Date : June 01, 2023

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 23E25-PTH01
Customer identification : White Camphor - China - C30107R
Type : Essential oil
Source : *Cinnamomum camphora* ct. White camphor
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 : Sylvain Mercier, M. Sc., Chimiste 2014-005
Analysis date : May 29, 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

Laboratoire PhytoChemia
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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid
Refractive index: 1.4699 ± 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
Ethanol	tr	Aliphatic alcohol
Isoamyl alcohol	0.01	Aliphatic alcohol
Toluene	tr	Simple phenolic
α-Thujene	0.28	Monoterpene
α-Pinene	2.06	Monoterpene
Camphene	0.30	Monoterpene
α-Fenchene	0.04	Monoterpene
Thuja-2,4(10)-diene	0.05	Monoterpene
Unknown	0.01	Monoterpene
β-Pinene	5.51	Monoterpene
Sabinene	6.91	Monoterpene
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Myrcene	10.34	Monoterpene
6-Methyl-5-hepten-2-ol	0.04	Aliphatic alcohol
2-Carene	0.12	Monoterpene
α-Phellandrene	2.47	Monoterpene
Pseudolimonene	0.04	Monoterpene
Octanal	0.05	Aliphatic aldehyde
Δ3-Carene	0.07	Monoterpene
α-Terpinene	7.87	Monoterpene
Carvomenthene	0.03	Aliphatic alcohol
para-Cymene	10.66	Monoterpene
Limonene	12.37	Monoterpene
1,8-Cineole	36.54	Monoterpenic ether
(*Z*?)-Citroxide	0.01	Monoterpenic ether
Benzyl alcohol	0.02	Simple phenolic
(*Z*)-β-Ocimene	0.04	Monoterpene
(*E*)-β-Ocimene	0.03	Monoterpene
γ-Terpinene	2.42	Monoterpene
Unknown	0.01	Oxygenated monoterpene
cis-Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Terpinolene	0.16	Monoterpene
para-Cymenene	0.01	Monoterpene
trans-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
ortho-Guaiacol	0.01	Simple phenolic
Linalool	0.01	Monoterpenic alcohol
Unknown	0.02	Monoterpenic alcohol
cis-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
Camphor	0.01	Monoterpenic ketone
Unknown	0.19	Unknown
Unknown	0.06	Unknown
Terpinen-4-ol	0.02	Monoterpenic alcohol
Unknown	0.01	Unknown
Cryptone	0.02	Normonoterpenic ketone
α-Terpineol	0.03	Monoterpenic alcohol

cis-α-Phellandrene epoxide (iPr vs Me)	0.02	Monoterpenic ether
trans-Carveol	0.01	Monoterpenic alcohol
Unknown	0.05	Unknown
Unknown	0.01	Oxygenated monoterpene
Unknown	0.03	Unknown
trans-Ascaridole glycol	0.02	Monoterpenic alcohol
cis-Ascaridole glycol	0.02	Monoterpenic alcohol
Unknown	0.01	Unknown
Unknown	0.01	Monoterpenic alcohol
Unknown	0.05	Unknown
α-Gurjunene	0.01	Sesquiterpene
meta-Camphorene	0.15	Diterpene
para-Camphorene	0.06	Diterpene
Consolidated total	**99.40%**	

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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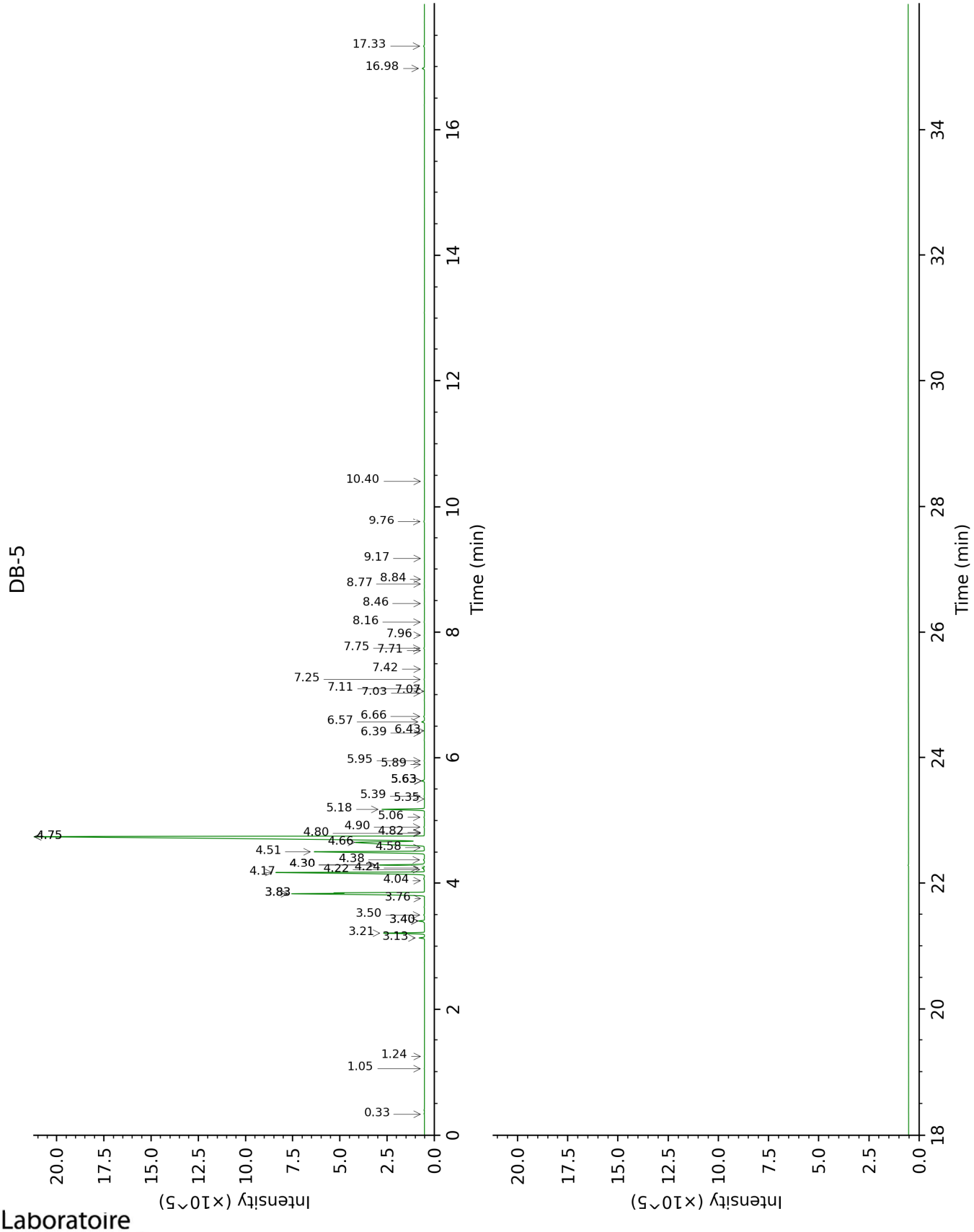
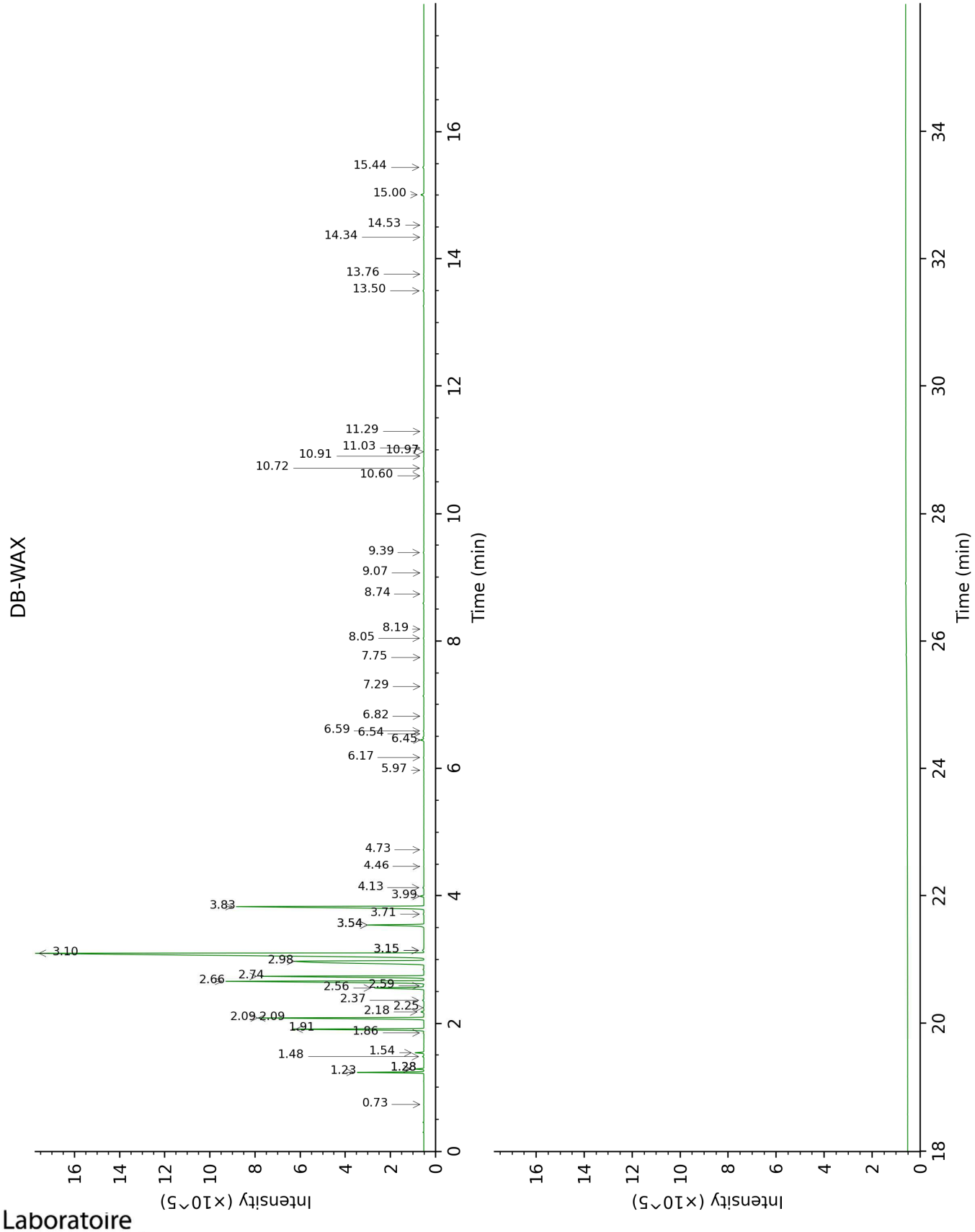

DB-5
17.33
16.98
10.40
9.76
9.17
8.84
8.77
8.46
8.16
7.96
7.75
7.71
7.42
7.25
7.11
7.07
7.03
6.66
6.57
6.43
6.39
5.95
5.89
5.63
5.39
5.35
5.18
5.06
4.90
4.82
4.80
4.75
4.66
4.58
4.51
4.38
4.30
4.24
4.22
4.17
4.04
3.83
3.76
3.50
3.40
3.21
3.13
1.24
1.05
0.33
Time (min)
Intensity (×10^5)


DB-WAX
Intensity (×10^5)
Time (min)
15.44
15.00
14.53
14.34
13.76
13.50
11.29
11.03
10.97
10.91
10.72
10.60
9.39
9.07
8.74
8.19
8.05
7.75
7.29
6.82
6.59
6.54
6.45
6.17
5.97
4.73
4.46
4.13
3.99
3.83
3.71
3.54
3.15
3.10
2.98
2.74
2.66
2.59
2.56
2.37
2.25
2.18
2.09
2.09
1.91
1.86
1.54
1.48
1.28
1.23
0.73

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Ethanol	0.33	499	tr	0.73	908	tr
Isoamyl alcohol	1.05	733	0.01	3.14*	1177	0.09
Toluene	1.24	759	tr	1.28*	1003	0.28
α-Thujene	3.13	926	0.28	1.28*	1003	[0.28]
α-Pinene	3.21	931	2.06	1.23	994	2.07
Camphene	3.40*	944	0.35	1.54	1029	0.30
α-Fenchene	3.40*	944	[0.35]	1.48	1023	0.04
Thuja-2,4(10)-diene	3.50	950	0.05	2.09*	1087	7.00
Unknown [m/z 93, 91 (60), 121 (55), 136 (42), 79 (40)]	3.76	967	0.01	1.86	1062	0.02
β-Pinene	3.83*†	972	12.42	1.91	1068	5.51
Sabinene	3.83*†	972	[12.42]	2.09*	1087	[7.00]
6-Methyl-5-hepten-2-one	4.04	986	0.01	4.73	1302	0.02
Myrcene	4.17	994	10.34	2.66	1137	10.36
6-Methyl-5-hepten-2-ol	4.22	997	0.04	6.59	1432	0.03
2-Carene	4.24	999	0.12	2.18	1096	0.11
α-Phellandrene	4.30*	1003	2.59	2.56	1129	2.47
Pseudolimonene	4.30*	1003	[2.59]	2.59	1132	0.04
Octanal	4.30*	1003	[2.59]	4.13	1255	0.05
Δ3-Carene	4.38	1008	0.07	2.37	1113	0.06
α-Terpinene	4.51	1016	7.87	2.74	1144	7.89
Carvomenthene	4.58	1020	0.03	2.25	1104	0.03
para-Cymene	4.66	1025	10.66	3.83	1232	10.56
Limonene	4.75*	1031	48.97	2.98	1163	12.37
1,8-Cineole	4.75*	1031	[48.97]	3.10	1173	36.54
(*Z*?)-Citroxide	4.80	1034	0.01	3.14*	1177	[0.09]
Benzyl alcohol	4.82	1035	0.02	11.29	1813	0.01
(*Z*)-β-Ocimene	4.90	1040	0.04	3.54*	1210	2.49
(*E*)-β-Ocimene	5.06	1050	0.03	3.71	1223	0.04
γ-Terpinene	5.18	1058	2.42	3.54*	1210	[2.49]
Unknown [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.35	1068	0.01	4.46	1281	0.01
cis-Linalool oxide (fur.)	5.39	1071	0.02	6.17	1401	0.02
Terpinolene	5.63*	1086	0.18	3.99	1245	0.16
para-Cymenene	5.63*	1086	[0.18]	5.97	1386	0.01
trans-Linalool oxide (fur.)	5.63*	1086	[0.18]	6.54	1428	0.01
ortho-Guaiacol	5.63*	1086	[0.18]	11.03	1791	0.01
Linalool	5.89	1102	0.01	7.75	1520	0.01

Unknown [m/z 119, 109 (94), 43 (61), 95 (56), 91 (48), 77 (32), 152 (32), 137 (31), 134 (24)]	5.95	1106	0.02	8.05	1544	0.03
cis-para-Mentha-2,8-dien-1-ol	6.39	1134	0.02	9.07	1625	0.01
Camphor	6.43	1136	0.01	6.82	1449	0.01
Unknown [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.57	1145	0.19	6.45	1421	0.16
Unknown [m/z 71, 85 (48), 43 (42), 57 (38), 58 (37), 41 (21), ... 155 (12)]	6.66	1151	0.06			
Terpinen-4-ol	7.03	1174	0.02	8.19	1555	0.02
Unknown [m/z 109, 71 (66), 43 (55), 93 (55), 69 (43), 91 (43)...]	7.07	1177	0.01			
Cryptone	7.10	1180	0.02	8.74	1598	0.02
α-Terpineol	7.25	1189	0.03	9.39	1651	0.03
cis-α-Phellandrene epoxide (iPr vs Me)	7.42	1199	0.02	10.60	1753	0.02
trans-Carveol	7.71	1219	0.01	10.97	1786	0.01
Unknown [m/z 43, 97 (72), 41 (44), 71 (27), 55 (26), 82 (25)...]	7.75	1221	0.05			
Unknown [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	7.96	1235	0.01	10.91	1780	0.02
Unknown [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	8.16	1249	0.03	10.72	1764	0.03
trans-Ascaridole glycol	8.46	1268	0.02	13.76	2042	0.01
cis-Ascaridole glycol	8.77	1289	0.02	14.34	2099	0.02
Unknown [m/z 95, 110 (95), 67 (31), 43 (29), 122 (18), 41 (14)...]	8.84	1294	0.01			
Unknown [m/z 97, 112 (92), 83	9.17	1317	0.01	14.53	2118	0.02

(62), 43 (44), 41 (25)... 170? (4)]						
Unknown [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	9.76	1358	0.05	13.50	2017	0.05
α-Gurjunene	10.40	1404	0.01	7.29	1485	0.01
meta-Camphorene	16.98	1949	0.15	15.00	2166	0.15
para-Camphorene	17.33	1983	0.06	15.44	2211	0.07
Total identified		**99.02%**			**98.96%**	
Total reported		**99.49%**			**99.30%**	

*: 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

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