

Date : April 16, 2019

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 19D15-PTH06-1-SCC

Customer identification : Ledum - Canada - L1B10087R

Type : Essential oil

Source : *Ledum groenlandicum*

Customer : Plant Therapy

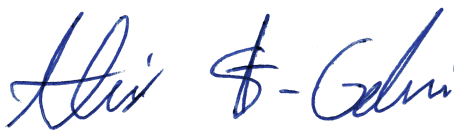
ANALYSIS

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 : Alexis St-Gelais, M. Sc., chimiste

Analysis date : April 15, 2019

Checked and approved by :



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

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PHYSICOCHEMICAL DATA

Physical aspect: Yellow liquid

Refractive index: 1.4858 ± 0.0003 (20 °C)

CONCLUSION

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

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Ethanol	0.01	0.01	Aliphatic alcohol
Toluene	0.01	0.01	Simple phenolic
Hexanal	tr	tr	Aliphatic aldehyde
Octane	0.01	0.02	Alkane
Unknown	0.01	0.02	Unknown
(3Z)-Hexenol	0.03	0.03	Aliphatic alcohol
Unknown	0.03	0.02	Unknown
Nonane	0.02*	tr	Alkane
Bornylene	[0.02]*	0.01	Monoterpene
Tricyclene	0.10	0.10	Monoterpene
Cumene	0.01	0.01	Normonoterpene
1-Isopropylcyclohexene	0.01	0.57*	Normonoterpene
α -Thujene	0.57	[0.57]*	Monoterpene
α -Pinene	5.87	5.97	Monoterpene
α -Fenchene	1.31*	0.02	Monoterpene
Camphene	[1.31]*	1.27	Monoterpene
Benzaldehyde	0.01	0.02	Simple phenolic
Unknown	0.02	0.02	Monoterpene
Sabinene	25.88*	20.13	Monoterpene
β -Pinene	[25.88]*	6.23	Monoterpene
Unknown	0.03		Unknown
6-Methyl-5-hepten-2-one	0.01	0.01	Aliphatic ketone
Myrcene	0.34	0.34	Monoterpene
Menthatriene isomer I	0.34*	0.06*	Monoterpene
α -Phellandrene	[0.34]*	0.28	Monoterpene
Δ^3 -Carene	0.01	0.02	Monoterpene
α -Terpinene	2.08	2.12	Monoterpene
para-Cymene	1.99	1.93	Monoterpene
Limonene	2.83*	2.00	Monoterpene
β -Phellandrene	[2.83]*	0.87	Monoterpene
1,8-Cineole	[2.83]*	[0.06]*	Monoterpenic ether
(Z)- β -Ocimene	0.14	6.33*	Monoterpene
(E)- β -Ocimene	0.06	0.06	Monoterpene
γ -Terpinene	6.00	[6.33]*	Monoterpene
Unknown	0.09*	0.07*	Oxygenated monoterpene
cis-Sabinene hydrate	[0.09]*	0.07	Monoterpenic alcohol
Terpinolene	1.03*	0.98	Monoterpene
para-Cymenene	[1.03]*	0.07	Monoterpene
trans-Sabinene hydrate	0.07*	0.28*	Monoterpenic alcohol
Unknown	[0.07]*	[0.07]*	Oxygenated monoterpene
Linalool	0.04	0.03	Monoterpenic alcohol
Nonanal	0.09*	0.05	Aliphatic aldehyde
Verbenol analog?	[0.09]*	0.06	Monoterpenic alcohol
β -Thujone	0.01	0.01	Monoterpenic ketone
Dehydrosabinaketone	0.37*	2.21*	Normonoterpenic ketone
cis-para-Menth-2-en-1-ol	[0.37]*	0.11*	Monoterpenic alcohol
α -Campholenal	0.19*	0.07	Monoterpenic aldehyde
trans-para-Mentha-2,8-dien-1-ol	[0.19]*	0.15	Monoterpenic alcohol

Unknown	0.16	0.14	Oxygenated monoterpene
4-Hydroxy-4-methylcyclohex-2-enone	0.04	0.04	Aliphatic alcohol
Cosmene?	0.01		Monoterpene
<i>cis</i> -para-Mentha-2,8-dien-1-ol	0.02	0.04*	Monoterpenic alcohol
<i>trans</i> -Pinocarveol	1.02	1.00	Monoterpenic alcohol
Camphor	0.09	0.12	Monoterpenic ketone
Unknown	0.01	0.01	Unknown
para-Vinylanisole	0.03	[0.04]*	Simple phenolic
Unknown	0.35*	0.24*	Oxygenated monoterpene
Sabinaketon	[0.35]*	0.89*	Normoterpenic ketone
Pinocarvone	0.38*	[0.28]*	Monoterpenic ketone
Borneol	[0.38]*	0.91*	Monoterpenic alcohol
δ -Terpineol	0.03	0.04	Monoterpenic alcohol
Isopinocampone	0.11*	0.36*	Monoterpenic ketone
<i>cis</i> -Sabinol	[0.11]*	0.40	Monoterpenic alcohol
Rosefuran oxide	0.02	4.49*	Monoterpenic ether
Terpinen-4-ol	4.38	[4.49]*	Monoterpenic alcohol
Thuj-3-en-10-al	0.68*	[0.89]*	Monoterpenic aldehyde
<i>trans</i> -Isocarveol	[0.68]*	0.16*	Monoterpenic alcohol
para-Cymen-8-ol	0.03	0.03	Monoterpenic alcohol
α -Terpineol	0.15	[0.91]*	Monoterpenic alcohol
<i>cis</i> -4-Caranone	2.05*	0.01	Aliphatic ketone
Myrtenal	[2.05]*	[2.21]*	Monoterpenic aldehyde
Myrtenol	0.36*	[0.40]*	Monoterpenic alcohol
para-Mentha-1,5-dien-7-ol	[0.36]*	[0.16]*	Monoterpenic alcohol
α -Phellandrene epoxide	0.10*	0.02	Monoterpenic ether
<i>trans</i> -Isopiperitenol	[0.10]*	0.55*	Monoterpenic alcohol
Unknown	[0.10]*	[0.40]*	Unknown
<i>trans</i> -Piperitol	0.02	0.02	Monoterpenic alcohol
<i>cis</i> -Isopiperitenol	0.03	0.03	Monoterpenic alcohol
<i>trans</i> -Carveol	0.03	0.04	Monoterpenic alcohol
Unknown	0.04		Unknown
para-Cumenol	0.02	0.02	Normoterpenic alcohol
<i>cis</i> -Isocarveol	0.13	0.27*	Monoterpenic alcohol
Cuminal	0.51	0.57*	Monoterpenic aldehyde
Carvone	0.06	0.07	Monoterpenic ketone
Unknown	0.01		Unknown
Unknown	0.01		Unknown
<i>trans</i> -Ascaridole glycol	0.02	0.03	Monoterpenic alcohol
Phellandral	0.13	3.37*	Monoterpenic aldehyde
Unknown	0.03		Unknown
α -Terpinen-7-al	0.06	0.07	Monoterpenic aldehyde
Bornyl acetate	2.08	2.09*	Monoterpenic ester
Cuminol	0.02	0.02	Monoterpenic alcohol
para-Cymen-7-ol	0.07	0.04	Monoterpenic alcohol
Thymol	0.02	0.03	Monoterpenic alcohol
Carvacrol	0.06		Monoterpenic alcohol
Unknown	0.04		Unknown
Myrtenyl acetate	0.04	0.07	Monoterpenic ester
1,4-para-Menthadien-7-ol	0.17	0.29*	Monoterpenic alcohol
δ -Elemene	0.11*	0.02*	Sesquiterpene
Unknown	[0.11]*	[0.57]*	Unknown

α-Cubebene	0.06	0.06	Sesquiterpene
Citronellyl acetate	0.05	0.06	Monoterpenic ester
Neryl acetate	0.02	4.62*	Monoterpenic ester
α-Ylangene	0.01*	0.01	Sesquiterpene
Cyclosativene II	[0.01]*	[0.02]*	Sesquiterpene
α-Copaene	0.26	[0.24]*	Sesquiterpene
cis-β-Elemene	0.05*	[2.09]*	Sesquiterpene
β-Bourbonene	[0.05]*	0.03	Sesquiterpene
Geranyl acetate	0.07	0.12	Monoterpenic ester
β-Cubebene	0.04	0.03	Sesquiterpene
β-Elemene	0.73	0.62	Sesquiterpene
α-Gurjunene	0.32*	[0.36]*	Sesquiterpene
Sesquithujene	[0.32]*	[0.11]*	Sesquiterpene
β-Caryophyllene	0.82	0.81*	Sesquiterpene
β-Copaene	0.03	0.07	Sesquiterpene
Unknown	0.04	0.04	Sesquiterpene
γ-Elemene	0.20	0.24	Sesquiterpene
trans-α-Bergamotene	0.18	[0.81]*	Sesquiterpene
α-Humulene	2.08	2.07	Sesquiterpene
allo-Aromadendrene	0.32*	0.25	Sesquiterpene
Unknown	[0.32]*		Sesquiterpene
(E)-β-Farnesene	0.38	0.39	Sesquiterpene
γ-Murolene	0.44*	0.12	Sesquiterpene
Eudesma-2,4,11-triene	[0.44]*	0.10	Sesquiterpene
trans-Cadina-1(6),4-diene	[0.44]*	0.15	Sesquiterpene
Germacrene D	0.46	[0.91]*	Sesquiterpene
β-Selinene	9.23*	9.03	Sesquiterpene
Eudesma-3,5,11-triene	[9.23]*	[4.62]*	Sesquiterpene
epi-Cubebol	0.20	[0.27]*	Sesquiterpenic alcohol
α-Selinene	3.50	[3.37]*	Sesquiterpene
Curzerene	0.39	0.44	Sesquiterpenic ether
Eudesma-2,4(15),11-triene	0.23	1.29*	Sesquiterpene
Cubebol	4.46*	0.04	Sesquiterpenic alcohol
γ-Cadinene	[4.46]*	[0.55]*	Sesquiterpene
β-Bisabolene	[4.46]*	[4.62]*	Sesquiterpene
7-epi-α-Selinene	0.21*	[0.55]*	Sesquiterpene
Shyobunone	[0.21]*	0.02	Sesquiterpenic ketone
trans-Calamenene	0.89*	0.10	Sesquiterpene
δ-Cadinene	[0.89]*	0.77	Sesquiterpene
trans-Cadina-1,4-diene	0.14	0.11	Sesquiterpene
Selina-4(15),7(11)-diene	0.13	0.11*	Sesquiterpene
α-Calacorene	0.05	0.04	Sesquiterpene
Selina-3,7(11)-diene	0.09	[0.11]*	Sesquiterpene
(E)-α-Bisabolene	0.27	0.25	Sesquiterpene
Isocaryophyllene epoxide B	0.05	0.07	Sesquiterpenic ether
Germacrene B	1.41	[1.29]*	Sesquiterpene
Palustrol	0.11	0.11	Sesquiterpenic alcohol
β-Calacorene	0.03	0.01	Sesquiterpene
Caryophyllene oxide isomer	0.08*	0.01	Sesquiterpenic ether
Caryophyllene oxide	[0.08]*	0.05	Sesquiterpenic ether
Unknown	0.14	0.22*	Oxygenated sesquiterpene
Unknown	0.18	[0.22]*	Oxygenated sesquiterpene

Unknown	0.99*	0.10	Oxygenated sesquiterpene
Eudesm-5-en-11-ol	[0.99]*	0.70	Sesquiterpenic alcohol
Unknown	0.33	0.13	Oxygenated sesquiterpene
Unknown	0.27	0.11	Oxygenated sesquiterpene
1-epi-Cubenol	0.15	[0.29]*	Sesquiterpenic alcohol
Unknown	0.18		Unknown
Caryophylladienol II	0.11	0.05	Sesquiterpenic alcohol
τ-Cadinol	0.12*	0.06	Sesquiterpenic alcohol
Cubenol	[0.12]*	0.06	Sesquiterpenic alcohol
β-Eudesmol	0.07	0.07	Sesquiterpenic alcohol
Unknown	0.26	0.12	Oxygenated sesquiterpene
Unknown	0.43	0.39	Oxygenated sesquiterpene
Germacrone	0.75	0.54	Sesquiterpenic ketone
Unknown	0.22	0.22	Oxygenated sesquiterpene
Patchoulenone	0.05	0.04	Sesquiterpenic ketone
Cyclocolorenone	0.35	0.33	Sesquiterpenic ketone
Eudesma-3,11-dien-2-one	0.70	0.75	Sesquiterpenic ketone
Phytone	0.01	0.01	Terpenic ketone
Total identified	94.24%	93.99%	

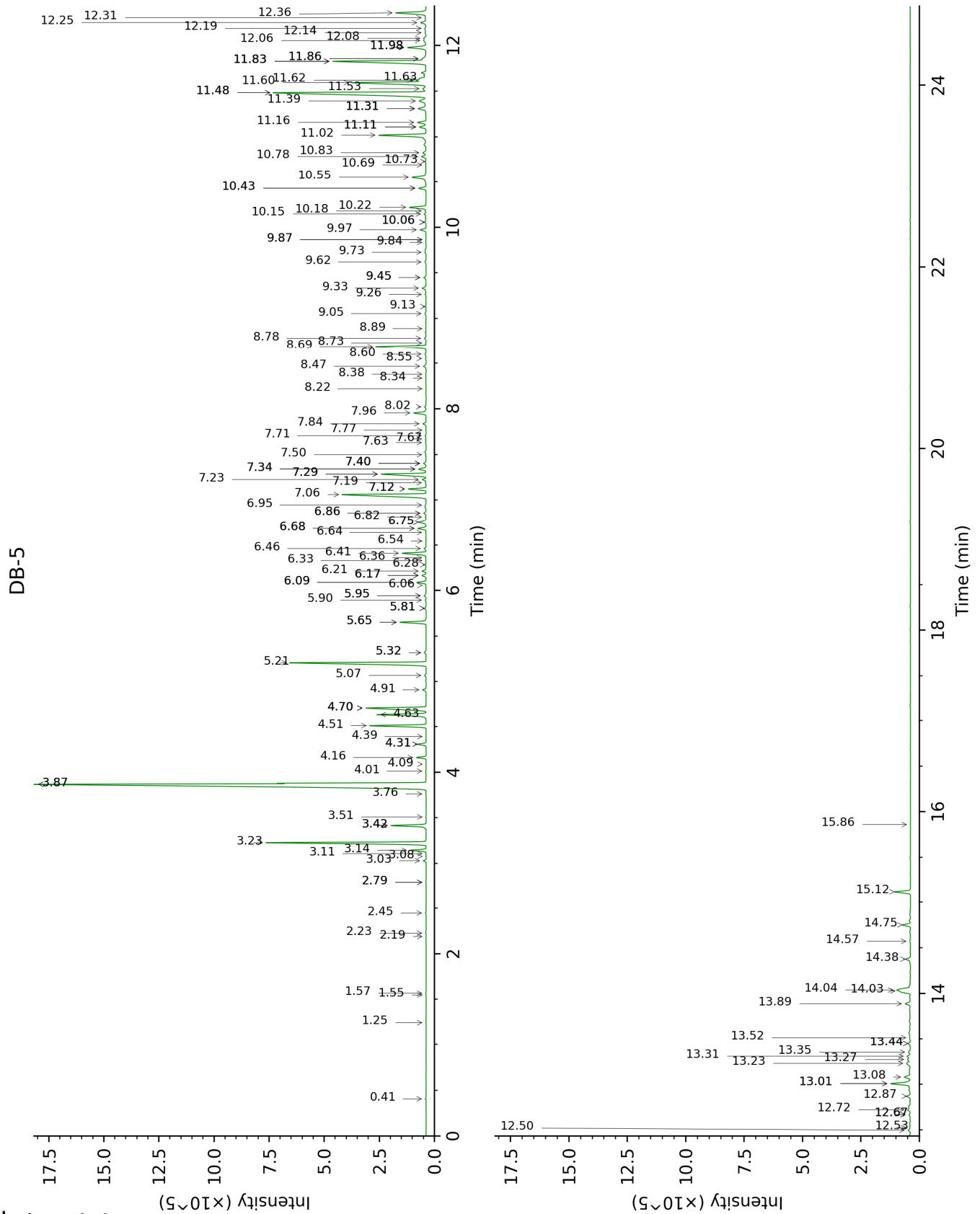
*: Two or more compounds are coeluting on this column

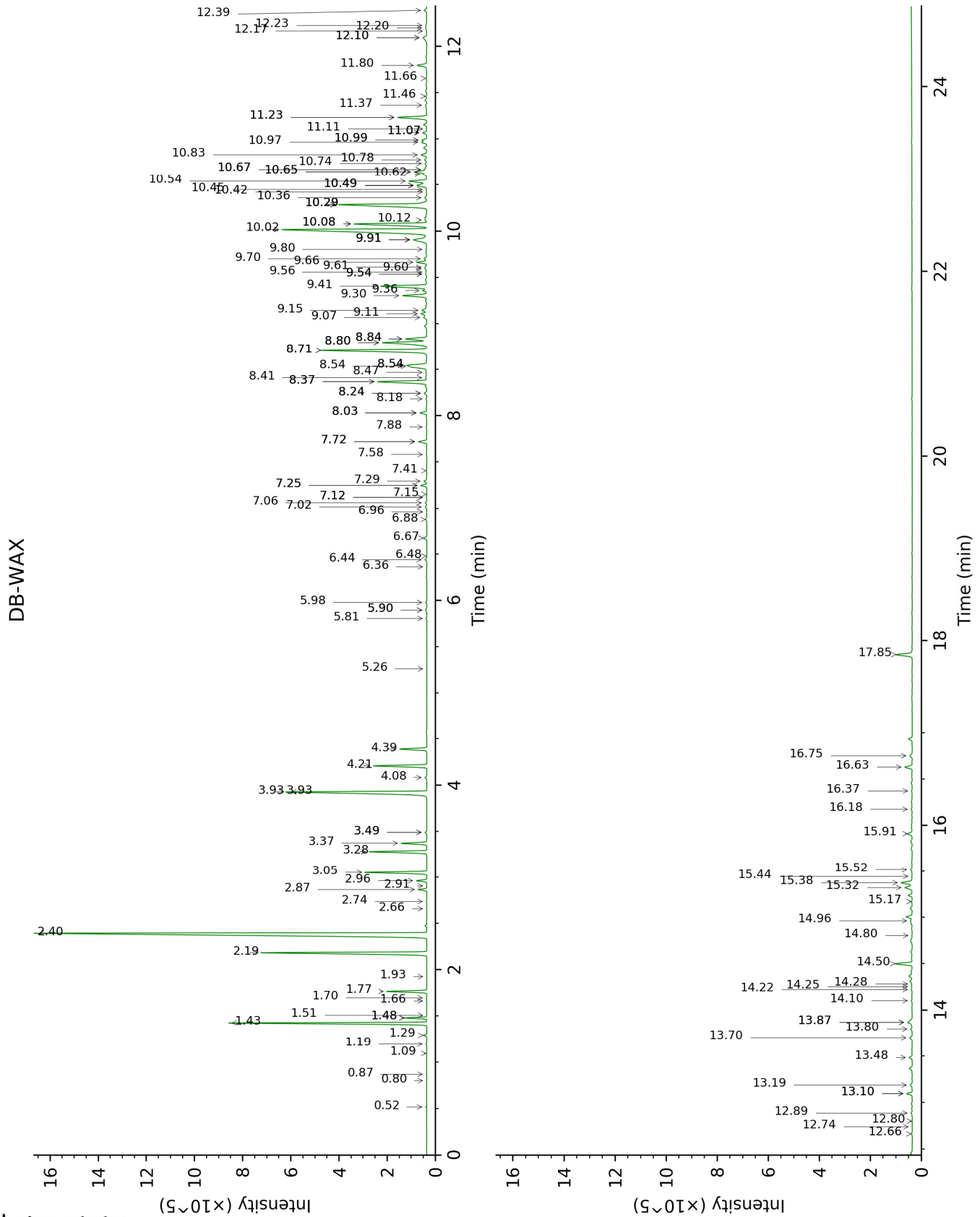
[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

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	%
Ethanol	0.41	500	0.01	0.87	907	0.01
Toluene	1.25	758	0.01	1.51	1004	0.01
Hexanal	1.55	799	tr	1.93	1045	tr
Octane	1.57	802	0.01	0.52	791	0.02
Unknown [m/z 109, 43 (28), 124 (28), 41 (14), 55 (11), 79 (9), 81 (8)...]	2.19	853	0.01	1.66	1019	0.02
(3Z)-Hexenol	2.23	856	0.03	5.81	1342	0.03
Unknown [m/z 79, 78 (45), 91 (28), 77 (28), 41 (13), 80 (12), 107 (11)... 122 (1)]	2.45	874	0.03	1.19	959	0.02
Nonane	2.78*	902	0.02	0.80	895	tr
Bornylene	2.78*	902	[0.02]	1.09	943	0.01
Tricyclene	3.03	918	0.10	1.29	975	0.10
Cumene	3.08	921	0.01	2.91	1131	0.01
1-Isopropylcyclohexene	3.11	923	0.01	1.48*	1001	0.57
α-Thujene	3.14	926	0.57	1.48*	1001	[0.57]
α-Pinene	3.23	931	5.87	1.43	996	5.97
α-Fenchene	3.42*	944	1.31	1.70	1022	0.02
Camphene	3.42*	944	[1.31]	1.77	1029	1.27
Benzaldehyde	3.51	950	0.01	7.41	1460	0.02
Unknown [m/z 799, 78 (44), 77 (30), 91 (29), 122 (17)]	3.76	966	0.02	2.74	1118	0.02
Sabinene	3.87*	974	25.88	2.40	1090	20.13
β-Pinene	3.87*	974	[25.88]	2.18	1070	6.23
Unknown [m/z 57, 123 (84), 43 (41), 95 (35), 93 (32), 56 (31)...]	4.01	983	0.03			
6-Methyl-5-hepten-2-one	4.09	988	0.01	5.26	1303	0.01
Myrcene	4.16	993	0.34	2.96	1135	0.34
Menthatriene isomer I	4.31*	1002	0.34	3.49*	1176	0.06
α-Phellandrene	4.31*	1002	[0.34]	2.87	1128	0.28
Δ ³ -Carene	4.39	1008	0.01	2.66	1112	0.02
α-Terpinene	4.51	1015	2.08	3.05	1142	2.12
para-Cymene	4.63	1023	1.99	4.21	1230	1.93
Limonene	4.70*	1028	2.83	3.28	1160	2.00
β-Phellandrene	4.70*	1028	[2.83]	3.37	1167	0.87
1,8-Cineole	4.70*	1028	[2.83]	3.49*	1176	[0.06]
(Z)-β-Ocimene	4.91	1041	0.14	3.93*	1210	6.33
(E)-β-Ocimene	5.07	1050	0.06	4.08	1221	0.06
γ-Terpinene	5.21	1059	6.00	3.93*	1210	[6.33]
Unknown [m/z 95, 109 (88), 41 (79), 81	5.32*	1066	0.09	5.90*	1349	0.07

(77), 55 (65), 79 (64), 43 (55)... 137 (22), 150 (8)]						
<i>cis</i> -Sabinene hydrate	5.32*	1066	[0.09]	7.02	1431	0.07
Terpinolene	5.65*	1087	1.03	4.39	1243	0.98
para-Cymenene	5.65*	1087	[1.03]	6.44	1388	0.07
<i>trans</i> -Sabinene hydrate	5.81*	1097	0.07	8.03*	1507	0.28
Unknown [m/z 111, 43 (73), 69 (58), 41 (38), 55 (38)... 125 (19), 140 (1)]	5.81*	1097	[0.07]	5.90*	1349	[0.07]
Linalool	5.90	1103	0.04	8.18	1519	0.03
Nonanal	5.94*	1106	0.09	5.98	1355	0.05
Verbenol analog?	5.94*	1106	[0.09]	8.41	1537	0.06
β-Thujone	6.06	1113	0.01	6.48	1391	0.01
Dehydrosabinaketone	6.09*	1115	0.37	8.80*	1567	2.21
<i>cis</i> -para-Menth-2-en- 1-ol	6.09*	1115	[0.37]	8.24*	1524	0.11
α-Campholenal	6.17*	1120	0.19	7.06	1434	0.07
<i>trans</i> -para-Mentha- 2,8-dien-1-ol	6.17*	1120	[0.19]	9.07	1588	0.15
Unknown [m/z 81, 67 (86), 79 (74), 109 (69), 41 (45), 91 (29), 77 (29), 123 (29)]	6.22	1123	0.16	6.67	1405	0.14
4-Hydroxy-4- methylcyclohex-2- enone	6.28	1128	0.04	14.10	2026	0.04
Cosmene?	6.33	1130	0.01			
<i>cis</i> -para-Mentha-2,8- dien-1-ol	6.36	1132	0.02	9.54*	1626	0.04
<i>trans</i> -Pinocarveol	6.41	1136	1.02	9.30	1607	1.00
Camphor	6.46	1139	0.09	7.30	1452	0.12
Unknown [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.54	1144	0.01	6.96	1427	0.01
para-Vinylanisole	6.64	1150	0.03	9.54*	1626	[0.04]
Unknown [m/z 67, 81 (99), 79 (78), 109 (67), 41 (47), 77 (31), 91 (29)... 121 (22), 123 (20)... 152 (5)]	6.68*	1153	0.35	7.25*	1448	0.24
Sabinaketone	6.68*	1153	[0.35]	8.84*	1570	0.89
Pinocarvone	6.75*	1158	0.38	8.03*	1507	[0.28]
Borneol	6.75*	1158	[0.38]	9.91*	1656	0.91
δ-Terpineol	6.82	1162	0.03	9.56	1627	0.04
Isopinocampone	6.86*	1164	0.11	7.72*	1483	0.36
<i>cis</i> -Sabinol	6.86*	1164	[0.11]	10.97†	1744	0.40
Rosefuran oxide	6.95	1170	0.02	8.71*	1560	4.49
Terpinen-4-ol	7.06	1178	4.38	8.71*	1560	[4.49]
Thuj-3-en-10-al	7.12*	1182	0.68	8.84*	1570	[0.89]

<i>trans</i> -Isocarveol	7.12*	1182	[0.68]	11.07*	1753	0.16
para-Cymen-8-ol	7.19	1186	0.03	11.66	1803	0.03
α -Terpineol	7.23	1188	0.15	9.91*	1656	[0.91]
<i>cis</i> -4-Caranone	7.29*	1192	2.05	6.36	1382	0.01
Myrtenal	7.29*	1192	[2.05]	8.80*	1567	[2.21]
Myrtenol	7.34*	1196	0.36	10.99*†	1746	[0.40]
para-Mentha-1,5-dien-7-ol	7.34*	1196	[0.36]	11.07*	1753	[0.16]
α -Phellandrene epoxide	7.40*	1200	0.10	11.11	1756	0.02
<i>trans</i> -Isopiperitenol	7.40*	1200	[0.10]	10.49*	1704	0.55
Unknown [m/z 95, 93 (32), 121 (24), 79 (22), 91 (21), 105 (16)... 154 (2)]	7.40*	1200	[0.10]	10.99*†	1746	[0.40]
<i>trans</i> -Piperitol	7.50	1206	0.02	10.42	1698	0.02
<i>cis</i> -Isopiperitenol	7.63	1215	0.03	10.45	1700	0.03
<i>trans</i> -Carveol	7.67	1218	0.03	11.46	1786	0.04
Unknown [m/z 43, 97 (72), 41 (44), 71 (27), 55 (26), 82 (25)...]	7.71	1220	0.04			
para-Cumenol	7.77	1224	0.02	15.44	2158	0.02
<i>cis</i> -Isocarveol	7.84	1229	0.13	12.10*	1842	0.27
Cuminal	7.96	1237	0.51	10.65*	1717	0.57
Carvone	8.02	1242	0.06	10.12	1673	0.07
Unknown [m/z 69, 41 (75), 109 (35), 95 (34), 55 (28), 43 (27), 110 (26)...]	8.22	1255	0.01			
Unknown [m/z 149, 93 (50), 121 (45), 91 (39), 77 (38), 136 (32), 67 (31)...]	8.34	1263	0.01			
<i>trans</i> -Ascaridole glycol	8.38	1266	0.02	14.25	2041	0.03
Phellandral	8.47	1272	0.13	10.08*	1670	3.37
Unknown [m/z 192, 93 (97), 177 (57), 121 (57), 91 (48), 136 (48)...]	8.56	1278	0.03			
α -Terpinen-7-al	8.60	1281	0.06	10.74	1724	0.07
Bornyl acetate	8.69	1287	2.08	8.37*	1533	2.09
Cuminol	8.73	1289	0.02	14.28	2044	0.02
para-Cymen-7-ol	8.78	1293	0.07	14.22	2038	0.04
Thymol	8.89	1300	0.02	15.17	2131	0.03
Carvacrol	9.05	1308	0.06			
Unknown [m/z 79, 91 (65), 77 (63), 55 (43)...]	9.13	1313	0.04			
Myrtenyl acetate	9.26	1322	0.04	9.61	1632	0.07
1,4-para-Menthadien-7-ol	9.33	1327	0.17	13.87*	2004	0.29
δ -Elemene	9.45*	1336	0.11	7.12*	1438	0.02

Unknown [m/z 93, 121 (67), 91 (62), 105 (56), 120 (56), 79 (47), 41 (47)...]	9.45*	1336	[0.11]	10.65*	1717	[0.57]
α -Cubebene	9.62	1348	0.06	6.88	1421	0.06
Citronellyl acetate	9.73	1355	0.05	9.60	1630	0.06
Neryl acetate	9.84	1363	0.02	10.29*	1686	4.62
α -Ylangene	9.87*	1365	0.01	7.15	1441	0.01
Cyclosativene II	9.87*	1365	[0.01]	7.12*	1438	[0.02]
α -Copaene	9.97	1372	0.26	7.25*	1448	[0.24]
<i>cis</i> - β -Elemene	10.06*	1378	0.05	8.37*	1533	[2.09]
β -Bourbonene	10.06*	1378	[0.05]	7.58	1473	0.03
Geranyl acetate	10.15	1385	0.07	10.62	1714	0.12
β -Cubebene	10.18	1387	0.04	7.88	1495	0.03
β -Elemene	10.22	1390	0.73	8.54	1546	0.62
α -Gurjunene	10.43*	1405	0.32	7.72*	1483	[0.36]
Sesquithujene	10.43*	1405	[0.32]	8.24*	1524	[0.11]
β -Caryophyllene	10.55	1414	0.82	8.54*	1547	0.81
β -Copaene	10.69	1424	0.03	8.47	1541	0.07
Unknown [m/z 93, 91 (52), 119 (37), 105 (31), 77 (29), 41 (27), 134 (26)... 204? (2)]	10.73	1427	0.04	9.80	1647	0.04
γ -Elemene	10.78	1431	0.20	9.15	1594	0.24
<i>trans</i> - α -Bergamotene	10.83	1434	0.18	8.54*	1547	[0.81]
α -Humulene	11.02	1449	2.08	9.41	1615	2.07
allo-Aromadendrene	11.11*	1456	0.32	9.11	1591	0.25
Unknown [m/z 131, 107 (74), 105 (69), 91 (67), 119 (59), 93 (51)... 202 (24), 204 (19)]	11.11*	1456	[0.32]			
(<i>E</i>)- β -Farnesene	11.16	1459	0.38	9.66	1636	0.39
γ -Murololene	11.31*	1471	0.44	9.70	1639	0.12
Eudesma-2,4,11-triene	11.31*	1471	[0.44]	10.36	1692	0.10
<i>trans</i> -Cadina-1(6),4-diene	11.31*	1471	[0.44]	9.36	1611	0.15
Germacrene D	11.39	1477	0.46	9.91*	1656	[0.91]
β -Selinene	11.48*	1484	9.23	10.02	1664	9.03
Eudesma-3,5,11-triene	11.48*	1484	[9.23]	10.29*	1686	[4.62]
epi-Cubebol	11.53	1487	0.20	12.10*	1842	[0.27]
α -Selinene	11.60	1492	3.50	10.08*	1670	[3.37]
Curzerene	11.62	1494	0.39	11.80	1815	0.44
Eudesma-2,4(15),11-triene	11.64	1495	0.23	11.24*	1767	1.29
Cubebol	11.83*	1510	4.46	12.66	1892	0.04
γ -Cadinene	11.83*	1510	[4.46]	10.49*	1704	[0.55]
β -Bisabolene	11.83*	1510	[4.46]	10.29*	1686	[4.62]
7-epi- α -Selinene	11.86*	1512	0.21	10.49*	1704	[0.55]
Shyobunone	11.86*	1512	[0.21]	12.17	1848	0.02
<i>trans</i> -Calamenene	11.98*	1522	0.89	11.37	1778	0.10

δ-Cadinene	11.98*	1522	[0.89]	10.54	1708	0.77
<i>trans</i> -Cadina-1,4-diene	12.06	1528	0.14	10.78	1728	0.11
Selina-4(15),7(11)-diene	12.08	1529	0.13	10.67*	1719	0.11
α-Calacorene	12.14	1534	0.05	12.23	1853	0.04
Selina-3,7(11)-diene	12.19	1538	0.09	10.67*	1719	[0.11]
(<i>E</i>)-α-Bisabolene	12.25	1543	0.27	10.83	1732	0.25
Isocaryophyllene epoxide B	12.31	1547	0.05	12.20	1851	0.07
Germacrene B	12.36	1551	1.41	11.24*	1767	[1.29]
Palustrol	12.50	1562	0.11	12.39	1868	0.11
β-Calacorene	12.53	1564	0.03	12.74	1899	0.01
Caryophyllene oxide isomer	12.67*	1576	0.08	12.80	1905	0.01
Caryophyllene oxide	12.67*	1576	[0.08]	12.89	1913	0.05
Unknown [m/z 106, 119 (66), 134 (51), 91 (41), 79 (32)... 218? (2)]	12.72	1580	0.14	13.10*	1932	0.22
Unknown [m/z 106, 119 (63), 134 (54), 91 (45), 79 (35), 105 (22)... 218? (3)]	12.87	1591	0.18	13.10*	1932	[0.22]
Unknown [m/z 205, 43 (38), 41 (25), 91 (24), 79 (24), 93 (23)... 220 (12)]	13.01*	1602	0.99	13.19	1940	0.10
Eudesm-5-en-11-ol	13.01*	1602	[0.99]	14.50	2065	0.70
Unknown [m/z 106, 119 (85), 91 (66), 93 (47), 79 (46), 134 (41)... 218 (15)]	13.08	1608	0.33	13.48	1968	0.13
Unknown [m/z 106, 119 (64), 134 (51), 91 (39), 79 (27), 105 (23), 92 (22)... 218? (3)]	13.23	1620	0.27	13.70	1988	0.11
1-epi-Cubenol	13.27	1624	0.15	13.87*	2004	[0.29]
Unknown [m/z 145, 59 (97), 161 (87), 218 (76), 43 (76), 179 (63)...]	13.31	1627	0.18			
Caryophylladienol II	13.35	1630	0.11	16.18	2233	0.05
τ-Cadinol	13.44*	1638	0.12	14.96	2110	0.06
Cubenol	13.44*	1638	[0.12]	13.80	1997	0.06
β-Eudesmol	13.52	1644	0.07	15.52	2165	0.07
Unknown [m/z 107, 91 (95), 93 (87), 79 (86), 105 (78), 41 (76), 95 (72)... 220 (18)]	13.89	1675	0.26	16.75	2293	0.12
Unknown [m/z 107, 67 (94), 55 (86), 109 (84), 81 (84), 41 (77)...]	14.03	1686	0.43	15.32	2146	0.39

220 (61)]						
Germacrone	14.04	1687	0.75	15.38	2151	0.54
Unknown [m/z 81, 67 (99), 55 (98), 107 (96), 109 (94), 41 (88), 93 (84), 95 (78), 220 (71)]	14.38	1716	0.22	15.91	2205	0.22
Patchoulenone	14.57	1733	0.05	16.37	2253	0.04
Cyclocolorenone	14.75	1748	0.35	16.63	2280	0.33
Eudesma-3,11-dien-2-one	15.12	1780	0.70	17.85	2412	0.75
Phytone	15.86	1846	0.01	14.80	2094	0.01
Total identified		94.24%			93.99%	
Total reported		96.67%			95.31%	

*: Two or more compounds are coeluting on this column

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