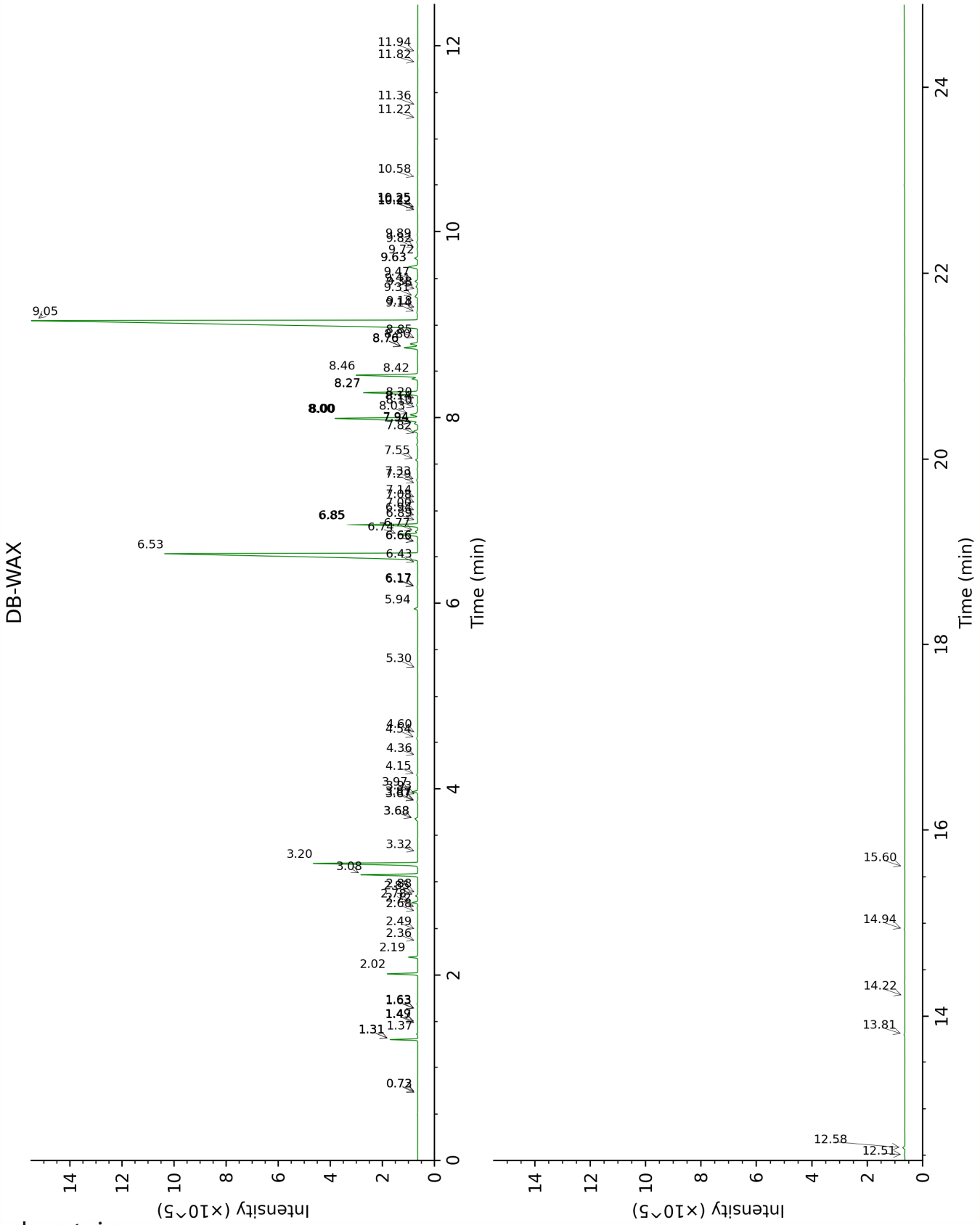
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

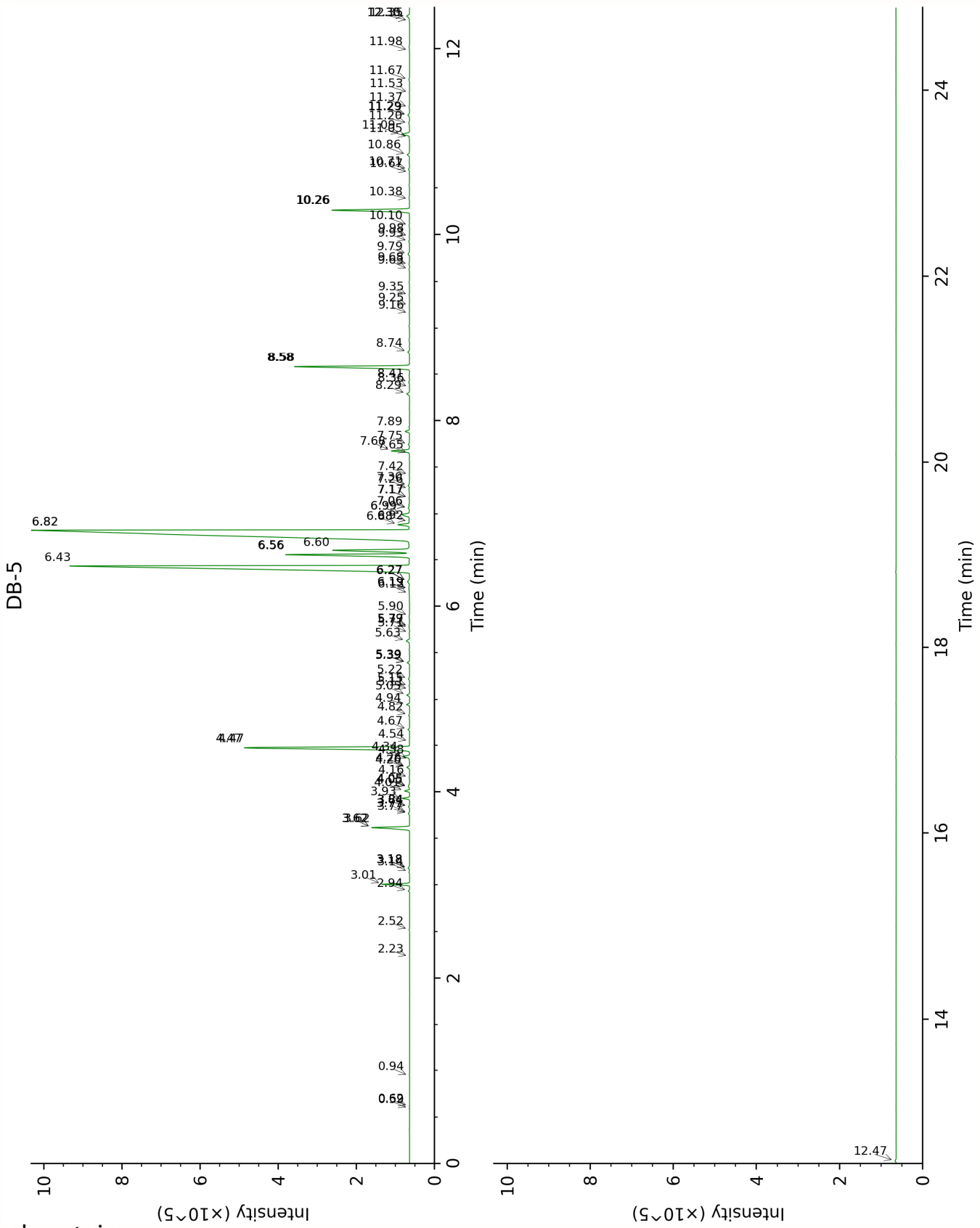
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

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.

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


DB-WAX
Time (min)
Intensity (×10^5)
11.94
11.82
11.36
11.22
10.58
9.89
9.72
9.63
9.47
9.05
8.46
8.42
8.27
8.00
7.94
7.82
7.55
6.85
6.53
6.43
6.17
5.94
5.30
4.60
4.54
4.36
4.15
3.68
3.32
3.20
3.08
2.49
2.36
2.19
2.02
1.63
1.49
1.37
1.31
0.72
15.60
14.94
14.22
13.81
12.58
12.51



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

FULL ANALYSIS DATA

Isovaleral	Column DB-WAX			Column DB-5		
	0.73	887.4	tr	0.59	643.4	0.01
2-Methylbutyral	0.72	881.8	tr	0.62	653.4	tr
Isoamyl alcohol	3.32	1177.5	tr	0.94	732.5	tr
Hexanol	5.30	1320.9	0.02	2.23	872.1	0.01
trans-2,5-Diethyltetrahydrofuran	1.49	1015.7	0.01	2.52	896.7	0.02
α-Thujene	1.37	1001.4	0.03	2.94	926.4	0.04
α-Pinene	1.31*	991.7	[0.80]	3.01	931.2	0.80
trans-3-Methylcyclohexanol	6.66*	1420.7	[0.04]	3.14	939.8	0.02
Camphene	1.63*	1029.2	[0.01]	3.18*	942.6	[0.07]
3-Methylcyclohexanone	4.54	1269.5	0.07	3.18*	942.6	[0.07]
β-Pinene	2.02	1066.9	1.10	3.62*	972.1	[1.49]
Sabinene	2.20	1084.6	0.32	3.62*	972.1	[1.49]
cis-para-Menthane	1.31*	991.7	[0.80]	3.62*	972.1	[1.49]
cis-Carane	1.63*	1029.2	[0.01]	3.77*	982.3	[0.06]
Octen-3-ol	6.66*	1420.7	[0.04]	3.77*	982.3	[0.06]
trans-para-Menthane	1.47	1013.7	0.01	3.84*	987.3	[0.05]
Octan-3-one	3.86*	1219.5	[0.06]	3.84*	987.3	[0.05]
Myrcene	2.78	1135.0	0.22	3.93	993.2	0.23
Octan-3-ol	5.94	1368.0	0.17	4.01	998.5	0.16
α-Phellandrene	2.68	1127.0	0.02	4.05*	1001.5	[0.08]
Pseudolimonene	2.72	1130.3	0.03	4.05*	1001.5	[0.08]
Δ3-Carene	2.49	1111.9	0.02	4.16	1008.2	0.02
1,4-Cineole	2.88	1142.7	0.01	4.26*	1015.0	[0.10]
α-Terpinene	2.85	1140.5	0.09	4.26*	1015.0	[0.10]
Carvomenthene	2.36	1100.9	0.01	4.34	1020.1	0.01
para-Cymene	3.97	1227.3	0.24	4.38	1022.4	0.27
Limonene	3.08	1158.5	2.46	4.48*	1028.4	[7.58]
1,8-Cineole	3.20	1168.0	5.09	4.48*	1028.4	[7.58]
2-Ethylhexanol	7.14	1457.0	0.02	4.54	1032.6	0.02
(*Z*)-β-Ocimene	3.68*	1205.9	[0.19]	4.67	1040.8	0.06
(*E*)-β-Ocimene	3.86*	1219.5	[0.06]	4.82	1050.6	0.04
γ-Terpinene	3.68*	1205.9	[0.19]	4.94	1057.9	0.10
cis-Sabinene hydrate	6.77	1429.4	0.11	5.05	1064.9	0.10
para-Mentha-3,8-diene	3.93	1224.4	0.01	5.11	1068.7	0.01
cis-Linalool oxide (fur.)	6.43	1403.5	0.02	5.15	1071.2	0.02
Octanol	8.03	1525.2	0.44	5.22	1075.9	0.05
Terpinolene	4.15	1240.6	0.05	5.40*	1087.0	[0.08]
para-Cymenene	6.17*	1384.8	[0.05]	5.40*	1087.0	[0.08]
Linalool	7.94*	1517.8	[0.18]	5.63	1102.0	0.16
2-Methylbutyl 2-	4.36	1255.7	0.02	5.71	1107.3	0.02

methylbutyrate						
β-Thujone	6.17*	1384.8	[0.05]	5.77	1111.1	0.02
Amyl isovalerate	4.60	1273.5	0.01	5.79	1112.4	0.02
cis-para-Menth-2-en-1-ol	8.00*	1522.2	[4.84]	5.90	1119.3	0.03
Camphor	7.08	1452.5	0.01	6.13	1134.7	0.02
trans-Sabinol	9.63*	1652.4	[0.57]	6.19*	1138.2	[0.06]
trans-para-Menth-2-en-1-ol	8.80†	1585.7	0.39	6.19*	1138.2	[0.06]
Isopulegol	8.00*	1522.2	[4.84]	6.27*	1143.4	[0.11]
cis-α-Dihydroterpineol	8.10	1530.6	0.01	6.27*	1143.4	[0.11]
Menthone	6.53	1411.4	24.13	6.43	1154.3	24.34
Isomenthone	6.85*	1435.2	[3.87]	6.56*	1162.2	[4.92]
Menthofuran	6.74	1426.9	0.99	6.56*	1162.2	[4.92]
neo-Menthol	8.46	1558.7	3.09	6.60	1165.2	3.17
Menthol	9.05	1605.2	42.61	6.82*	1179.3	[43.83]
Terpinen-4-ol	8.42	1555.6	0.28	6.82*	1179.3	[43.83]
Isomenthol	8.76*†	1582.4	[0.71]	6.88	1183.7	0.44
para-Cymen-8-ol	11.36	1798.8	0.02	6.92	1185.9	0.02
neoiso-Menthol	9.31	1626.1	0.16	6.99*	1190.7	[0.38]
α-Terpineol	9.63*	1652.4	[0.57]	6.99*	1190.7	[0.38]
Dihydrocarveol	10.25*	1703.8	[0.03]	7.06*	1195.3	[0.04]
Methylchavicol	9.18	1615.8	0.01	7.06*	1195.3	[0.04]
Unknown MEPI V [m/z 43, 99 (84), 81 (46), 986 (43), 126 (36), 71 (28)... 170 (12)]				7.17*	1202.4	[0.01]
Dihydroanethole				7.17*	1202.4	[0.01]
4,7-Dimethylbenzofuran?				7.26	1208.6	0.03
Unknown UNKN CCCXCVIII [m/z 43, 99 (91), 81 (48), 86 (45), 126 (36)...]				7.30	1211.3	0.06
trans-Carveol	11.22	1786.7	0.01	7.42	1219.2	0.01
Citronellol	10.58	1731.7	0.03	7.65	1234.8	0.01
Pulegone	8.76*†	1582.4	[0.71]	7.68	1236.8	0.66
Carvone	9.82	1668.1	0.04	7.75	1241.6	0.05
Piperitone	9.72	1659.9	0.18	7.89	1251.2	0.16
neo-Menthyl acetate	7.55	1488.0	0.11	8.29	1278.9	0.12
2-Ethylmenthone?				8.36	1283.6	0.01
Dihydroedulan I	6.94	1442.1	0.05	8.42	1287.5	0.04
Thymol	14.94	2132.8	0.04	8.58*	1299.0	[4.76]
Menthyl acetate	8.00*	1522.2	[4.84]	8.58*	1299.0	[4.76]
Dihydroedulan II	7.28	1468.0	0.03	8.58*	1299.0	[4.76]

Isomenthyl acetate	8.14	1533.2	0.08	8.74	1306.6	0.07
Bicycloelemene	6.89	1438.5	0.01	9.16	1335.9	0.01
Menthofurolactone isomer II				9.25	1342.3	0.02
Menthofurolactone	11.82	1839.3	0.02	9.35	1350.0	0.03
α-Ylangene	6.85*	1435.2	[3.87]	9.63	1369.6	0.03
α-Copaene	7.00	1446.3	0.03	9.68	1373.4	0.03
β-Bourbonene	7.33	1471.5	0.06	9.79	1381.2	0.08
β-Elemene	8.27*	1543.9	[3.12]	9.93	1390.8	0.04
Longifolene	7.82	1508.7	0.02	9.98	1394.6	0.02
Isocaryophyllene	8.00*	1522.2	[4.84]	10.10	1403.0	0.02
β-Caryophyllene	8.27*	1543.9	[3.12]	10.26*	1415.1	[3.12]
β-Ylangene	7.94*	1517.8	[0.18]	10.26*	1415.1	[3.12]
β-Copaene	8.20	1538.6	0.02	10.38	1424.0	0.01
Unknown PIRA III [m/z 91, 93 (92), 105 (79), 133 (70), 79 (70), 92 (65)... 204 (5)]	8.85	1589.3	0.03	10.67	1445.9	0.01
α-Humulene	9.14	1612.1	0.08	10.71	1448.7	0.04
(*E*)-β-Farnesene	9.41	1634.9	0.12	10.86	1460.2	0.11
γ-Muurolene	9.38	1632.1	0.01	11.05	1474.3	0.03
Germacrene D	9.63*	1652.4	[0.57]	11.08	1476.8	0.34
Menthalactone	15.60	2200.4	0.03	11.20	1485.7	0.04
Bicyclogermacrene	9.89	1674.0	0.07	11.29*	1492.2	[0.08]
Viridiflorene	9.47	1639.6	0.15	11.29*	1492.2	[0.08]
Germacrene A	10.22*	1701.5	[0.03]	11.37	1498.5	0.03
γ-Cadinene	10.22*	1701.5	[0.03]	11.53	1510.5	0.02
δ-Cadinene	10.25*	1703.8	[0.03]	11.67	1521.7	0.03
Isocaryophyllene epoxide B	11.94	1849.6	0.04	11.98	1546.2	0.01
Spathulenol	14.22	2062.3	0.02	12.30	1571.4	0.01
Caryophyllene oxide	12.58	1907.7	0.12	12.35*	1575.5	[0.15]
Caryophyllene oxide isomer	12.51	1900.9	0.04	12.35*	1575.5	[0.15]
Viridiflorol	13.81	2022.2	0.06	12.47	1585.0	0.05
Total reported		98.33%			99.43%	

*: 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