Date : February 01, 2023

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 23A19-ZAA02
Customer identification : Épinette noire Lot: EAB742627CA27021D
Type : Essential oil
Source : *Picea mariana*
Customer : ZAYAT AROMA

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 : January 31, 2023

Checked and approved by :

Alexis St-Gelais, Ph. D., Chimiste 2013-174

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid
Refractive index: 1.4719 ± 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
3-Methylfuran	tr	Furan
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
2-Ethylfuran	tr	Furan
Toluene	0.02	Simple phenolic
Hexanal	0.03	Aliphatic aldehyde
Octane	0.01	Alkane
Unknown	tr	Alkene
(3*Z*)-Hexenol	0.02	Aliphatic alcohol
Hexanol	0.03	Aliphatic alcohol
Santene	2.58	Normonoterpene
Styrene	0.01	Simple phenolic
Unknown	0.03	Normonoterpene
Bornylene	tr	Monoterpene
Unknown	tr	Unknown
Tricyclene	1.62	Monoterpene
α-Thujene	0.25	Monoterpene
α-Pinene	19.65	Monoterpene
Camphene	14.52	Monoterpene
α-Fenchene	0.11	Monoterpene
Thuja-2,4(10)-diene	0.05	Monoterpene
Benzaldehyde	0.01	Simple phenolic
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.06	Monoterpene
β-Pinene	7.48	Monoterpene
Sabinene	0.04	Monoterpene
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Dehydro-1,8-cineole	0.02	Monoterpenic ether
Myrcene	3.51	Monoterpene
2-Carene	0.02	Monoterpene
α-Phellandrene	0.35	Monoterpene
Pseudolimonene	0.01	Monoterpene
Unknown	0.04	Oxygenated monoterpene
Δ3-Carene	10.13	Monoterpene
α-Terpinene	0.32	Monoterpene
(2*E*)-Butenylbenzene?	0.01	Simple phenolic
para-Cymene	0.29	Monoterpene
1,8-Cineole	0.26	Monoterpenic ether
Limonene	3.37	Monoterpene
β-Phellandrene	1.42	Monoterpene
(*Z*)-β-Ocimene	0.03	Monoterpene
(*E*)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	0.34	Monoterpene
Unknown	0.05	Oxygenated monoterpene
Unknown	0.01	Unknown
meta-Cymenene	0.03	Monoterpene

Fenchone	0.03	Monoterpenic ketone
γ-Campholenal	0.10	Aliphatic alcohol
Terpinolene	1.12	Monoterpene
para-Cymenene	0.18	Monoterpene
α-Pinene oxide	0.01	Monoterpenic ether
2-Nonanone	0.02	Aliphatic ketone
Linalool	0.25	Monoterpenic alcohol
Nonanal	0.06	Aliphatic aldehyde
para-Mentha-1,3,8-triene	0.01	Monoterpene
endo-Fenchol	0.09	Monoterpenic alcohol
3-Methyl-3-butenyl isovalerate	0.01	Aliphatic ester
cis-para-Menth-2-en-1-ol	0.03	Monoterpenic alcohol
α-Campholenal	0.13	Monoterpenic aldehyde
Cosmene isomer I	0.02	Monoterpene
trans-Pinocarveol	0.13	Monoterpenic alcohol
Camphor	0.13	Monoterpenic ketone
trans-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Camphene hydrate	0.23	Monoterpenic alcohol
Isoborneol	0.12	Monoterpenic alcohol
Citronellal	0.03	Monoterpenic aldehyde
Pinocamphone	0.02	Monoterpenic ketone
Borneol	1.11	Monoterpenic alcohol
Unknown	0.03	Unknown
Isopinocamphone	0.04	Monoterpenic ketone
Terpinen-4-ol	0.34	Monoterpenic alcohol
Cryptone	0.02	Normonoterpenic ketone
meta-Cymen-8-ol	0.03	Monoterpenic alcohol
para-Cymen-8-ol	0.02	Monoterpenic alcohol
trans-Isocarveol	0.04	Monoterpenic alcohol
α-Terpineol	0.84	Monoterpenic alcohol
Myrtenol	0.07	Monoterpenic alcohol
Methylchavicol	0.01	Phenylpropanoid
Verbenone	0.01	Monoterpenic ketone
Unknown	0.01	Unknown
trans-Piperitol	0.01	Monoterpenic alcohol
endo-Fenchyl acetate	0.27	Monoterpenic ester
Citronellol	0.14	Monoterpenic alcohol
Carvone	0.03	Monoterpenic ketone
Unknown	0.01	Unknown
Unknown	0.02	Oxygenated monoterpene
Piperitone	0.02	Monoterpenic ketone
Geraniol	0.04	Monoterpenic alcohol
Geranial	0.02	Monoterpenic aldehyde
Unknown	0.03	Unknown
Undec-(5*Z*)-en-2-one	0.05	Aliphatic ketone
Bornyl acetate	17.97	Monoterpenic ester
Isobornyl acetate	0.54	Monoterpenic ester
trans-Linalool oxide acetate (pyr.)	0.01	Monoterpenic ester
cis-Verbenyl acetate	0.14	Monoterpenic ester
Unknown	0.12	Monoterpenic ester
trans-Pinocarvyl acetate	0.11	Monoterpenic ester
(2*E*,4*E*)-Decadienal	0.04	Aliphatic aldehyde

Myrtenyl acetate	0.03	Monoterpenic ester
Terpinyl acetate analog	0.06	Monoterpenic ester
trans-Carvyl acetate	0.03	Monoterpenic ester
exo-2-Hydroxycineole acetate	0.02	Monoterpenic ester
Unknown	0.03	Unknown
α-Terpinyl acetate	0.08	Monoterpenic ester
Citronellyl acetate	0.08	Monoterpenic ester
Longicyclene	0.03	Sesquiterpene
Unknown	0.02	Oxygenated monoterpene
α-Copaene	0.06	Sesquiterpene
Geranyl acetate	0.18	Monoterpenic ester
Unknown	0.04	Sesquiterpene
β-Elemene	0.14	Sesquiterpene
Longifolene	0.19	Sesquiterpene
Methyleugenol	0.01	Phenylpropanoid
β-Caryophyllene	0.33	Sesquiterpene
β-Copaene	0.03	Sesquiterpene
Aromadendrene	0.02	Sesquiterpene
cis-Muurola-3,5-diene	0.04	Sesquiterpene
trans-Muurola-3,5-diene	0.06	Sesquiterpene
α-Humulene	0.09	Sesquiterpene
Unknown	0.04	Unknown
cis-Muurola-4(15),5-diene	0.06	Sesquiterpene
(*E*)-β-Farnesene	0.02	Sesquiterpene
trans-Cadina-1(6),4-diene	0.16	Sesquiterpene
γ-Muurolene	0.21	Sesquiterpene
Germacrene D	0.08	Sesquiterpene
Dodecanol	0.04	Aliphatic alcohol
β-Selinene	0.08	Sesquiterpene
trans-Muurola-4(15),5-diene	0.05	Sesquiterpene
α-Selinene	0.11	Sesquiterpene
α-Muurolene	0.45	Sesquiterpene
γ-Cadinene	0.64	Sesquiterpene
(3*E*,6*E*)-α-Farnesene	0.01	Sesquiterpene
trans-Calamenene	0.05	Sesquiterpene
δ-Cadinene	1.78	Sesquiterpene
trans-Cadina-1,4-diene	0.08	Sesquiterpene
α-Cadinene	0.13	Sesquiterpene
α-Calacorene	0.04	Sesquiterpene
(*E*)-α-Bisabolene	0.24	Sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
(*E*)-Nerolidol	0.02	Sesquiterpenic alcohol
Globulol	0.03	Sesquiterpenic alcohol
Unknown	0.01	Unknown
10-epi-Cubenol	0.05	Sesquiterpenic alcohol
1-epi-Cubenol	0.04	Sesquiterpenic alcohol
τ-Muurolol	0.18	Sesquiterpenic alcohol
τ-Cadinol	0.18	Sesquiterpenic alcohol
α-Muurolol	0.06	Sesquiterpenic alcohol
α-Cadinol	0.31	Sesquiterpenic alcohol
trans-Calamenen-10-ol	0.02	Sesquiterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene

Unknown	0.03	Oxygenated sesquiterpene
Amorpha-4,9-dien-2-ol	0.03	Sesquiterpenic alcohol
(5*Z*)-Tetradecen-14-olide?	0.04	Aliphatic lactone
Unknown	0.01	Oxygenated sesquiterpene
Oplopanone	tr	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
(3*E*)-Cembrene A	0.02	Diterpene
Unknown	0.03	Oxygenated diterpene
Unknown	0.02	Diterpene
13-epi-Manoyl oxide	0.02	Diterpenic ether
(*E*,*E*)-Geranyllinalool	0.02	Diterpenic alcohol
Manool	0.04	Diterpenic alcohol
7,13-Abietadiene	0.01	Diterpene
(*Z*)-Abienol	0.04	Diterpenic alcohol
Isopimaral	0.01	Diterpenic aldehyde
Palustral	0.02	Diterpenic aldehyde
Abietal	0.01	Diterpenic aldehyde
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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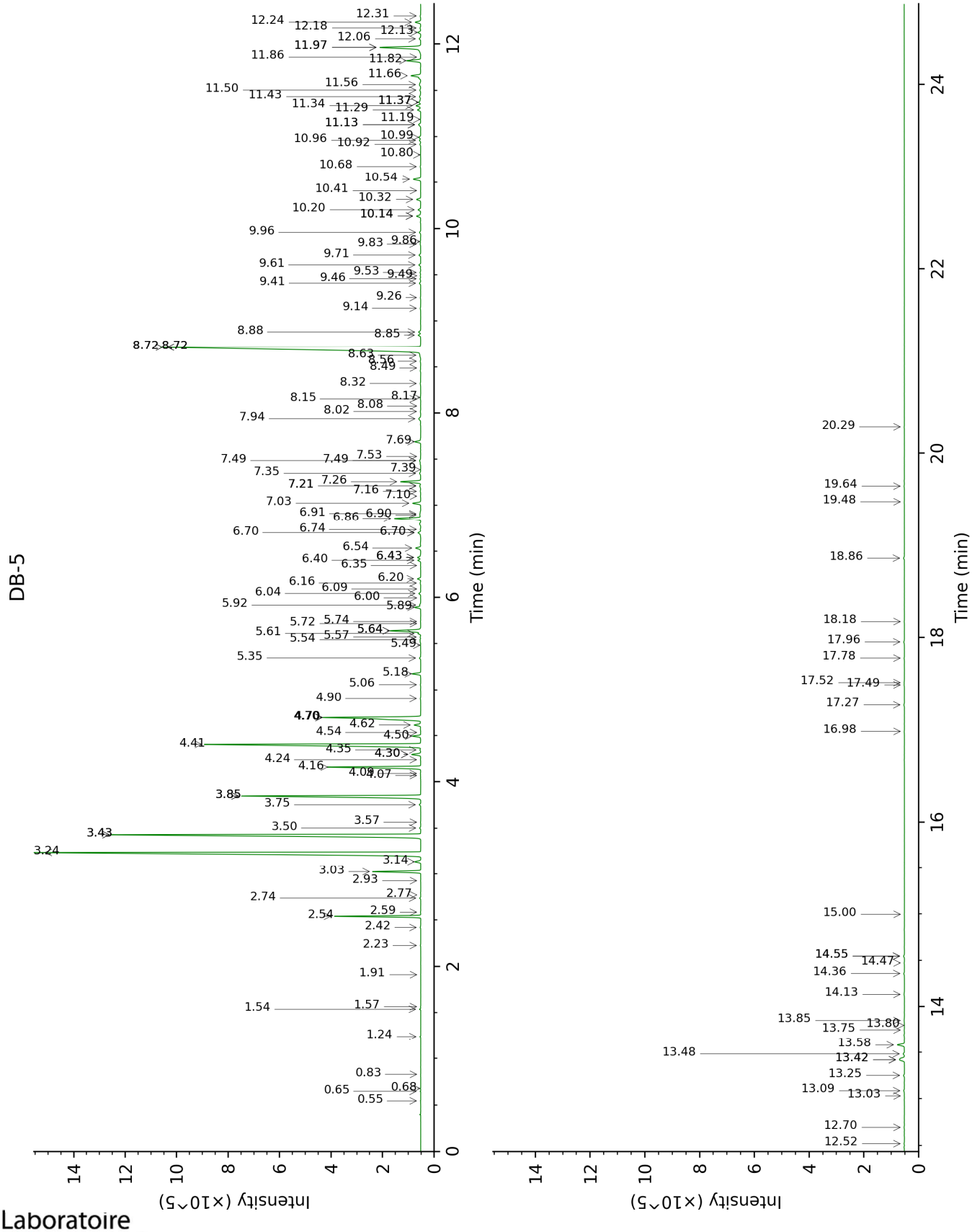
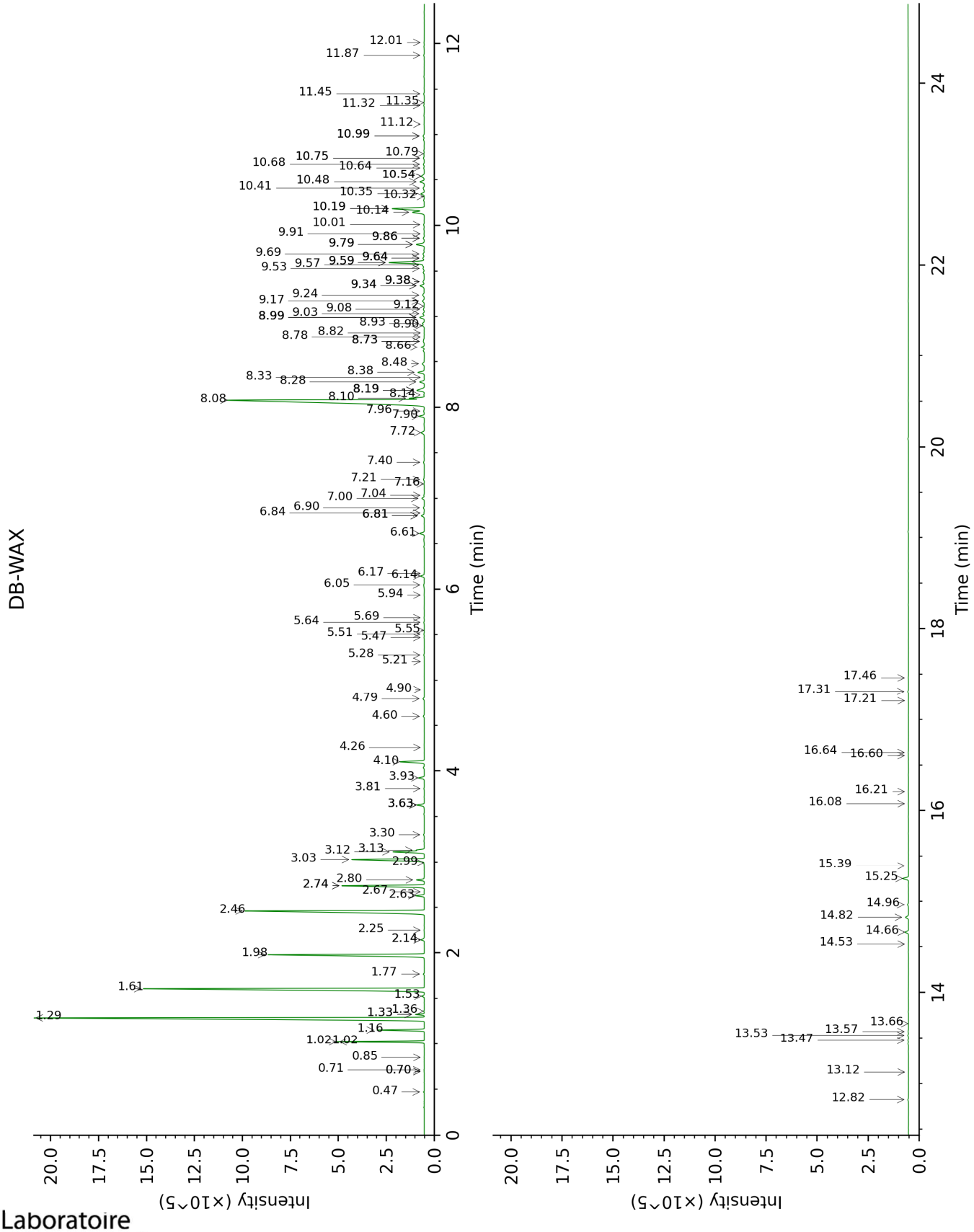

DB-5
Time (min)
Intensity (×10^5)
12.31
12.24
12.18
12.13
12.06
11.97
11.86
11.82
11.66
11.56
11.50
11.43
11.37
11.34
11.29
11.19
11.13
10.99
10.96
10.92
10.80
10.68
10.54
10.41
10.32
10.20
10.14
9.96
9.86
9.83
9.71
9.61
9.53
9.49
9.46
9.41
9.26
9.14
8.88
8.85
8.72
8.63
8.56
8.49
8.32
8.17
8.15
8.08
8.02
7.94
7.69
7.53
7.49
7.49
7.39
7.35
7.26
7.21
7.16
7.10
7.03
6.90
6.91
6.86
6.74
6.70
6.70
6.54
6.43
6.40
6.35
6.20
6.16
6.09
6.04
6.00
5.92
5.89
5.74
5.72
5.64
5.61
5.57
5.54
5.49
5.35
5.18
5.06
4.90
4.70
4.62
4.54
4.50
4.41
4.35
4.30
4.24
4.16
4.08
4.07
3.85
3.75
3.57
3.50
3.43
3.24
3.14
3.03
2.93
2.77
2.74
2.59
2.54
2.42
2.23
1.91
1.57
1.54
1.24
0.83
0.68
0.65
0.55
20.29
19.64
19.48
18.86
18.18
17.96
17.78
17.52
17.49
17.27
16.98
15.00
14.55
14.47
14.36
14.13
13.85
13.80
13.75
13.58
13.48
13.42
13.25
13.09
13.03
12.70
12.52


DB-WAX
Time (min)
Intensity (×10^5)
12.01
11.87
11.45
11.32
11.35
11.12
10.99
10.79
10.75
10.68
10.64
10.54
10.48
10.41
10.35
10.32
10.19
10.14
10.01
9.91
9.86
9.79
9.69
9.64
9.59
9.57
9.53
9.38
9.34
9.24
9.17
9.12
9.08
9.03
8.99
8.93
8.90
8.82
8.78
8.73
8.66
8.48
8.38
8.33
8.28
8.19
8.14
8.10
8.08
7.96
7.90
7.72
7.40
7.21
7.18
7.04
7.00
6.90
6.84
6.81
6.61
6.17
6.14
6.05
5.94
5.69
5.64
5.55
5.51
5.47
5.28
5.21
4.90
4.79
4.60
4.26
4.10
3.93
3.81
3.63
3.30
3.13
3.12
3.03
2.99
2.80
2.74
2.67
2.63
2.46
2.25
2.14
1.98
1.77
1.61
1.53
1.36
1.33
1.29
1.16
1.02
1.02
0.85
0.71
0.70
0.47
17.46
17.31
17.21
16.64
16.60
16.21
16.08
15.39
15.25
14.96
14.82
14.66
14.53
13.66
13.57
13.53
13.47
13.12
12.82

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
3-Methylfuran	0.54	606	tr			
Isovaleral	0.65	640	0.01	0.71	887	0.01
2-Methylbutyral	0.68	650	tr	0.70*	880	0.01
2-Ethylfuran	0.83	700	tr	0.85	915	0.01
Toluene	1.24	758	0.02	1.36	1000	0.02
Hexanal	1.54	798	0.03	1.77	1043	0.03
Octane	1.57	802	0.01	0.47	782	0.01
Unknown [m/z 109, 67 (32), 81 (14), 41 (12), 124 (10)]	1.91	831	tr	0.70*	880	[0.01]
(3*Z*)-Hexenol	2.23	857	0.02	5.55	1344	0.01
Hexanol	2.42	873	0.03	5.28	1324	0.03
Santene	2.54	882	2.58	1.02*	945	2.60
Styrene	2.59	886	0.01	3.63*	1205	0.36
Unknown [m/z 79, 93 (66), 94 (52), 91 (39), 77 (37), 122 (31)]	2.74	898	0.03	1.33*	997	0.28
Bornylene	2.77	901	tr	1.02*	945	[2.60]
Unknown [m/z 43, 59 (71), 44 (40), 85 (30), 41 (28), 45 (27)...]	2.93	912	tr			
Tricyclene	3.03	918	1.62	1.16	969	1.61
α-Thujene	3.14	926	0.25	1.33*	997	[0.28]
α-Pinene	3.24	932	19.65	1.29	992	19.79
Camphene	3.43*	945	14.56	1.61	1026	14.52
α-Fenchene	3.43*	945	[14.56]	1.53	1017	0.11
Thuja-2,4(10)-diene	3.50	950	0.05	2.14*	1082	0.15
Benzaldehyde	3.57	954	0.01	7.16	1462	0.02
3,7,7-Trimethylcyclohepta-1,3,5-triene	3.76	966	0.06	2.74*	1133	3.57
β-Pinene	3.85*	972	7.52	1.98	1065	7.48
Sabinene	3.85*	972	[7.52]	2.14*	1082	[0.15]
6-Methyl-5-hepten-2-one	4.07	987	0.01	4.90	1296	0.01
Dehydro-1,8-cineole	4.09	988	0.02	2.99	1154	0.02
Myrcene	4.16	993	3.51	2.74*	1133	[3.57]
2-Carene	4.24	998	0.02	2.25	1093	0.01
α-Phellandrene	4.30*	1002	0.37	2.63	1124	0.35
Pseudolimonene	4.30*	1002	[0.37]	2.67	1127	0.01
Unknown [m/z 109, 81 (35), 43 (34), 69 (33), 67 (29), 152 (29)]	4.35	1005	0.04	3.30	1179	0.04
Δ3-Carene	4.41	1009	10.13	2.46	1110	10.19
α-Terpinene	4.50	1014	0.32	2.80	1138	0.31
(2*E*)-Butenylbenzene?	4.54	1017	0.01	4.26	1253	0.01

para-Cymene	4.62	1022	0.29	3.93	1228	0.27
1,8-Cineole	4.70*	1027	5.01	3.13	1165	0.26
Limonene	4.70*	1027	[5.01]	3.03	1157	3.37
β-Phellandrene	4.70*	1027	[5.01]	3.12	1164	1.42
(*Z*)-β-Ocimene	4.90	1040	0.03	3.63*	1205	[0.36]
(*E*)-β-Ocimene	5.06	1049	0.02	3.81	1219	0.02
γ-Terpinene	5.18	1057	0.34	3.63*	1205	[0.36]
Unknown [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.35	1067	0.05	4.60	1279	0.05
Unknown [m/z 94, 79 (74), 67 (33), 41 (22), 95 (21)...]	5.49	1076	0.01			
meta-Cymenene	5.54	1080	0.03	6.05	1380	0.04
Fenchone	5.57	1081	0.03	5.51	1341	0.02
γ-Campholenal	5.61	1084	0.10	4.79	1294	0.07
Terpinolene	5.64*	1086	1.31	4.10	1241	1.12
para-Cymenene	5.64*	1086	[1.31]	6.14	1387	0.18
α-Pinene oxide	5.72	1090	0.01	5.21	1319	0.01
2-Nonanone	5.74	1092	0.02	5.64	1350	0.03
Linalool	5.90	1101	0.25	7.90	1518	0.25
Nonanal	5.92	1103	0.06	5.69	1354	0.01
para-Mentha-1,3,8-triene	6.00	1108	0.01	5.94	1372	0.01
endo-Fenchol	6.04	1111	0.09	8.19*	1540	0.51
3-Methyl-3-butenyl isovalerate	6.09	1114	0.01	5.47	1338	0.02
cis-para-Menth-2-en-1-ol	6.16	1118	0.03	7.96	1523	0.04
α-Campholenal	6.20	1121	0.13	6.81*	1436	0.17
Cosmene isomer I	6.35	1130	0.02	6.17	1389	0.01
trans-Pinocarveol	6.40	1134	0.13	8.99*	1603	0.26
Camphor	6.43*	1136	0.15	7.00	1450	0.13
trans-para-Menth-2-en-1-ol	6.43*	1136	[0.15]	8.78	1586	0.01
Camphene hydrate	6.54	1142	0.23	8.28	1548	0.25
Isoborneol	6.70*	1152	0.16	9.17	1618	0.12
Citronellal	6.70*	1152	[0.16]	6.81*	1436	[0.17]
Pinocamphone	6.74	1155	0.02	7.04	1453	0.02
Borneol	6.86	1163	1.11	9.59*†	1652	[2.03]
Unknown [m/z 109, 108 (48), 67 (41), 81 (40), 41 (28)...]	6.90	1165	0.03	7.21	1466	0.05
Isopinocamphone	6.91	1166	0.04	7.40	1480	0.05
Terpinen-4-ol	7.03	1173	0.34	8.38	1556	0.35
Cryptone	7.10	1178	0.02	8.99*	1603	[0.26]
meta-Cymen-8-ol	7.16	1181	0.03	11.32	1797	0.03
para-Cymen-8-ol	7.21*	1185	0.06	11.35	1800	0.02
trans-Isocarveol	7.21*	1185	[0.06]	10.75*	1748	0.06
α-Terpineol	7.26	1188	0.84	9.59*†	1652	[2.03]
Myrtenol	7.35	1194	0.07	10.68	1742	0.05

Methylchavicol	7.39	1196	0.01	9.12	1613	0.01
Verbenone	7.49*	1202	0.08	9.38*	1635	0.10
Unknown [m/z 95, 93 (32), 121 (24), 79 (22), 91 (21), 105 (16)... 154 (2)]	7.49*	1202	[0.08]	10.75*	1748	[0.06]
trans-Piperitol	7.53	1205	0.01	10.18*	1700	1.79
endo-Fenchyl acetate	7.69	1216	0.27	6.61	1421	0.24
Citronellol	7.94	1232	0.14	10.54*	1730	0.22
Carvone	8.02	1238	0.03	9.79*	1668	0.45
Unknown [m/z 41, 44 (99), 69 (73), 108 (50), 93 (44), 119 (37)...]	8.08	1242	0.01			
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27)...]	8.15	1247	0.02	11.12	1779	0.02
Piperitone	8.17	1248	0.02	9.64*	1656	0.09
Geraniol	8.32	1258	0.04	11.45	1808	0.04
Geranial	8.49	1269	0.02	9.91	1678	0.02
Unknown [m/z 43, 119 (72), 81 (66), 54 (48), 41 (47), 58 (44)...]	8.56	1274	0.03			
Undec-(5*Z*)-en-2-one	8.63	1278	0.05	8.73*	1583	0.10
Bornyl acetate	8.72*	1284	18.74	8.08	1532	17.97
Isobornyl acetate	8.72*	1284	[18.74]	8.10	1534	0.54
trans-Linalool oxide acetate (pyr.)	8.72*	1284	[18.74]	8.82	1590	0.01
cis-Verbenyl acetate	8.72*	1284	[18.74]	8.48	1563	0.14
Unknown [m/z 107, 43 (76), 150 (42), 91 (28), 108 (23)]	8.85	1293	0.12	8.93	1598	0.11
trans-Pinocarvyl acetate	8.88	1295	0.11	8.90	1596	0.09
(2*E*,4*E*)-Decadienal	9.14	1313	0.04	10.99*	1768	0.08
Myrtenyl acetate	9.26	1321	0.03	9.38*	1635	[0.10]
Terpinyl acetate analog	9.41	1332	0.06	9.38*	1635	[0.10]
trans-Carvyl acetate	9.46	1335	0.03	10.01	1686	0.04
exo-2-Hydroxycineole acetate	9.49	1338	0.02	9.86*	1674	0.06
Unknown [m/z 133, 105 (45), 91 (38), 119 (36)... 150 (3)]	9.53	1340	0.03			
α-Terpinyl acetate	9.61	1346	0.08	9.53	1647	0.08
Citronellyl acetate	9.72	1353	0.08	9.24	1623	0.12
Longicyclene	9.83	1362	0.03	6.84	1438	0.02
Unknown [m/z 93, 121 (68), 43 (67), 67	9.86	1364	0.02	9.86*	1674	[0.06]

(44), 136 (36), 107 (34)... 180 (4)]						
α-Copaene	9.96	1371	0.06	6.90	1443	0.05
Geranyl acetate	10.14*	1383	0.21	10.35	1714	0.18
Unknown [m/z 119, 91 (24), 134 (24), 43 (16)... 204 (2)]	10.14*	1383	[0.21]	10.79	1752	0.04
β-Elemene	10.20	1388	0.14	8.19*	1540	[0.51]
Longifolene	10.32	1396	0.19	7.72	1504	0.20
Methyleugenol	10.41	1402	0.01	13.12	1959	0.01
β-Caryophyllene	10.54	1412	0.33	8.19*	1540	[0.51]
β-Copaene	10.68	1422	0.03	8.14	1536	0.02
Aromadendrene	10.80	1432	0.02	8.33	1551	0.01
cis-Muurola-3,5-diene	10.92	1440	0.04	8.73*	1583	[0.10]
trans-Muurola-3,5-diene	10.96	1443	0.06	8.66	1577	0.17
α-Humulene	11.00	1446	0.09	9.03	1607	0.08
Unknown [m/z 95, 43 (94), 79 (93), 91 (71), 93 (65), 177 (54), 41 (52)...]	11.13*	1456	0.13	10.64	1739	0.04
cis-Muurola-4(15),5-diene	11.13*	1456	[0.13]	9.08	1611	0.06
(*E*)-β-Farnesene	11.19	1460	0.02	9.34*	1632	0.26
trans-Cadina-1(6),4-diene	11.29	1468	0.16	8.99*	1603	[0.26]
γ-Muurolene	11.34	1471	0.21	9.34*	1632	[0.26]
Germacrene D	11.37*	1474	0.12	9.57†	1650	2.03
Dodecanol	11.37*	1474	[0.12]	12.82	1931	0.04
β-Selinene	11.43	1478	0.08	9.64*	1656	[0.09]
trans-Muurola-4(15),5-diene	11.50	1484	0.05	9.64*	1656	[0.09]
α-Selinene	11.56	1488	0.11	9.69	1660	0.09
α-Muurolene	11.66	1495	0.45	9.79*	1668	[0.45]
γ-Cadinene	11.82	1507	0.64	10.14	1697	0.68
(3*E*,6*E*)-α-Farnesene	11.86	1510	0.01	10.32	1712	0.01
trans-Calamenene	11.97*	1519	1.99	10.99*	1768	[0.08]
δ-Cadinene	11.97*	1519	[1.99]	10.18*	1700	[1.79]
trans-Cadina-1,4-diene	12.06	1526	0.08	10.41	1719	0.08
α-Cadinene	12.13	1531	0.13	10.54*	1730	[0.22]
α-Calacorene	12.18	1535	0.04	11.87	1845	0.04
(*E*)-α-Bisabolene	12.24	1540	0.24	10.48	1725	0.24
Unknown [m/z 95, 81 (70), 109 (68), 93 (59), 67 (53), 41 (49), 139 (40)... 220 (3)]	12.31	1545	0.03	12.01	1858	0.02
(*E*)-Nerolidol	12.52	1562	0.02	13.57	2000	0.03
Globulol	12.70	1576	0.03	13.66	2009	0.01
Unknown0 [m/z 108, 43 (56), 109 (33), 93	13.03	1602	0.01	14.53	2092	0.01

(26), 119 (24)... 212 (2)]						
10-epi-Cubenol	13.09	1607	0.05	13.47	1991	0.03
1-epi-Cubenol	13.25	1620	0.04	13.53	1996	0.04
τ-Muurolol	13.42*	1634	0.36	14.82	2122	0.18
τ-Cadinol	13.42*	1634	[0.36]	14.66	2105	0.18
α-Muurolol	13.48	1639	0.06	14.96	2135	0.06
α-Cadinol	13.58	1647	0.31	15.25	2164	0.30
trans-Calamenen-10-ol	13.75	1661	0.02	16.60	2304	0.02
Unknown [m/z 159, 177 (59), 135 (57), 91 (47), 105 (47)... 220? (25)]	13.80	1665	0.01			
Unknown [m/z 177, 159 (98), 93 (94), 136 (84), 121 (68), 135 (65), 91 (57)... 220 (23)]	13.85	1669	0.03			
Amorpha-4,9-dien-2-ol	14.13	1693	0.03	16.64	2307	0.02
(5*Z*)-Tetradecen-14-olide?	14.36	1712	0.04			
Unknown [m/z 159, 220 (92), 93 (88), 177 (63), 91 (57), 107 (55)]	14.47	1722	0.01	17.46	2396	0.02
Oplopanone	14.55*	1728	0.04			
Unknown [m/z 159, 132 (79), 135 (37), 91 (35), 177 (33)... 220 (16)]	14.55*	1728	[0.04]	17.31	2380	0.04
Unknown [m/z 43, 147 (93), 159 (76), 187 (76), 81 (64), 93 (56), 121 (56), 220 (51)]	15.00	1767	0.01			
(3*E*)-Cembrene A	16.98	1947	0.02	15.39	2178	0.01
Unknown [m/z 105, 91 (100), 81 (89), 79 (86), 109 (86), 257 (83)... 275 (12)...]	17.27	1974	0.03			
Unknown [m/z 257, 258 (20), 91 (19), 272 (18)]	17.49	1995	0.02	16.08	2249	0.01
13-epi-Manoyl oxide	17.52	1998	0.02	16.21	2262	0.02
(*E*,*E*)-Geranyllinalool	17.78	2024	0.02			
Manool	17.96	2041	0.04			
7,13-Abietadiene	18.18	2063	0.01	17.21	2368	0.01
(*Z*)-Abienol	18.86	2132	0.04			
Isopimaral	19.48	2195	0.01			
Palustral	19.64	2213	0.02			

Abietal	20.29	2282	0.01	
Total identified		**98.50%**		**98.07%**
Total reported		**99.06%**		**98.50%**

*: 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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