

Date : May 23, 2018

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 18E09-FWM4-1-CC

Customer identification : Eucalyptus - Australia

Type : Essential oil

Source : *Eucalyptus globulus*

Customer : Faith Wellness Ministries

ANALYSIS

Method: PC-PA-014-17J19 - 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

Analysis date : May 17, 2018

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid

Refractive index: 1.4615 ± 0.0003 (20 °C)

CONCLUSION

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

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Isovaleral	0.01	0.01	Aliphatic aldehyde
Isoamyl alcohol	0.04	0.04	Aliphatic alcohol
Toluene	tr	0.02*	Simple phenolic
(2E)-Hexenal	tr	70.52*	Aliphatic aldehyde
(3Z)-Hexenol	0.01	0.01	Aliphatic alcohol
Isovaleric acid	0.03	0.02	Aliphatic acid
Hexanol	tr	tr	Aliphatic alcohol
Isoamyl acetate	tr	0.01	Aliphatic ester
Hashishene	0.02	4.87*	Monoterpene
Tricyclene	0.01	0.01	Monoterpene
α -Thujene	0.02	[0.02]*	Monoterpene
α -Pinene	4.80	[4.87]*	Monoterpene
α -Fenchene	0.23*	0.04	Monoterpene
Camphene	[0.23]*	0.19	Monoterpene
Thuja-2,4(10)-diene	0.01	0.05*	Monoterpene
β -Pinene	0.44*	0.39	Monoterpene
Sabinene	[0.44]*	[0.05]*	Monoterpene
Myrcene	0.76*	0.74	Monoterpene
<i>trans</i> -Dehydroxylinalool oxide	[0.76]*	0.02	Monoterpenic ether
α -Phellandrene	0.73*	0.70	Monoterpene
Pseudolimonene	[0.73]*	0.04	Monoterpene
Δ^3 -Carene	0.06*	0.05	Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	[0.06]*	1.48*	Monoterpenic ether
α -Terpinene	3.26	3.27	Monoterpene
para-Cymene	85.67*	4.48	Monoterpene
Limonene	[85.67]*	10.32	Monoterpene
1,8-Cineole	[85.67]*	[70.52]*	Monoterpenic ether
(Z)- β -Ocimene	0.07	0.06	Monoterpene
(E)- β -Ocimene	0.03	0.04	Monoterpene
γ -Terpinene	1.39	[1.48]*	Monoterpene
Unknown	0.02	0.01	Oxygenated monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.02	0.01	Monoterpenic alcohol
Isoterpinolene	0.01	0.01	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	0.13*	0.01	Monoterpenic alcohol
Terpinolene	[0.13]*	0.09	Monoterpene
para-Cymenene	[0.13]*	0.03	Monoterpene
α -Pinene oxide	0.02	0.01	Monoterpenic ether
Linalool	0.06	0.05	Monoterpenic alcohol
Unknown	0.03	0.02	Unknown
Nopinone	0.01	tr	Normonoterpenic ketone
<i>trans</i> -Pinocarveol	0.12	0.11	Monoterpenic alcohol
Pinocarpone	0.01	0.02	Monoterpenic ketone
Borneol	0.04	0.61*	Monoterpenic alcohol
Terpinen-4-ol	0.19	0.17*	Monoterpenic alcohol
para-Cymen-8-ol	0.01	0.02	Monoterpenic alcohol
<i>trans</i> -Isocarveol	0.02	0.03	Monoterpenic alcohol
α -Terpineol	0.59	[0.61]*	Monoterpenic alcohol
Myrtenol	0.01	0.01	Monoterpenic alcohol

α -Phellandrene epoxide	0.02	0.01	Monoterpenic ether
<i>trans</i> -Carveol	0.02	0.02	Monoterpenic alcohol
Unknown	0.01		Oxygenated monoterpene
<i>cis</i> -Isocarveol	0.01	0.02	Monoterpenic alcohol
Unknown	0.04		Oxygenated monoterpene
Carvone	0.02	0.02	Monoterpenic ketone
Unknown	0.01	0.01	Unknown
Geraniol	0.02	0.02	Monoterpenic alcohol
<i>cis</i> -Ascaridole glycol?	0.06	0.06	Monoterpenic alcohol
Unknown	0.02	0.02	Monoterpenic alcohol
α -Terpinyl acetate	0.01	0.01	Monoterpenic ester
Unknown	0.04	0.02	Unknown
Isoledene	0.01	0.01	Sesquiterpene
α -Copaene	0.01	0.01	Sesquiterpene
Geranyl acetate	0.01	0.02	Monoterpenic ester
Unknown	0.03		Sesquiterpene
Unknown	0.01		Sesquiterpene
β -Caryophyllene	0.02	0.01	Sesquiterpene
β -Gurjunene	0.01	0.01	Sesquiterpene
Aromadendrene	0.01	[0.17]*	Sesquiterpene
allo-Aromadendrene	0.01	0.01	Sesquiterpene
Viridiflorene	0.01	0.03	Sesquiterpene
γ -Cadinene	0.02	0.01	Sesquiterpene
δ -Cadinene	0.01	0.01	Sesquiterpene
Total identified	99.07%	98.81%	

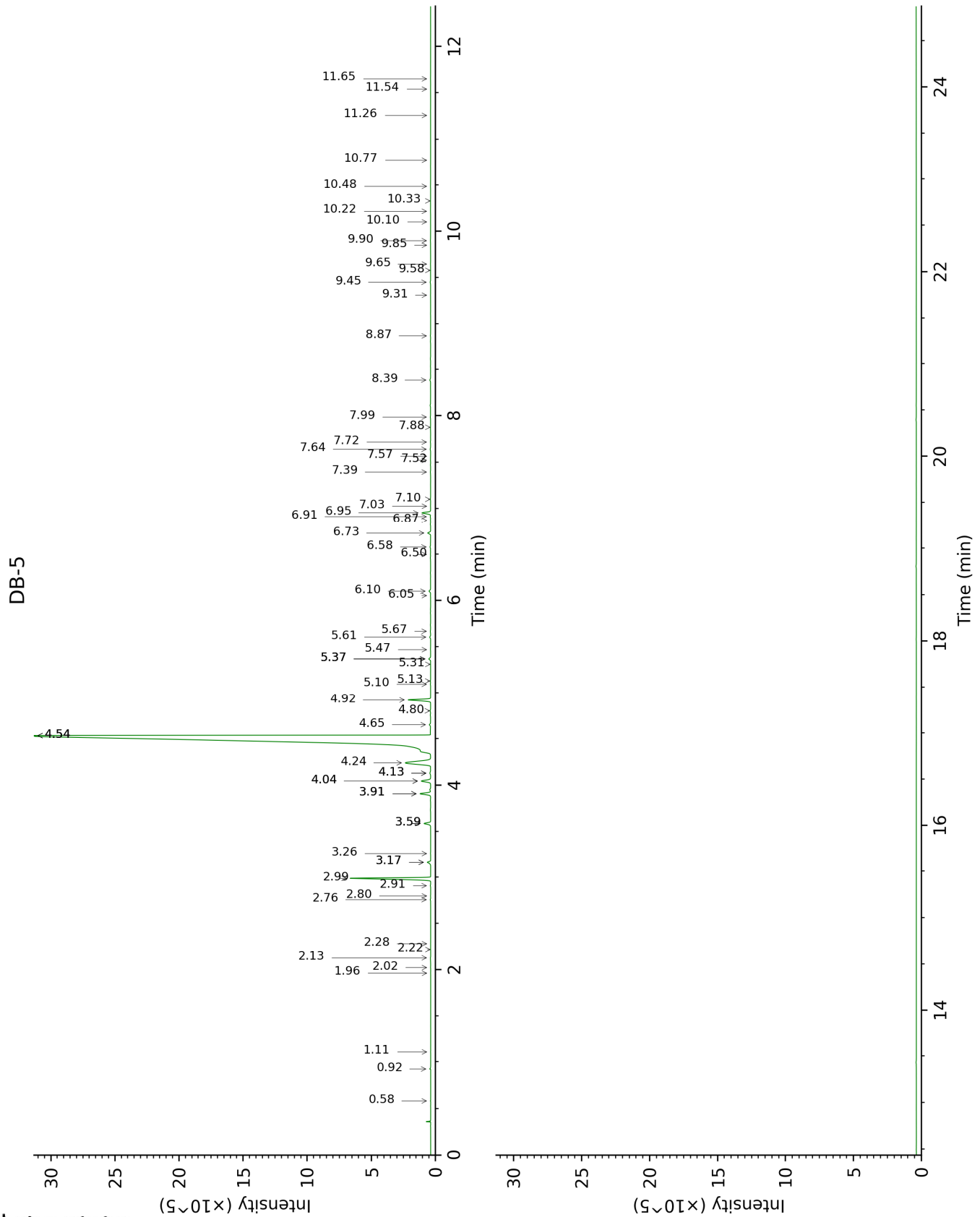
*: Two or more compounds are coeluting on this column

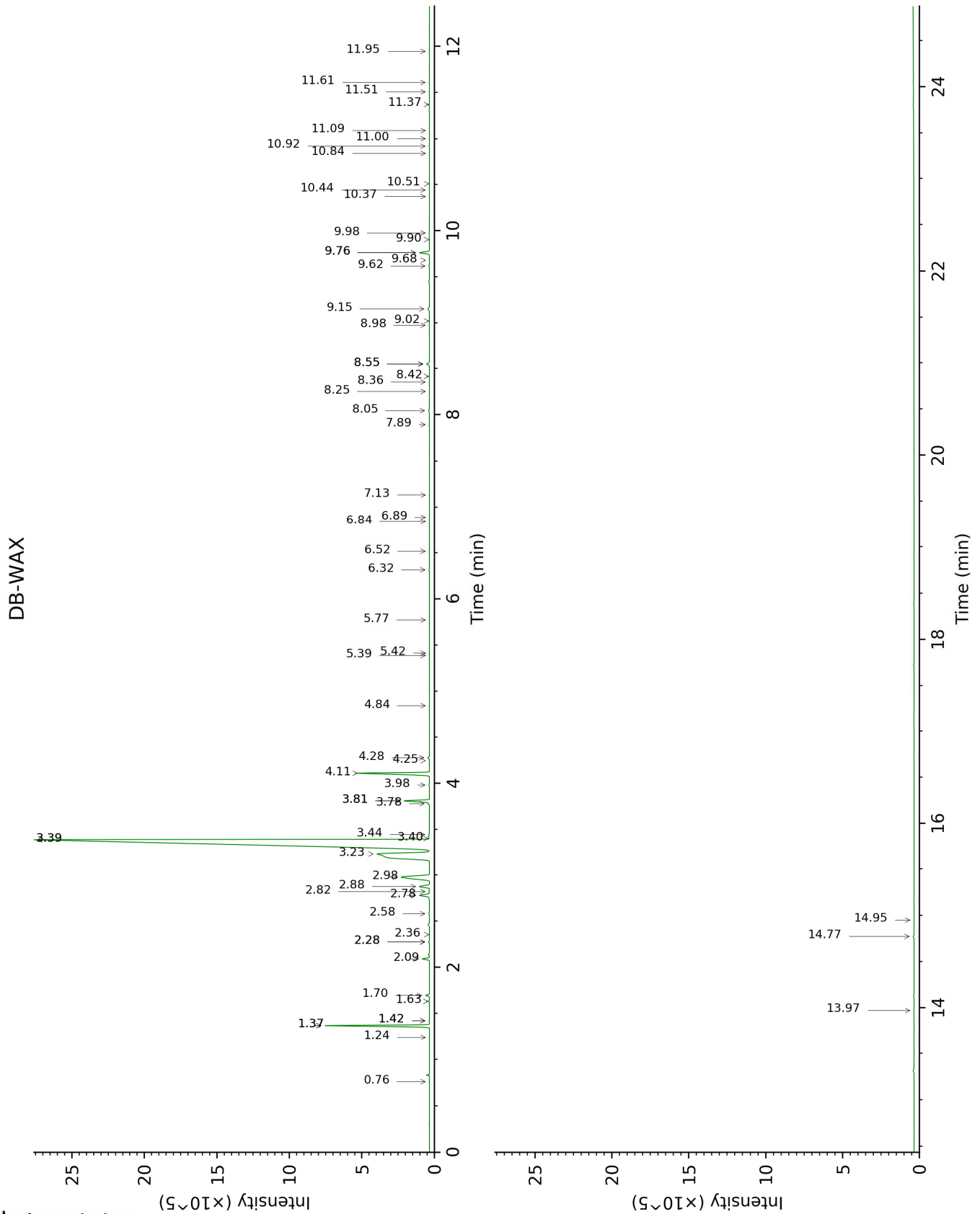
[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

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

Note: no correction factor was applied

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Isovaleral	0.58	637	0.01	0.76	884	0.01
Isoamyl alcohol	0.92	725	0.04	3.44	1178	0.04
Toluene	1.11	752	tr	1.42*	1001	0.02
(2E)-Hexenal	1.96	846	tr	3.39*	1174	70.52
(3Z)-Hexenol	2.02	851	0.01	5.77	1347	0.01
Isovaleric acid	2.13	860	0.03	9.90	1661	0.02
Hexanol	2.22	868	tr	5.42	1321	tr
Isoamyl acetate	2.28	873	tr	2.36	1093	0.01
Hashishene	2.76	911	0.02	1.37*	993	4.87
Tricyclene	2.80	914	0.01	1.24	972	0.01
α-Thujene	2.91	922	0.02	1.42*	1001	[0.02]
α-Pinene	2.99	927	4.80	1.37*	993	[4.87]
α-Fenchene	3.17*	939	0.23	1.63	1022	0.04
Camphene	3.17*	939	[0.23]	1.70	1028	0.19
Thuja-2,4(10)-diene	3.26	945	0.01	2.28*	1085	0.05
β-Pinene	3.59*	967	0.44	2.09	1067	0.39
Sabinene	3.59*	967	[0.44]	2.28*	1085	[0.05]
Myrcene	3.91*	989	0.76	2.88	1135	0.74
<i>trans</i> -Dehydroxylinalool oxide	3.91*	989	[0.76]	3.40	1175	0.02
α-Phellandrene	4.04*	998	0.73	2.78	1127	0.70
Pseudolimonene	4.04*	998	[0.73]	2.82	1130	0.04
Δ3-Carene	4.13*	1004	0.06	2.58	1112	0.05
<i>cis</i> -Dehydroxylinalool oxide	4.13*	1004	[0.06]	3.81*	1206	1.48
α-Terpinene	4.24	1011	3.26	2.98	1142	3.27
para-Cymene	4.54*	1029	85.67	4.11	1227	4.48
Limonene	4.54*	1029	[85.67]	3.24	1162	10.32
1,8-Cineole	4.54*	1029	[85.67]	3.39*	1174	[70.52]
(Z)-β-Ocimene	4.65	1037	0.07	3.78	1204	0.06
(E)-β-Ocimene	4.80	1046	0.03	3.98	1218	0.04
γ-Terpinene	4.92	1054	1.39	3.81*	1206	[1.48]
Unknown [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.10	1065	0.02	4.84	1279	0.01
<i>cis</i> -Linalool oxide (fur.)	5.13	1067	0.02	6.52	1400	0.01
Isoterpinolene	5.31	1079	0.01	4.24	1237	0.01
<i>trans</i> -Linalool oxide (fur.)	5.37*	1082	0.13	6.89	1428	0.01
Terpinolene	5.37*	1082	[0.13]	4.28	1239	0.09
para-Cymenene	5.37*	1082	[0.13]	6.32	1386	0.03
α-Pinene oxide	5.47	1089	0.02	5.39	1319	0.01

Linalool	5.60	1097	0.06	8.05	1514	0.05
Unknown [m/z 43, 59 (37), 79 (33), 91 (32), 119 (31)...]	5.67	1101	0.03	8.98	1586	0.02
Nopinone	6.05	1126	0.01	8.25	1530	tr
<i>trans</i> -Pinocarveol	6.10	1129	0.12	9.15	1600	0.11
Pinocarvone	6.50	1155	0.01	7.90	1502	0.02
Borneol	6.58	1160	0.04	9.76*	1650	0.61
Terpinen-4-ol	6.73	1170	0.19	8.55*	1553	0.17
<i>para</i> -Cymen-8-ol	6.87	1179	0.01	11.51	1796	0.02
<i>trans</i> -Isocarveol	6.91	1181	0.02	10.92	1746	0.03
α -Terpineol	6.95	1184	0.59	9.76*	1650	[0.61]
Myrtenol	7.02	1188	0.01	10.84	1739	0.01
α -Phellandrene epoxide	7.10	1193	0.02	11.00	1753	0.01
<i>trans</i> -Carveol	7.39	1213	0.02	11.37	1784	0.02
Unknown [m/z 43, 135 (82), 91 (68), 107 (58), 79 (55), 150 (49)]	7.52	1221	0.01			
<i>cis</i> -Isocarveol	7.56	1224	0.01	11.95	1834	0.02
Unknown [m/z 91, 92 (87), 137 (57), 81 (47)... 152 (17), 178 (1)]	7.64	1229	0.04			
Carvone	7.72	1234	0.02	9.98	1667	0.02
Unknown [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	7.88	1245	0.01	11.09	1760	0.01
Geraniol	7.99	1253	0.02	11.61	1804	0.02
<i>cis</i> -Ascaridole glycol?	8.39	1280	0.06	14.77	2097	0.06
Unknown [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]	8.87	1313	0.02	14.95	2115	0.02
α -Terpinyl acetate	9.31	1344	0.01	9.68	1643	0.01
Unknown [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	9.45	1354	0.04	13.97	2020	0.02
Isoledene	9.58	1363	0.01	6.84	1424	0.01
α -Copaene	9.65	1368	0.01	7.13	1446	0.01
Geranyl acetate	9.85	1382	0.01	10.51	1710	0.02
Unknown [m/z 93, 122 (98), 161 (98), 107 (86), 95 (46), 105 (72)... 204 (34)]	9.90	1385	0.03			
Unknown [m/z 119, 107 (86), 105	10.10	1400	0.01			

(85), 93 (78), 189 (66), 81 (65), 121 (64)... 204 (23)]						
β-Caryophyllene	10.22	1408	0.02	8.42	1543	0.01
β-Gurjunene	10.33	1417	0.01	8.36	1538	0.01
Aromadendrene	10.48	1428	0.01	8.55*	1553	[0.17]
allo-Aromadendrene	10.77	1450	0.01	9.02	1590	0.01
Viridiflorene	11.26	1486	0.01	9.62	1638	0.03
γ-Cadinene	11.54	1508	0.02	10.37	1699	0.01
δ-Cadinene	11.65	1516	0.01	10.44	1705	0.01
Total identified			99.07%			98.81%
Total reported			99.28%			98.89%

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

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