

Date : February 04, 2022

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 22A28-PTH01


Customer identification : Balm Mint Bush - BP0104213R

Type : Essential oil

Source : *Prostanthera melissifolia*

Customer : Plant Therapy

ANALYSIS

Method: PC-MAT-014  - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.

Analyst : Seydou Ka, Ph. D.

Analysis date : February 01, 2022

Checked and approved by :

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

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid

Refractive index: 1.4713 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

No adulterant or diluent were detected using this method. However, Phytochemia can make no guarantee that this oil corresponds to the stated species, as there is yet no scientific reference about the expected composition for this species.

ANALYSIS SUMMARY – CONSOLIDATED CONTENTS

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

Identification	%	Class
Hashishene	tr	Monoterpene
Tricyclene	0.04	Monoterpene
α -Thujene	0.05	Monoterpene
α -Pinene	18.63	Monoterpene
Camphene	0.20	Monoterpene
α -Fenchene	0.02	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
β -Pinene	0.09	Monoterpene
Sabinene	0.02	Monoterpene
Unknown	tr	Unknown
Myrcene	0.21	Monoterpene
α -Phellandrene	0.21	Monoterpene
Δ^3 -Carene	tr	Monoterpene
α -Terpinene	0.28	Monoterpene
Carvomenthene	0.01	Aliphatic alcohol
para-Cymene	1.00	Monoterpene
Limonene	2.17	Monoterpene
1,8-Cineole	22.09	Monoterpenic ether
(Z)- β -Ocimene	0.05	Monoterpene
(E)- β -Ocimene	0.03	Monoterpene
γ -Terpinene	0.54	Monoterpene
cis-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
para-Cymenene	0.05	Monoterpene
Terpinolene	0.05	Monoterpene
trans-Linalool oxide (fur.)	0.07	Monoterpenic alcohol
α -Pinene oxide	0.02	Monoterpenic ether
Linalool	13.74	Monoterpenic alcohol
endo-Fenchol	0.01	Monoterpenic alcohol
cis-para-Menth-2-en-1-ol	0.02	Monoterpenic alcohol
α -Campholenal	0.01	Monoterpenic aldehyde
Camphor	0.01	Monoterpenic ketone
trans-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
trans-Verbenol	0.02	Monoterpenic alcohol
Prenyl 2-methylbutyrate	0.01	Aliphatic ester
Borneol	0.02	Monoterpenic alcohol
Unknown	0.03	Oxygenated monoterpene
δ -Terpineol	0.01	Monoterpenic alcohol
Unknown	tr	Oxygenated monoterpene
Terpinen-4-ol	0.44	Monoterpenic alcohol
Cryptone	0.02	Normonoterpenic ketone
4-Methylacetophenone	0.01	Simple phenolic
Unknown	2.88	Unknown
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α -Terpineol	0.37	Monoterpenic alcohol
Myrtanal	0.01	Monoterpenic aldehyde

<i>cis</i> -Piperitol	0.01	Monoterpenic alcohol
<i>cis</i> - α -Phellandrene epoxide (iPr vs Me)	0.07	Monoterpenic ether
Verbenone	0.02	Monoterpenic ketone
para-Cymen-9-ol	0.02	Monoterpenic alcohol
Benzylacetone	0.16	Simple phenolic
Geraniol	0.03	Monoterpenic alcohol
Piperitone	34.63	Monoterpenic ketone
Methyl citronellate	0.01	Monoterpenic ester
Phellandral	0.01	Monoterpenic aldehyde
para-Cymen-7-ol	0.04	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
para-Mentha-1,8-diene-4-hydroperoxide?	0.01	Monoterpenic peroxide
Unknown	0.01	Unknown
Bicycloelemene	0.04	Sesquiterpene
α -Terpinyl acetate	0.06	Monoterpenic ester
Neryl acetate	0.02	Monoterpenic ester
α -Copaene	0.01	Sesquiterpene
7-Cubebene	0.02	Sesquiterpene
β -Cubebene	0.02	Sesquiterpene
β -Elemene	0.05	Sesquiterpene
Pacificorgia-1(6),10-diene	0.01	Sesquiterpene
α -Gurjunene	0.07	Sesquiterpene
β -Caryophyllene	0.16	Sesquiterpene
γ -Maaliene	0.02	Sesquiterpene
α -Maaliene	0.02	Sesquiterpene
Aromadendrene	0.12	Sesquiterpene
α -Humulene	0.02	Sesquiterpene
allo-Aromadendrene	0.07	Sesquiterpene
Valerena-4,7(11)-diene	0.01	Sesquiterpene
β -Selinene	0.01	Sesquiterpene
Unknown	0.01	Sesquiterpene
Viridiflorene	0.08	Sesquiterpene
Bicyclogermacrene	0.18	Sesquiterpene
δ -Cadinene	0.01	Sesquiterpene
Spathulenol	0.02	Sesquiterpenic alcohol
Caryophyllene oxide	0.01	Sesquiterpenic ether
Globulol	0.03	Sesquiterpenic alcohol
Viridiflorol	0.01	Sesquiterpenic alcohol
Isospathulenol	0.03	Sesquiterpenic alcohol
Consolidated total	99.58%	

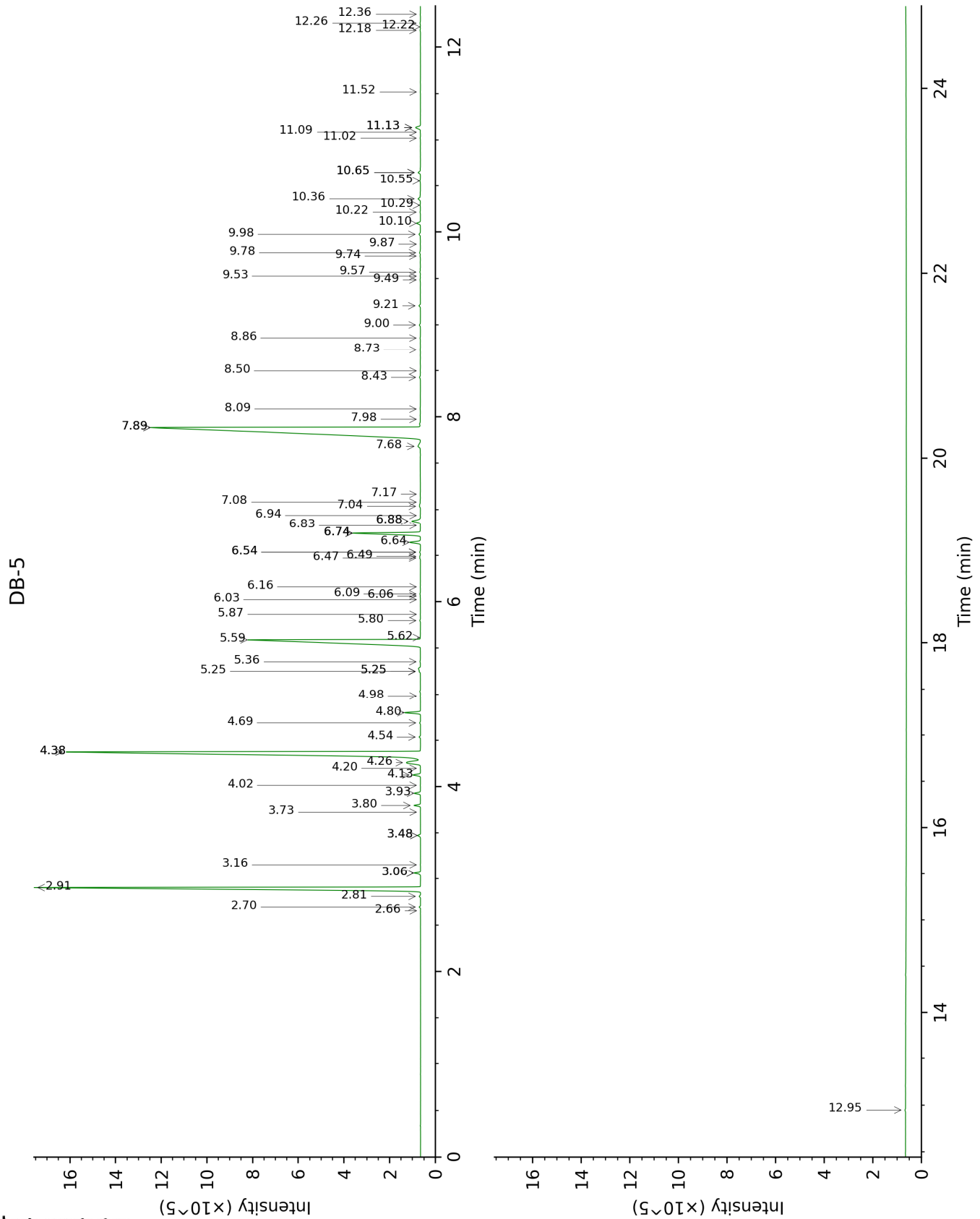
tr: The compound has been detected below 0.005% of total signal.

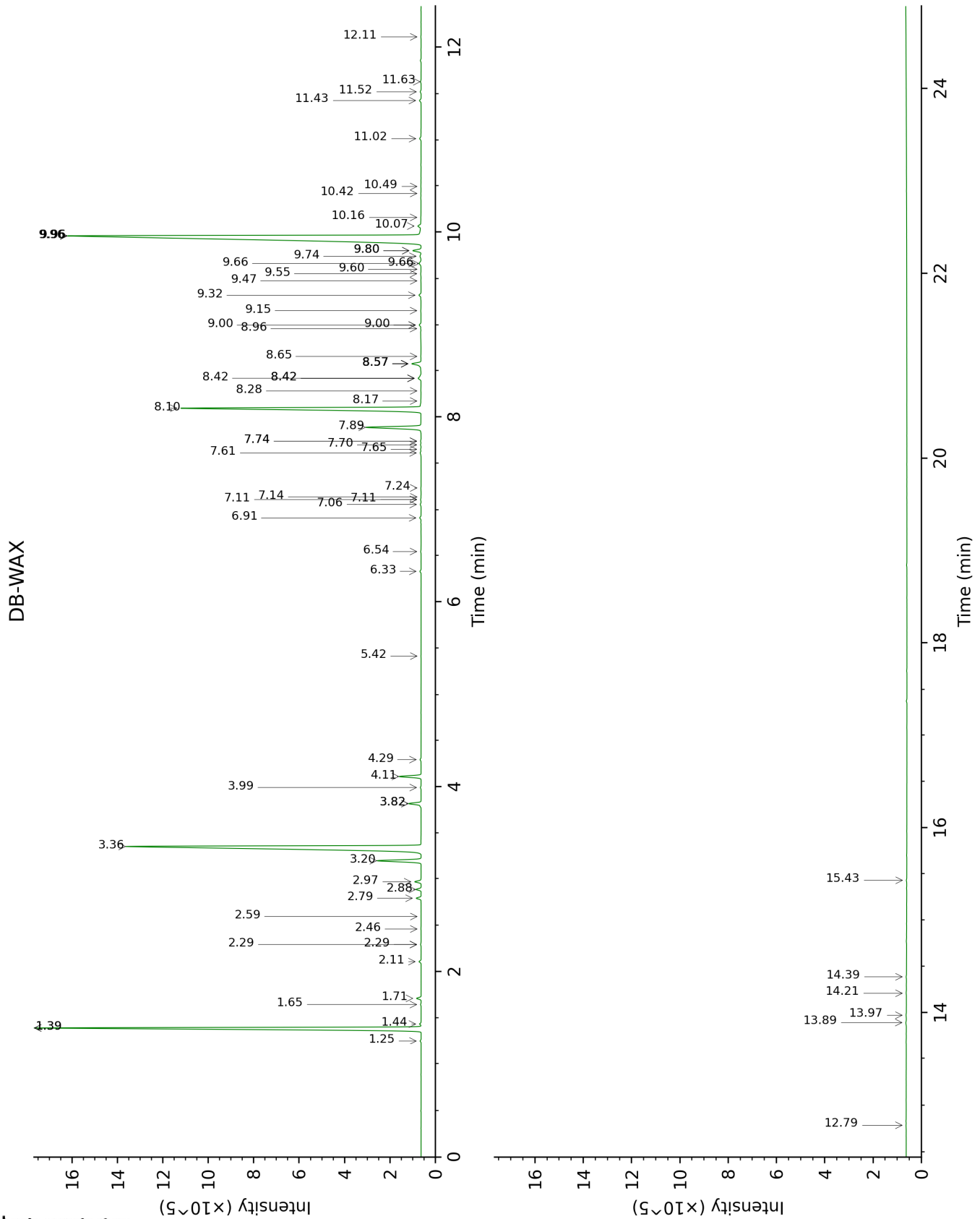
Note: no correction factor was applied

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.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Hashishene	2.66	915	tr	1.39*	994	18.46
Tricyclene	2.70	918	0.04	1.25	971	0.04
α -Thujene	2.81	926	0.05	1.44	999	0.06
α -Pinene	2.91	932	18.63	1.39*	994	[18.46]
Camphene	3.06*	943	0.22	1.71	1026	0.20
α -Fenchene	3.06*	943	[0.22]	1.64	1019	0.02
Thuja-2,4(10)-diene	3.16	949	0.01	2.29*	1083	0.03
β -Pinene	3.48*	971	0.11	2.11	1065	0.09
Sabinene	3.48*	971	[0.11]	2.29*	1083	[0.03]
Unknown [m/z 67, 68 (95), 43 (73), 94 (65), 79 (54), 41 (50)...]	3.73	988	tr			
Myrcene	3.80	993	0.21	2.88	1133	0.21
α -Phellandrene	3.93	1002	0.21	2.79	1125	0.21
Δ 3-Carene	4.02	1007	tr	2.59	1110	tr
α -Terpinene	4.13	1014	0.28	2.97	1139	0.28
Carvomenthene	4.20	1019	0.01	2.46	1099	0.01
para-Cymene	4.26	1023	1.00	4.11	1228	0.99
Limonene	4.38*	1030	24.36	3.20	1158	2.17
1,8-Cineole	4.38*	1030	[24.36]	3.36	1170	22.09
(Z)- β -Ocimene	4.54	1040	0.05	3.82*	1206	0.60
(E)- β -Ocimene	4.69	1050	0.03	3.99	1219	0.03
γ -Terpinene	4.80	1057	0.54	3.82*	1206	[0.60]
cis-Linalool oxide (fur.)	4.98	1069	0.01	6.54	1401	0.02
para-Cymenene	5.25*†	1086	0.17	6.33	1385	0.05
Terpinolene	5.25*†	1086	[0.17]	4.29	1241	0.05
trans-Linalool oxide (fur.)	5.25*†	1086	[0.17]	6.91	1428	0.07
α -Pinene oxide	5.36	1092	0.02	5.42	1319	0.01
Linalool	5.59	1107	13.74	8.10	1517	13.76
endo-Fenchol	5.62	1109	0.01	8.42*	1542	0.19
cis-para-Menth-2-en-1-ol	5.80	1120	0.02	8.17	1523	0.01
α -Campholenal	5.87	1125	0.01	7.06	1439	0.04
Camphor	6.02	1135	0.01	7.24	1452	0.02
trans-para-Menth-2-en-1-ol	6.06	1138	0.01	9.00*	1587	0.09
trans-Verbenol	6.09	1139	0.02	9.55	1632	0.02
Prenyl 2-methylbutyrate	6.16	1144	0.01			
Borneol	6.47	1164	0.02	9.80*	1652	0.39
Unknown [m/z 95, 110 (38), 81 (21), 79 (16)... 152 (7)]	6.49	1165	0.03	7.70	1487	0.03
δ -Terpineol	6.54*	1168	0.03	9.48	1625	0.01

Unknown [m/z 95, 110 (43), 81 (28), 41 (15)... 152 (8)]	6.54*	1168	[0.03]	7.74*	1490	0.02
Terpinen-4-ol	6.64	1175	0.44	8.57*	1554	0.52
Cryptone	6.74*	1181	2.91	9.15	1599	0.02
4-Methylacetophenone	6.74*	1181	[2.91]	10.49	1708	0.01
Unknown [m/z 69, 68 (65), 110 (51), 67 (39), 41 (27), 83 (26)...]	6.74*	1181	[2.91]	7.89	1501	2.88
para-Cymen-8-ol	6.83	1187	0.01	11.52	1796	0.05
α -Terpineol	6.88*	1190	0.43	9.80*	1652	[0.39]
Myrtenal	6.88*	1190	[0.43]	8.65	1560	0.01
cis-Piperitol	6.94	1194	0.01	9.60	1636	0.01
cis- α -Phellandrene epoxide (iPr vs Me)	7.04	1200	0.07	11.02	1753	0.08
Verbenone	7.08	1203	0.02	9.66*	1640	0.12
para-Cymen-9-ol	7.17	1209	0.02	12.11	1848	0.01
Benzylacetone	7.68	1243	0.16	11.43	1788	0.08
Geraniol	7.89*	1257	34.66	11.63	1805	0.03
Piperitone	7.89*	1257	[34.66]	9.96*	1665	34.89
Methyl citronellate	7.98	1263	0.01	8.28	1531	0.01
Phellandral	8.09	1270	0.01	9.96*	1665	[34.89]
para-Cymen-7-ol	8.43	1293	0.04	14.21	2042	0.02
Unknown [m/z 43, 93 (66), 91 (44), 41 (38), 69 (35)... 152? (1)]	8.50	1298	0.01			
para-Mentha-1,8-diene-4-hydroperoxide?	8.73	1314	0.01			
Unknown [m/z 69, 41 (58), 114 (29), 43 (25), 83 (24), 123 (20)...]	8.86	1323	0.01			
Bicycloelemene	9.00	1333	0.04	7.11*	1443	0.02
α -Terpinyl acetate	9.21	1348	0.06	9.74	1647	0.06
Neryl acetate	9.49	1368	0.02	10.16	1681	0.01
α -Copaene	9.53	1370	0.01	7.14	1445	0.01
7-Cubebene	9.57	1374	0.02	7.11*	1443	[0.02]
β -Cubebene	9.74	1386	0.02	7.74*	1490	[0.02]
β -Elemene	9.78	1388	0.05	8.42*	1542	[0.19]
Pacifigorgia-1(6),10-diene	9.87	1395	0.01	7.65	1483	0.02
α -Gurjunene	9.98	1402	0.07	7.61	1480	0.06
β -Caryophyllene	10.10	1411	0.16	8.42*	1542	[0.19]
γ -Maaliene	10.22	1420	0.02	8.57*	1554	[0.52]
α -Maaliene	10.29	1426	0.02	8.57*	1554	[0.52]
Aromadendrene	10.36	1431	0.12	8.57*	1554	[0.52]
α -Humulene	10.55	1446	0.02	9.32	1613	0.11
allo-Aromadendrene	10.65*	1453	0.10	9.00*	1587	[0.09]
Valerena-4,7(11)-diene	10.65*	1453	[0.10]	8.96	1584	0.01
β -Selinene	11.02	1480	0.01	9.96*	1665	[34.89]

Unknown [m/z 95, 59 (96), 110 (84), 43 (79), 109 (67), 67 (29)...220 (1)]	11.08	1485	0.01			
Viridiflorene	11.14*	1489	0.26	9.66*	1640	[0.12]
Bicyclogermacrene	11.14*	1489	[0.26]	10.07	1673	0.18
δ-Cadinene	11.52	1518	0.01	10.42	1702	0.01
Spathulenol	12.18	1570	0.02	14.39	2059	0.02
Caryophyllene oxide	12.22	1574	0.01	12.79	1908	0.01
Globulol	12.26	1577	0.03	13.89	2011	0.04
Viridiflorol	12.36	1584	0.01	13.97	2019	0.02
Isospathulenol	12.95	1632	0.03	15.43	2162	0.02
Total identified		99.70%			96.72%	
Total reported		99.76%			99.63%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not 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