Date : May 26, 2020

Certificate of Analysis – GC Profiling

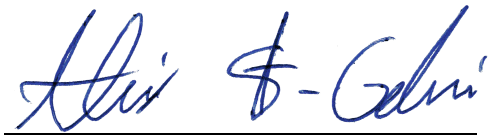
Sample identification

Internal code : 20E25-PTH04
Customer identification : Camphor - China - C3010592R
Type : Essential oil
Source : *Cinnamomum camphora* ct. White camphor
Customer : Plant Therapy

Analysis

Method: PC-MAT-007 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID (in French); identifications validated by GC-MS.
Analyst : Fanny Charlier, B. Sc.
Analysis date : May 26, 2020

Checked and approved by :



Alexis St-Gelais, M. Sc., 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid
Refractive index: 1.4691 ± 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
Hashishene	0.07	Monoterpene
α-Thujene	0.20	Monoterpene
α-Pinene	22.41	Monoterpene
Camphene	0.58	Monoterpene
α-Fenchene	0.15	Monoterpene
Thuja-2,4(10)-diene	0.08	Monoterpene
β-Pinene	9.82	Monoterpene
Sabinene	0.38	Monoterpene
trans-2-para-Menthene	0.02	Monoterpene
Myrcene	2.01	Monoterpene
Pseudolimonene	0.02	Monoterpene
α-Phellandrene	0.07	Monoterpene
Octanal	0.41	Aliphatic aldehyde
Δ3-Carene	0.18	Monoterpene
α-Terpinene	21.12	Monoterpene
1,4-Cineole	1.43	Monoterpenic ether
Carvomenthene	0.04	Aliphatic alcohol
para-Cymene	3.65	Monoterpene
Limonene	8.26	Monoterpene
1,8-Cineole	23.83	Monoterpenic ether
(*Z*?)-Citroxide	0.12	Monoterpenic ether
(2*E*,4*E*)-3,7-Dimethylocta-2,4-diene?	0.44	Monoterpene
Benzyl alcohol	0.04	Simple phenolic
(*Z*)-β-Ocimene	0.02	Monoterpene
Unknown	0.08	Monoterpene
(*E*)-β-Ocimene	0.01	Monoterpene
γ-Terpinene	1.72	Monoterpene
cis-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
Terpinolene	0.01	Monoterpene
trans-Linalool oxide (fur.)	0.10	Monoterpenic alcohol
α-Pinene oxide	0.02	Monoterpenic ether
Linalool	0.02	Monoterpenic alcohol
α-Thujone	0.01	Monoterpenic ketone
Unknown	0.06	Monoterpenic alcohol
endo-Fenchol	0.01	Monoterpenic alcohol
α-Campholenal	0.03	Monoterpenic aldehyde
cis-para-Mentha-2,8-dien-1-ol	0.03	Monoterpenic alcohol
Unknown	0.36	Unknown
Unknown	0.10	Unknown
Terpinen-4-ol	0.07	Monoterpenic alcohol
Cryptone	0.01	Normonoterpenic ketone
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	0.02	Monoterpenic alcohol
Unknown	0.04	Unknown
Unknown	0.02	Oxygenated monoterpene

trans-Ascaridole glycol	0.04	Monoterpenic alcohol
cis-Ascaridole glycol	0.04	Monoterpenic alcohol
Unknown	0.01	Unknown
Unknown	0.12	Unknown
Unknown	0.04	Unknown
Eugenol	0.01	Phenylpropanoid
Methyleugenol	0.01	Phenylpropanoid
meta-Camphorene	0.07	Diterpene
Consolidated total	**98.39%**	

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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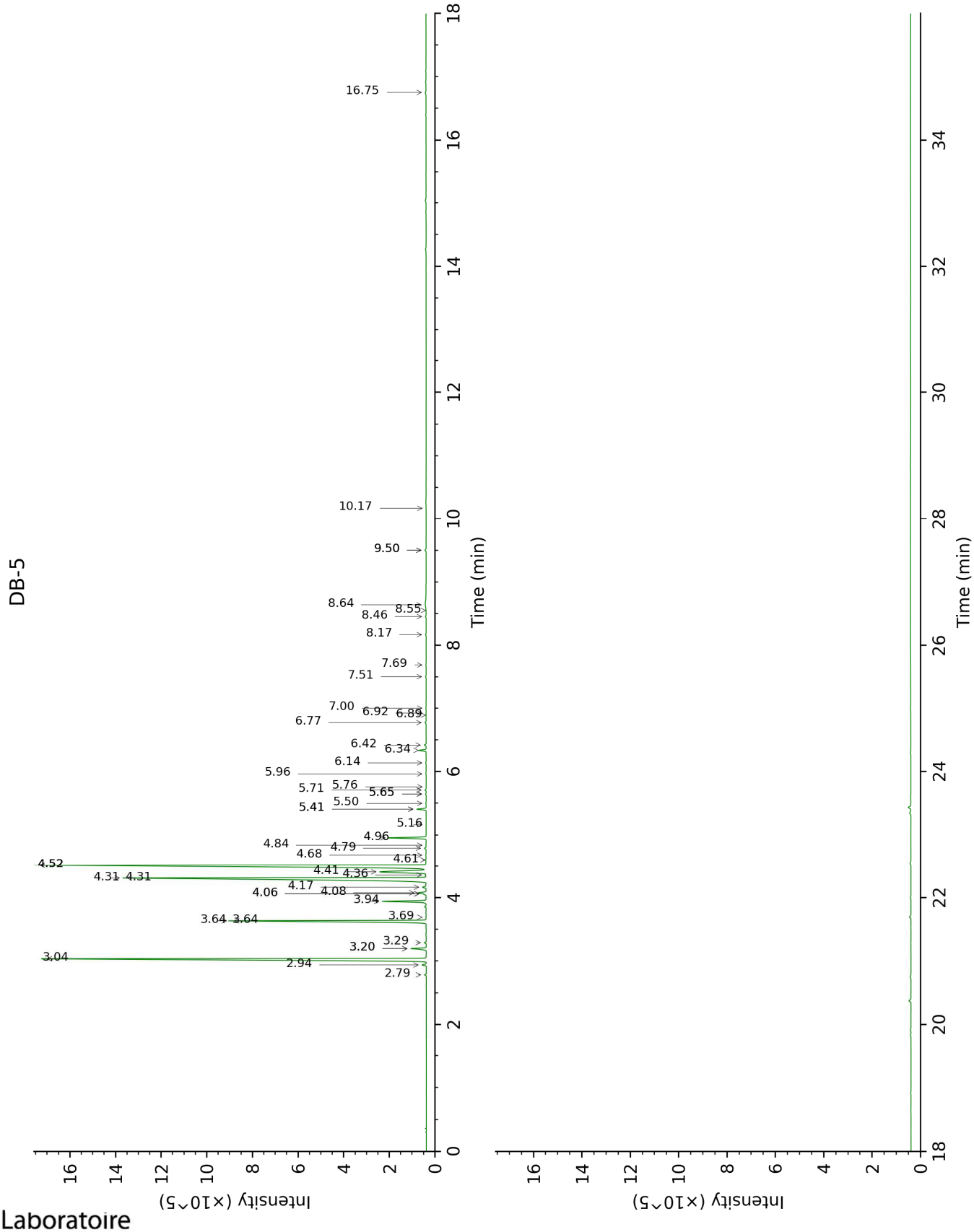
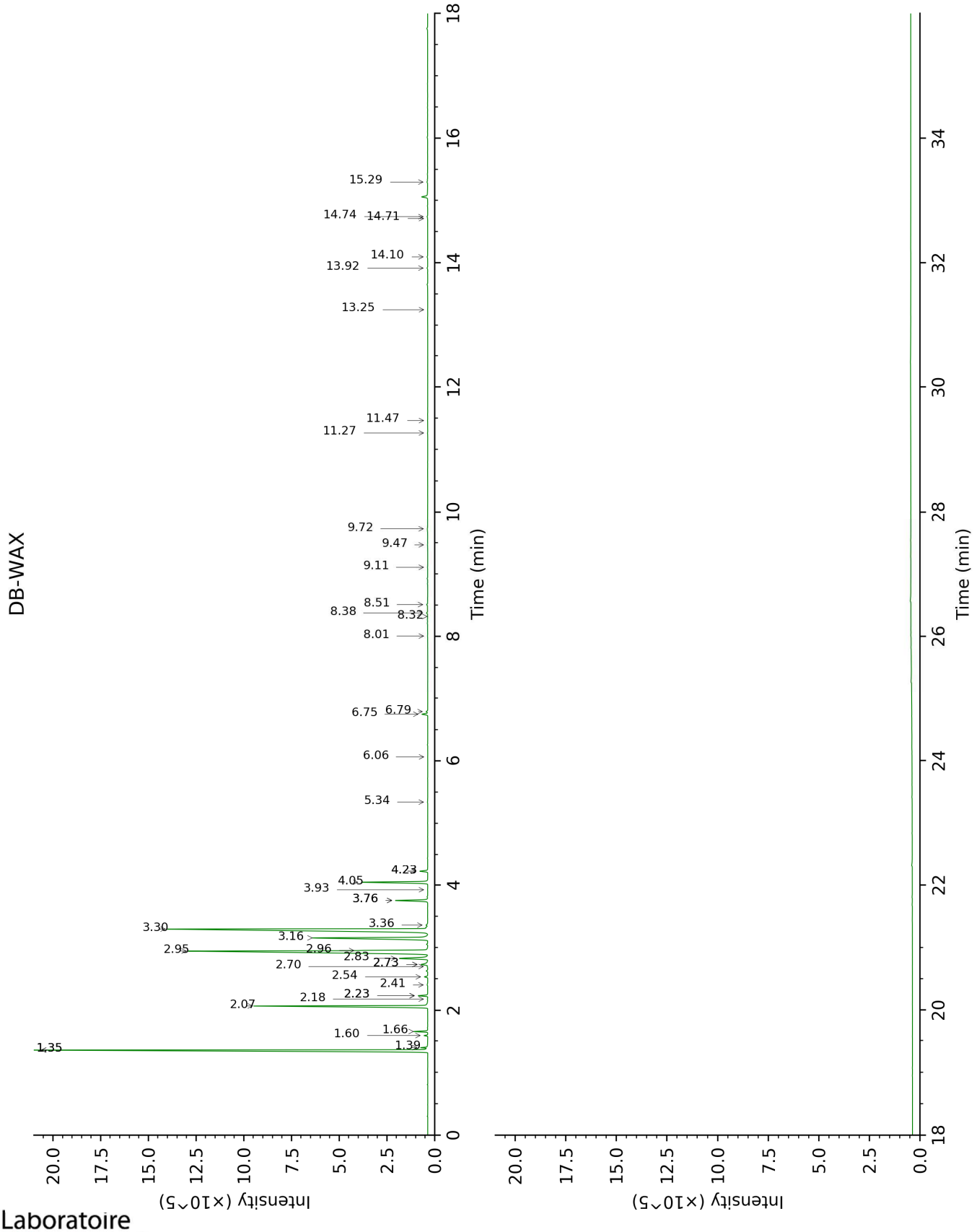

DB-5
16.75
10.17
9.50
8.64
8.46
8.55
8.17
7.69
7.51
7.00
6.92
6.89
6.77
6.42
6.34
6.14
5.96
5.71
5.76
5.65
5.41
5.50
5.16
4.96
4.84
4.79
4.68
4.61
4.52
4.41
4.36
4.31
4.31
4.17
4.08
4.06
3.94
3.69
3.64
3.64
3.29
3.20
3.04
2.94
2.79
Time (min)
Intensity (×10^5)


DB-WAX
Time (min)
Intensity (×10^5)
15.29
14.74
14.71
14.10
13.92
13.25
11.47
11.27
9.72
9.47
9.11
8.51
8.38
8.32
8.01
6.75
6.79
6.06
5.34
4.23
4.05
3.93
3.76
3.36
3.30
3.16
2.96
2.95
2.83
2.73
2.70
2.54
2.41
2.23
2.18
2.07
1.66
1.60
1.39
1.35

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Hashishene	2.79	915	0.07	1.36*	996	22.48
α-Thujene	2.94	925	0.20	1.39	1002	0.30
α-Pinene	3.04	932	22.41	1.36*	996	[22.48]
Camphene	3.20*	942	0.75	1.66	1028	0.58
α-Fenchene	3.20*	942	[0.75]	1.60	1022	0.15
Thuja-2,4(10)-diene	3.29	948	0.08	2.23*	1085	0.46
β-Pinene	3.64*	971	10.23	2.07	1068	9.82
Sabinene	3.64*	971	[10.23]	2.23*	1085	[0.46]
trans-2-para-Menthene	3.69	975	0.02	2.18	1079	0.02
Myrcene	3.94	992	2.01	2.83	1135	1.94
Pseudolimonene	4.06*	999	0.09	2.70	1125	0.02
α-Phellandrene	4.06*	999	[0.09]	2.73*	1127	0.51
Octanal	4.08	1000	0.41	4.23*	1242	0.42
Δ3-Carene	4.17	1006	0.18	2.54	1112	0.17
α-Terpinene	4.31*	1015	22.38	2.95	1144	21.12
1,4-Cineole	4.31*	1015	[22.38]	2.96	1145	1.43
Carvomenthene	4.36	1018	0.04	2.41	1102	0.05
para-Cymene	4.41	1021	3.65	4.05	1229	3.70
Limonene	4.52*	1028	31.82	3.16	1161	8.26
1,8-Cineole	4.52*	1028	[31.82]	3.30	1172	23.83
(*Z*?)-Citroxide	4.52*	1028	[31.82]	3.36	1177	0.12
(2*E*,4*E*)-3,7-Dimethylocta-2,4-diene?	4.52*	1028	[31.82]	2.73*	1127	[0.51]
Benzyl alcohol	4.61	1034	0.04			
(*Z*)-β-Ocimene	4.68	1039	0.02	3.76*	1208	1.76
Unknown [m/z 93, 136 (45), 79 (41), 91 (33), 77 (25)...]	4.79	1045	0.08			
(*E*)-β-Ocimene	4.84	1048	0.01	3.93	1220	0.01
γ-Terpinene	4.96	1056	1.72	3.76*	1208	[1.76]
cis-Linalool oxide (fur.)	5.16	1069	0.01			
Terpinolene	5.41*	1084	0.44	4.23*	1242	[0.42]
trans-Linalool oxide (fur.)	5.41*	1084	[0.44]	6.79	1425	0.10
α-Pinene oxide	5.50	1090	0.02	5.34	1319	0.02
Linalool	5.65*	1100	0.03	8.01	1517	0.02
α-Thujone	5.65*	1100	[0.03]	6.06	1372	0.01
Unknown [m/z 119, 109 (94), 43 (61), 95 (56), 91 (48), 77 (32), 152 (32), 137 (31), 134 (24)]	5.71	1104	0.06	8.38	1546	0.08

endo-Fenchol	5.76	1107	0.01	8.32	1541	0.02
α-Campholenal	5.96	1120	0.03			
cis-para-Mentha-2,8-dien-1-ol	6.14	1131	0.03	9.47	1632	0.02
Unknown [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.34	1144	0.36	6.75	1422	0.34
Unknown [m/z 71, 85 (48), 43 (42), 57 (38), 58 (37), 41 (21), ... 155 (12)]	6.42	1150	0.10			
Terpinen-4-ol	6.77	1173	0.07	8.51	1556	0.10
Cryptone	6.89	1180	0.01	9.11	1603	0.02
para-Cymen-8-ol	6.92	1182	0.01	11.47	1799	0.02
α-Terpineol	7.00	1188	0.02	9.72	1653	0.05
Unknown [m/z 43, 97 (72), 41 (44), 71 (27), 55 (26), 82 (25)...]	7.51	1222	0.04			
Unknown [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	7.69	1234	0.02	11.27	1782	0.02
trans-Ascaridole glycol	8.17	1267	0.04	14.10	2039	0.04
cis-Ascaridole glycol	8.46	1287	0.04	14.74	2102	0.04
Unknown [m/z 95, 110 (95), 67 (31), 43 (29), 122 (18), 41 (14)...]	8.55	1294	0.01			
Unknown [m/z 112, 97 (93), 83 (60), 43 (46), 41 (20), 69 (19)...]	8.64	1300	0.12			
Unknown [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	9.50*	1356	0.08	13.92	2022	0.04
Eugenol	9.50*	1356	[0.08]	14.71	2098	0.01
Methyleugenol	10.17	1404	0.01	13.25	1960	0.01
meta-Camphorene	16.75	1952	0.07	15.29	2157	0.05
Total identified		**97.02%**			**97.68%**	
Total reported		**97.80%**			**98.16%**	

*: 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

Note: no correction factor was applied
R.T.: Retention time (minutes)

R.I.: Retention index

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