Date : June 15, 2023

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 23F08-PTH02
Customer identification : Lemon Myrtle Oil - Australia - LP0106R
Type : Essential oil
Source : *Backhousia citriodora*
Customer : Plant Therapy

Analysis

Method: PC-MAT-014 ISO - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.
Analyst : Amélie Simard, Analyste
Analysis date : June 15, 2023

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia
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PHYSICOCHEMICAL DATA

Physical aspect: Light yellow liquid
Refractive index: 1.4879 ± 0.0003 (20 °C; method PC-MAT-016)

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
2-Methyl-3-buten-2-ol	0.01	Aliphatic alcohol
(3*Z*)-Hexenol	tr	Aliphatic alcohol
2,6-Dimethyl-1,5-heptadiene	0.01	Normonoterpene
α-Pinene	0.01	Monoterpene
Sabinene	tr	Monoterpene
β-Pinene	0.01	Monoterpene
6-Methyl-5-hepten-2-one	0.89	Aliphatic ketone
Dehydro-1,8-cineole	0.01	Monoterpenic ether
Myrcene	0.12	Monoterpene
Octan-3-ol	0.02	Aliphatic alcohol
α-Phellandrene	0.02	Monoterpene
para-Cymene	0.02	Monoterpene
Limonene	0.08	Monoterpene
1,8-Cineole	0.02	Monoterpenic ether
Seudenone?	0.02	Aliphatic ketone
(*E*)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	0.01	Monoterpene
cis-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
trans-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
Terpinolene	0.01	Monoterpene
Rosefuran	0.01	Monoterpenic ether
Linalool	1.10	Monoterpenic alcohol
cis-Chrysanthemal?	0.07	Monoterpenic aldehyde
α-Cyclocitral	0.03	Monoterpenic aldehyde
trans-para-Mentha-2,8-dien-1-ol	0.03	Monoterpenic alcohol
cis-para-Mentha-2,8-dien-1-ol	0.04	Monoterpenic alcohol
trans-para-Menth-2-en-1-ol	0.06	Monoterpenic alcohol
Isopulegol	0.04	Monoterpenic alcohol
exo-Isocitral	0.12	Monoterpenic aldehyde
Citronellal	0.92	Monoterpenic aldehyde
iso-Isopulegol	0.01	Monoterpenic alcohol
Borneol	0.05	Monoterpenic alcohol
α-Phellandren-8-ol	0.09	Monoterpenic alcohol
Isoneral	0.42	Monoterpenic aldehyde
Terpinen-4-ol	0.20	Monoterpenic alcohol
Unknown	0.14	Oxygenated monoterpene
para-Cymen-8-ol	0.02	Monoterpenic alcohol
Isogeranial	0.87	Monoterpenic aldehyde
α-Terpineol	0.49	Monoterpenic alcohol
β-Phellandren-8-ol	0.06	Monoterpenic alcohol
trans-Isopiperitenol	0.07	Monoterpenic alcohol
Unknown	0.09	Oxygenated monoterpene
Unknown	0.01	Oxygenated monoterpene
cis-Isopiperitenol	0.08	Monoterpenic alcohol
Nerol	0.55	Monoterpenic alcohol

Citronellol	0.23	Monoterpenic alcohol
Neral	39.47	Monoterpenic aldehyde
Piperitone	0.12	Monoterpenic ketone
Geraniol	1.56	Monoterpenic alcohol
Geranial	47.68	Monoterpenic aldehyde
Unknown	0.07	Oxygenated monoterpene
Unknown	0.13	Unknown
α-Terpinyl acetate	0.09	Monoterpenic ester
Unknown	0.07	Unknown
α-Copaene	0.15	Sesquiterpene
Unknown	0.06	Unknown
Geranic acid	0.10	Aliphatic acid
Geranyl acetate	0.06	Monoterpenic ester
β-Elemene	0.11	Sesquiterpene
Longifolene	0.07	Sesquiterpene
β-Caryophyllene	1.03	Sesquiterpene
trans-α-Bergamotene	0.04	Sesquiterpene
α-Humulene	0.10	Sesquiterpene
allo-Aromadendrene	0.02	Sesquiterpene
(*E*)-β-Farnesene	0.04	Sesquiterpene
Bicyclogermacrene	0.12	Sesquiterpene
β-Bisabolene	0.07	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
δ-Cadinene	0.03	Sesquiterpene
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.07	Sesquiterpenic ether
Caryophyllene oxide isomer	0.03	Sesquiterpenic ether
Unknown	0.02	Oxygenated diterpene
Unknown	0.06	Unknown
Unknown	0.02	Unknown
Unknown	0.19	Unknown
Unknown	0.03	Unknown
Unknown	0.01	Unknown
Germacrene D	0.01	Sesquiterpene
Consolidated total	**98.80%**	

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.

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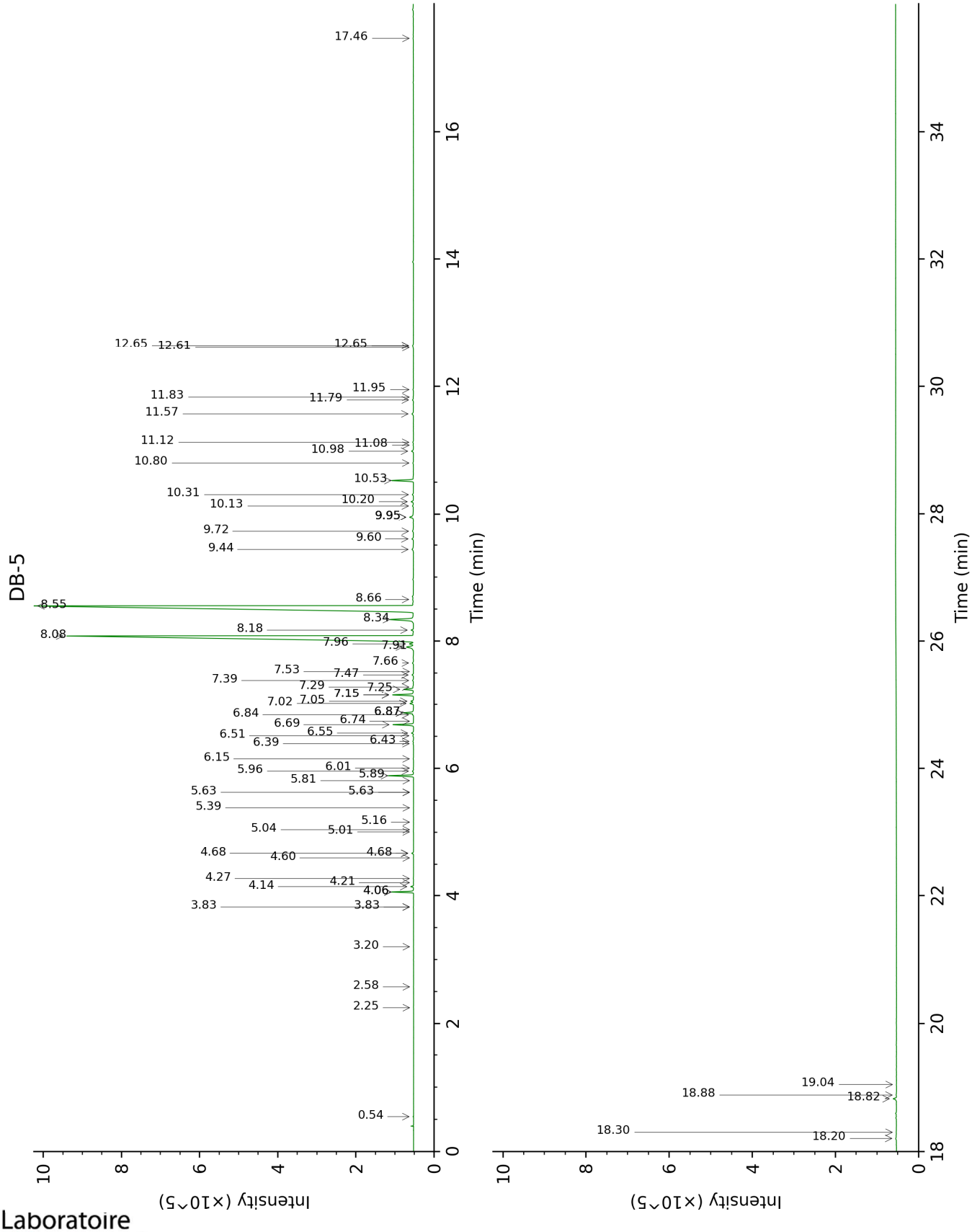
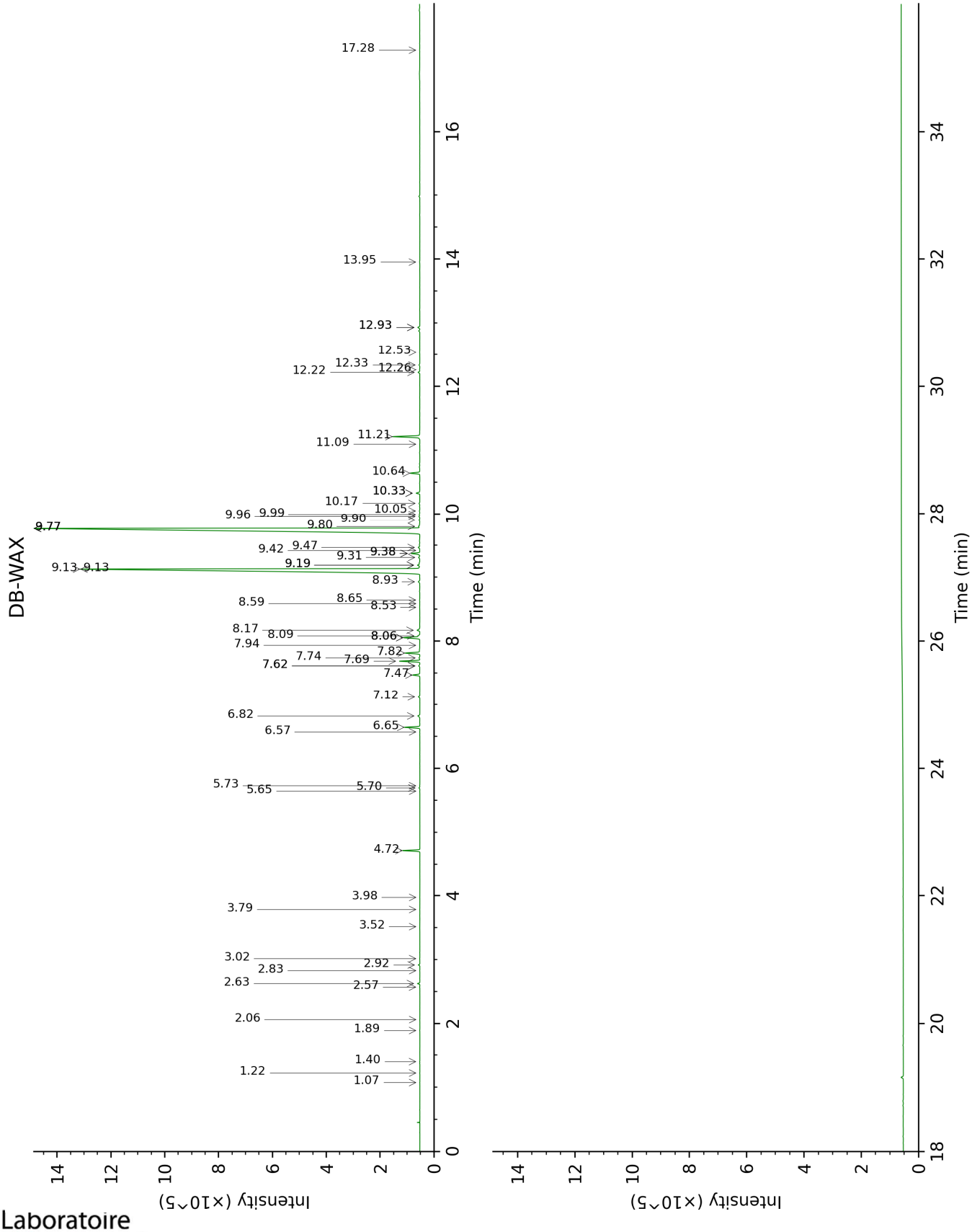

DB-5
17.46
12.65
12.61
12.65
11.83
11.79
11.95
11.57
11.12
10.98
11.08
10.80
10.53
10.31
10.13
10.20
9.95
9.72
9.60
9.44
8.55
8.66
8.34
8.18
8.08
7.96
7.91
7.66
7.53
7.47
7.39
7.29
7.25
7.15
7.02
7.05
6.87
6.84
6.69
6.74
6.51
6.55
6.43
6.39
6.15
5.96
6.01
5.89
5.81
5.63
5.63
5.39
5.16
5.04
5.01
4.68
4.60
4.68
4.27
4.14
4.21
4.06
3.83
3.83
3.20
2.58
2.25
0.54
Time (min)
Intensity (×10^5)
19.04
18.88
18.82
18.30
18.20
Time (min)
Intensity (×10^5)


DB-WAX
17.28
13.95
12.93
12.53
12.33
12.26
12.22
11.21
11.09
10.64
10.33
10.17
10.05
9.99
9.96
9.90
9.80
9.77
9.47
9.42
9.38
9.31
9.19
9.13
9.13
8.93
8.65
8.59
8.53
8.17
8.09
8.06
7.94
7.82
7.74
7.69
7.62
7.47
7.12
6.82
6.65
6.57
5.73
5.70
5.65
4.72
3.98
3.79
3.52
3.02
2.92
2.83
2.63
2.57
2.06
1.89
1.40
1.22
1.07
Time (min)
Intensity (×10^5)
Time (min)
Intensity (×10^5)

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
2-Methyl-3-buten-2-ol	0.54	606	0.01	1.40	1015	0.01
(3*Z*)-Hexenol	2.25	859	tr			
2,6-Dimethyl-1,5-heptadiene	2.58	886	0.01	1.07	966	tr
α-Pinene	3.20	931	0.01	1.22	992	tr
Sabinene	3.82*	972	0.03	2.06	1084	tr
β-Pinene	3.82*	972	[0.03]	1.89	1066	0.01
6-Methyl-5-hepten-2-one	4.06*	987	0.87	4.72	1301	0.89
Dehydro-1,8-cineole	4.06*	987	[0.87]	2.83	1151	0.01
Myrcene	4.14	992	0.12	2.63	1134	0.11
Octan-3-ol	4.21	997	0.02	5.73	1368	0.01
α-Phellandrene	4.27	1001	0.02	2.57	1130	0.02
para-Cymene	4.60	1022	0.02	3.79	1229	0.01
Limonene	4.68*	1026	0.09	2.92	1158	0.08
1,8-Cineole	4.68*	1026	[0.09]	3.02	1166	0.02
Seudenone?	5.01	1047	0.02	7.94	1535	0.04
(*E*)-β-Ocimene	5.04	1049	0.02			
γ-Terpinene	5.16	1057	0.01	3.52	1208	0.01
cis-Linalool oxide (fur.)	5.39	1071	0.01			
trans-Linalool oxide (fur.)	5.63*	1086	0.02	6.57	1431	0.01
Terpinolene	5.63*	1086	[0.02]	3.98	1243	0.01
Rosefuran	5.81	1097	0.01	5.65	1362	0.01
Linalool	5.89	1102	1.10	7.69	1516	1.11
cis-Chrysanthemal?	5.96	1107	0.07	5.70	1366	0.05
α-Cyclocitral	6.01	1110	0.03			
trans-para-Mentha-2,8-dien-1-ol	6.15	1119	0.03	8.53	1582	0.02
cis-para-Mentha-2,8-dien-1-ol	6.39	1134	0.04	9.13*	1630	39.38
trans-para-Menth-2-en-1-ol	6.43	1136	0.06	8.65	1591	0.03
Isopulegol	6.51	1142	0.04	7.74	1520	0.07
exo-Isocitral	6.56	1144	0.12	7.12	1472	0.09
Citronellal	6.69	1153	0.92	6.65	1436	0.87
iso-Isopulegol	6.74	1156	0.01	7.62*	1510	0.09
Borneol	6.84	1163	0.05	9.38*	1650	0.53
α-Phellandren-8-ol	6.87*	1165	0.51	9.77*†	1683	47.82
Isoneral	6.87*	1165	[0.51]	7.47	1499	0.42
Terpinen-4-ol	7.02	1174	0.20	8.17	1554	0.21
Unknown [m/z 84, 83 (74), 137 (56),	7.05	1176	0.14	9.19*	1635	0.16

41 (47), 93 (43), 108 (40)... 152 (2)]						
para-Cymen-8-ol	7.15*	1182	1.00	11.09	1796	0.02
Isogeranial	7.15*	1182	[1.00]	7.82	1526	0.87
α-Terpineol	7.25	1189	0.49	9.38*	1650	[0.53]
β-Phellandren-8-ol	7.29	1191	0.06	10.33*	1730	0.24
trans-Isopiperitenol	7.39	1198	0.07	9.96	1699	0.06
Unknown [m/z 84, 41 (83), 83 (79), 91 (76), 93 (67), 119 (64), 137 (63), 109 (54), 108 (54)... 152 (4)]	7.48	1203	0.09			
Unknown [m/z 123, 81 (40), 67 (29), 79 (29), 93 (26), 121 (25), 41 (24), 55 (18), 69 (15)...]	7.53	1206	0.01			
cis-Isopiperitenol	7.66	1215	0.08	9.90	1694	0.07
Nerol	7.91	1232	0.55	10.64	1757	0.59
Citronellol	7.96	1235	0.23	10.33*	1730	[0.24]
Neral	8.08	1244	39.47	9.13*	1630	[39.38]
Piperitone	8.18	1250	0.12	9.47	1658	0.12
Geraniol	8.34	1261	1.56	11.21	1806	1.70
Geranial	8.56	1275	47.68	9.77*†	1683	[47.82]
Unknown [m/z 43, 69 (77), 41 (70), 109 (54)... 152 (6)]	8.66	1282	0.07	12.53	1926	0.03
Unknown [m/z 82, 59 (44), 41 (43), 95 (31), 43 (29), 81 (24)...]	9.44	1336	0.13	12.22	1896	0.12
α-Terpinyl acetate	9.60	1347	0.09	9.31	1645	0.11
Unknown [m/z 110, 95 (98), 109 (40), 43 (35), 111 (32)... 153 (13)...]	9.72	1356	0.07	12.93*	1963	0.13
α-Copaene	9.95*	1372	0.31	6.82	1450	0.15
Unknown [m/z 81, 59 (94), 41 (74), 85 (40), 43 (55)...]	9.95*	1372	[0.31]	12.93*	1963	[0.13]
Geranic acid	9.95*	1372	[0.31]			
Geranyl acetate	10.13	1384	0.06	10.17	1716	0.06
β-Elemene	10.20	1389	0.11	8.09†	1547	[1.21]
Longifolene	10.31	1397	0.07	7.62*	1510	[0.09]
β-Caryophyllene	10.53	1413	1.03	8.06*†	1545	1.21
trans-α-Bergamotene	10.80	1433	0.04	8.06*†	1545	[1.21]
α-Humulene	10.98	1447	0.10	8.93	1614	0.12

allo-Aromadendrene	11.08	1454	0.02	8.59	1587	0.02
(*E*)-β-Farnesene	11.12	1457	0.04	9.19*	1635	[0.16]
Bicyclogermacrene	11.57	1490	0.12	9.77*†	1683	[47.82]
β-Bisabolene	11.79	1506	0.07	9.80†	1685	[47.82]
γ-Cadinene	11.83	1510	0.03	9.99	1701	0.05
δ-Cadinene	11.95	1519	0.03	10.05	1706	0.04
Spathulenol	12.61	1571	0.03	13.95	2061	0.03
Caryophyllene oxide	12.65*	1574	0.08	12.33	1907	0.07
Caryophyllene oxide isomer	12.65*	1574	[0.08]	12.26	1900	0.03
Unknown [m/z 81, 137 (70), 95 (46), 69 (45), 41 (39), 55 (29)...]	17.46	1995	0.02			
Unknown [m/z 93, 69 (95), 135 (76), 107 (53), 41 (53), 109 (50)... 235 (10)...]	18.20	2069	0.06			
Unknown [m/z 69, 81 (56), 83 (52), 41 (39), 95 (42), 55 (27)...]	18.30	2078	0.02	17.28	2409	0.02
Unknown [m/z 69, 41 (38), 151 (36), 123 (34), 82 (24), 43 (23), 109 (21)...]	18.82	2131	0.19			
Unknown [m/z 69, 41 (75), 95 (53), 55 (47), 82 (40), 81 (38)...]	18.88	2137	0.03			
Unknown [m/z 69, 41 (77), 95 (55), 55 (50), 82 (46), 109 (42)...]	19.04	2154	0.01			
Germacrene D				9.42	1654	0.01
Total identified		**98.03%**			**97.77%**	
Total reported		**98.87%**			**97.94%**	

*: 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