Date : February 16, 2023

Certificate of Analysis – GC Profiling

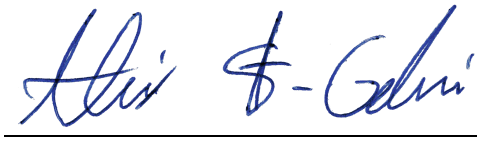
Sample identification

Internal code : 23A04-NPA02
Customer identification : Piper nigrum - Madagascar - NPS00029 - Lot # NP0013
Type : Essential oil
Source : *Piper nigrum*
Customer : Nature Packaged

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 : January 10, 2023

Checked and approved by :



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

Notes: 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.

This report is an update from the first version issued on January 17, 2023, to format it for online publication.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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PHYSICOCHEMICAL DATA

Physical aspect: Faintly yellow liquid
Refractive index: 1.4808 ± 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
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
Toluene	tr	Simple phenolic
Tricyclene	0.01	Monoterpene
α-Thujene	0.06	Monoterpene
α-Pinene	15.13	Monoterpene
Camphene	0.43	Monoterpene
α-Fenchene	0.02	Monoterpene
Thuja-2,4(10)-diene	tr	Monoterpene
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.02	Monoterpene
Sabinene	0.20	Monoterpene
β-Pinene	14.02	Monoterpene
Dehydro-1,8-cineole	0.01	Monoterpenic ether
Myrcene	2.15	Monoterpene
2-Carene	0.02	Monoterpene
Pseudolimonene	0.07	Monoterpene
Menthatriene isomer I	0.01	Monoterpene
α-Phellandrene	2.56	Monoterpene
Unknown	0.03	Monoterpene
Δ3-Carene	14.19	Monoterpene
α-Terpinene	0.03	Monoterpene
meta-Cymene	0.04	Monoterpene
para-Cymene	0.47	Monoterpene
Limonene	19.82	Monoterpene
β-Phellandrene	0.20	Monoterpene
1,8-Cineole	0.05	Monoterpenic ether
(*Z*)-β-Ocimene	0.02	Monoterpene
(*E*)-β-Ocimene	0.20	Monoterpene
Unknown	0.04	Monoterpene
γ-Terpinene	0.09	Monoterpene
cis-Sabinene hydrate	0.02	Monoterpenic alcohol
Isoterpinolene	0.19	Monoterpene
Terpinolene	0.52	Monoterpene
para-Cymenene	0.01	Monoterpene
para-Cresol	0.01	Simple phenolic
α-Pinene oxide	0.01	Monoterpenic ether
trans-Sabinene hydrate	0.01	Monoterpenic alcohol
Unknown	0.01	Unknown
Linalool	0.23	Monoterpenic alcohol
Verbenol analog?	0.01	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
trans-para-Mentha-2,8-dien-1-ol	0.01	Monoterpenic alcohol
Limona ketone	0.01	Normonoterpenic ketone
cis-Limonene oxide	0.01	Monoterpenic ether
cis-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol

trans-Limonene oxide	0.01	Monoterpenic ether
trans-para-Menth-2-en-1-ol	0.04	Monoterpenic alcohol
trans-Verbenol	0.02	Monoterpenic alcohol
meta-Mentha-4,6-dien-8-ol	0.01	Monoterpenic alcohol
1,4-Dimethyl-4-acetylcyclohexene	tr	Monoterpenic ketone
Sabinaketone	0.01	Normonoterpenic ketone
Pinocarvone	0.01	Monoterpenic ketone
Borneol	0.02	Monoterpenic alcohol
cis-Sabinol	0.02	Monoterpenic alcohol
Terpinen-4-ol	0.04	Monoterpenic alcohol
Cryptone	0.01	Normonoterpenic ketone
meta-Cymen-8-ol	0.02	Monoterpenic alcohol
para-Cymen-8-ol	0.03	Monoterpenic alcohol
Myrtenal	0.02	Monoterpenic aldehyde
α-Terpineol	0.15	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Myrtenol	0.02	Monoterpenic alcohol
trans-Isopiperitenol	0.01	Monoterpenic alcohol
cis-α-Phellandrene epoxide (iPr vs Me)	0.03	Monoterpenic ether
Verbenone	0.01	Monoterpenic ketone
Unknown	0.03	Oxygenated monoterpene
Car-2-en-4-one?	0.03	Monoterpenic ketone
trans-Carveol	0.02	Monoterpenic alcohol
cis-Carveol	0.01	Monoterpenic alcohol
Cuminal	0.01	Monoterpenic aldehyde
Carvone	0.01	Monoterpenic ketone
Car-3-en-2-one	0.01	Monoterpenic ketone
Unknown	0.04	Unknown
(7*Z*)-Undecen-2-one	0.01	Aliphatic ketone
Bornyl acetate	0.01	Monoterpenic ester
Cuminol	0.01	Monoterpenic alcohol
2-Undecanone	0.01	Aliphatic ketone
Car-3-en-5-one	0.02	Monoterpenic ketone
para-Menth-5-en-1,2-diol isomer III	0.01	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
δ-Elemene isomer	0.01	Sesquiterpene
Bicycloelemene	0.08	Sesquiterpene
δ-Elemene	1.87	Sesquiterpene
α-Cubebene	0.06	Sesquiterpene
Cyclosativene I	0.01	Sesquiterpene
Cyclosativene II	0.19	Sesquiterpene
α-Copaene	0.10	Sesquiterpene
β-Bourbonene	0.01	Sesquiterpene
cis-β-Elemene	0.03	Sesquiterpene
β-Cubebene	0.04	Sesquiterpene
β-Elemene	0.82	Sesquiterpene
Unknown	0.02	Unknown
Isocaryophyllene	0.01	Sesquiterpene
α-Gurjunene	0.08	Sesquiterpene
cis-α-Bergamotene	0.02	Sesquiterpene
β-Caryophyllene	16.73	Sesquiterpene
β-Copaene	0.02	Sesquiterpene

Aromadendrene	0.03	Sesquiterpene
trans-α-Bergamotene	0.26*	Sesquiterpene
α-Guaiene	0.26*	Sesquiterpene
Unknown	0.02	Unknown
Unknown	0.01	Sesquiterpene
α-Humulene	1.10	Sesquiterpene
allo-Aromadendrene	0.02	Sesquiterpene
β-Santalene	tr	Sesquiterpene
(*E*)-β-Farnesene	0.04	Sesquiterpene
γ-Gurjunene	0.02	Sesquiterpene
trans-Cadina-1(6),4-diene	0.01	Sesquiterpene
γ-Muurolene	0.04	Sesquiterpene
Germacrene D	1.96	Sesquiterpene
β-Selinene	1.30	Sesquiterpene
α-Selinene	0.90	Sesquiterpene
epi-Cubebol	0.02	Sesquiterpenic alcohol
Bicyclogermacrene	0.07	Sesquiterpene
Viridiflorene	0.06	Sesquiterpene
Epizonarene	0.03	Sesquiterpene
α-Muurolene	0.02	Sesquiterpene
Germacrene A	0.16	Sesquiterpene
β-Bisabolene	0.07	Sesquiterpene
γ-Cadinene	0.05	Sesquiterpene
Cubebol	0.02	Sesquiterpenic alcohol
δ-Cadinene	0.03	Sesquiterpene
trans-Calamenene	0.02	Sesquiterpene
Zonarene	0.03	Sesquiterpene
trans-Cadina-1,4-diene	0.01	Sesquiterpene
α-Cadinene	0.01	Sesquiterpene
α-Calacorene	0.01	Sesquiterpene
(*E*)-α-Bisabolene	0.01	Sesquiterpene
Isocaryophyllene epoxide B	0.03	Sesquiterpenic ether
α-Elemol	0.02	Sesquiterpenic alcohol
Germacrene B	0.16	Sesquiterpene
(*E*)-Nerolidol	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	0.32	Sesquiterpenic ether
Caryophyllene oxide isomer	0.07	Sesquiterpenic ether
Globulol	0.01	Sesquiterpenic alcohol
Ledol	0.03	Sesquiterpenic alcohol
Humulene epoxide II	0.03	Sesquiterpenic ether
α-Corocalene	0.02	Sesquiterpene
Alismol	0.28	Sesquiterpenic alcohol
Caryophylladienol I	0.03	Sesquiterpenic alcohol
Isospathulenol	0.06	Sesquiterpenic alcohol
τ-Cadinol	0.01	Sesquiterpenic alcohol
τ-Muurolol	0.01	Sesquiterpenic alcohol
α-Muurolol	0.01	Sesquiterpenic alcohol
α-Cadinol	0.01	Sesquiterpenic alcohol
Selin-11-en-4α-ol	0.02	Sesquiterpenic alcohol
trans-Calamenen-10-ol	0.02	Sesquiterpenic alcohol
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	0.01	Sesquiterpenic alcohol
Cadalene	0.02	Sesquiterpene

Dehydrojinkoh-eremol	0.01	Sesquiterpenic alcohol
Eudesma-4(15),7-dien-1β-ol	0.05	Sesquiterpenic alcohol
α-Bisabolol	0.01	Sesquiterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene
Phytone	0.02	Terpenic ketone
meta-Camphorene	0.02	Diterpene
para-Camphorene	0.01	Diterpene
Consolidated total	**99.40%**	

*: Individual compounds concentration could not be found due to overlapping coelutions on columns considered
[xx]: Duplicate percentage due to coelutions, not taken into account in the consolidated total
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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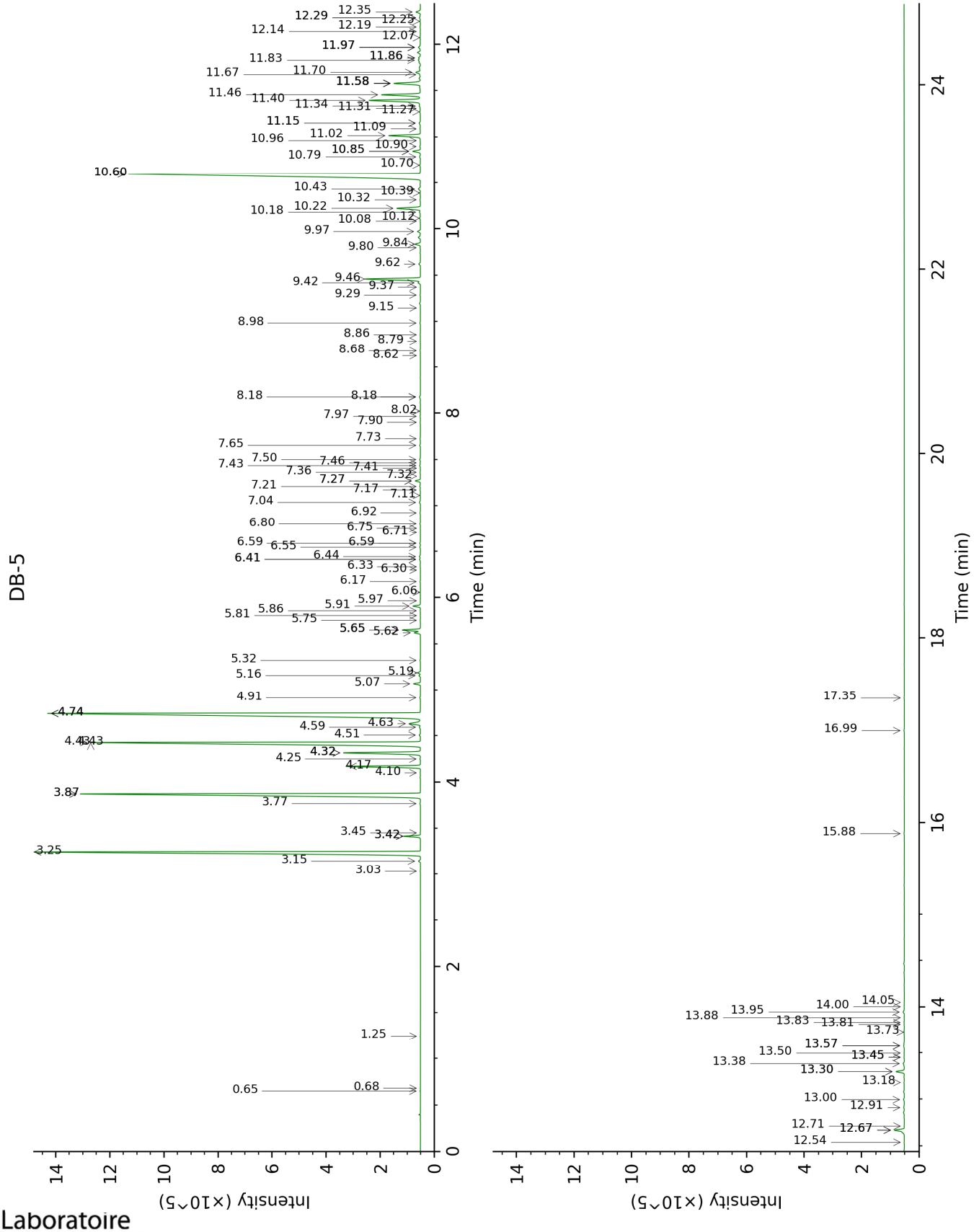
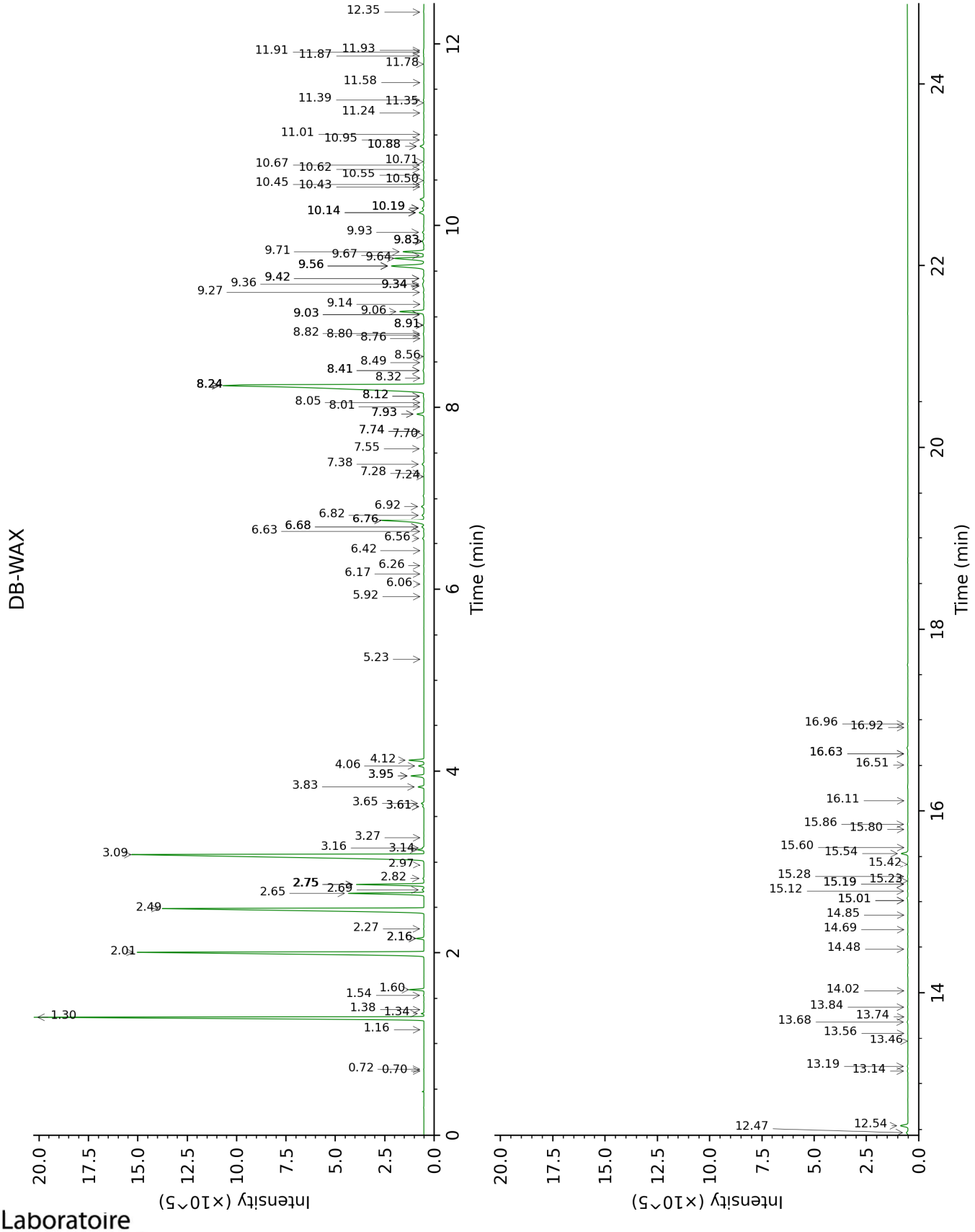

DB-5
Intensity (×10^5)
Time (min)
12.29
12.35
12.14
12.19
12.25
12.07
11.97
11.86
11.83
11.67
11.70
11.58
11.46
11.40
11.34
11.31
11.27
11.15
11.09
11.02
10.96
10.90
10.85
10.79
10.70
10.60
10.43
10.39
10.32
10.18
10.22
10.08
10.12
9.97
9.80
9.84
9.62
9.42
9.46
9.37
9.29
9.15
8.98
8.86
8.79
8.68
8.62
8.18
8.18
8.02
7.97
7.90
7.73
7.65
7.43
7.50
7.46
7.41
7.36
7.32
7.27
7.21
7.17
7.11
7.04
6.92
6.80
6.75
6.71
6.59
6.55
6.59
6.41
6.44
6.33
6.30
6.17
6.06
5.91
5.97
5.81
5.86
5.75
5.65
5.62
5.32
5.16
5.19
5.07
4.91
4.74
4.59
4.63
4.51
4.43
4.32
4.25
4.17
4.10
3.87
3.77
3.45
3.42
3.25
3.15
3.03
1.25
0.65
0.68
17.35
16.99
15.88
14.00
14.05
13.88
13.95
13.83
13.81
13.73
13.57
13.50
13.45
13.38
13.30
13.18
13.00
12.91
12.71
12.67
12.54


DB-WAX
Time (min)
Intensity (×10^5)
12.35
11.91
11.87
11.93
11.78
11.58
11.39
11.35
11.24
11.01
10.95
10.88
10.67
10.62
10.71
10.55
10.50
10.45
10.43
10.14
10.19
9.93
9.83
9.71
9.67
9.64
9.56
9.42
9.36
9.34
9.27
9.14
9.03
9.06
8.91
8.82
8.80
8.76
8.56
8.49
8.41
8.32
8.24
8.12
8.05
8.01
7.93
7.74
7.70
7.55
7.38
7.28
7.24
6.92
6.82
6.76
6.63
6.68
6.56
6.42
6.26
6.17
6.06
5.92
5.23
4.12
4.06
3.95
3.83
3.65
3.61
3.27
3.16
3.14
3.09
2.97
2.82
2.75
2.69
2.65
2.49
2.27
2.16
2.01
1.60
1.54
1.38
1.34
1.30
1.16
0.72
0.70
16.96
16.92
16.63
16.51
16.11
15.86
15.80
15.60
15.54
15.42
15.28
15.19
15.23
15.12
15.01
14.85
14.69
14.48
14.02
13.84
13.74
13.68
13.56
13.46
13.19
13.14
12.47
12.54

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Isovaleral	0.65	641	0.01	0.72	890	tr
2-Methylbutyral	0.68	651	tr	0.70	882	tr
Toluene	1.25	759	tr	1.38	1002	tr
Tricyclene	3.03	919	0.01	1.16	970	0.01
α-Thujene	3.15	926	0.06	1.34	998	0.06
α-Pinene	3.24	933	15.13	1.30	994	15.14
Camphene	3.42*	944	0.44	1.60	1025	0.43
α-Fenchene	3.42*	944	[0.44]	1.54	1018	0.02
Thuja-2,4(10)-diene	3.45	946	tr	2.16*	1084	0.24
3,7,7-Trimethylcyclohepta-1,3,5-triene	3.77	967	0.02	2.75*	1134	2.18
Sabinene	3.87*	974	14.22	2.16*	1084	[0.24]
β-Pinene	3.87*	974	[14.22]	2.01	1068	14.02
Dehydro-1,8-cineole	4.10	989	0.01	2.97	1152	0.01
Myrcene	4.17	993	2.15	2.75*	1134	[2.18]
2-Carene	4.25	998	0.02	2.26	1094	0.02
Pseudolimonene	4.32*	1003	2.60	2.69	1129	0.07
Menthatriene isomer I	4.32*	1003	[2.60]	3.27	1176	0.01
α-Phellandrene	4.32*	1003	[2.60]	2.65	1126	2.56
Unknown [m/z 91, 92 (53), 77 (19), 41 (14)... 134 (5)]	4.43*	1010	14.22			
Δ3-Carene	4.43*	1010	[14.22]	2.49	1112	14.19
α-Terpinene	4.51	1015	0.03	2.82	1139	0.04
meta-Cymene	4.59	1020	0.04	3.95*	1229	0.48
para-Cymene	4.63	1023	0.47	3.95*	1229	[0.48]
Limonene	4.74*	1030	19.99	3.09	1161	19.82
β-Phellandrene	4.74*	1030	[19.99]	3.14	1166	0.20
1,8-Cineole	4.74*	1030	[19.99]	3.16	1167	0.05
(*Z*)-β-Ocimene	4.91	1040	0.02	3.61*	1204	0.05
(*E*)-β-Ocimene	5.07	1050	0.20	3.83	1220	0.20
Unknown [m/z 93, 91 (54), 92 (31), 77 (29), 79 (17), 43 (13), 41 (10), 136 (9)]	5.16	1055	0.04	3.61*	1204	[0.05]
γ-Terpinene	5.19	1057	0.09	3.65	1206	0.09
cis-Sabinene hydrate	5.32	1066	0.02	6.68*	1427	0.09
Isoterpinolene	5.62	1084	0.19	4.06	1238	0.19
Terpinolene	5.65*	1086	0.53	4.12	1242	0.52
para-Cymenene	5.65*	1086	[0.53]	6.17	1388	0.01
para-Cresol	5.65*	1086	[0.53]	13.74	2016	0.01
α-Pinene oxide	5.76	1093	0.01	5.23	1321	0.01
trans-Sabinene hydrate	5.81	1096	0.01	7.74*	1506	0.01
Unknown [m/z 109, 43 (65), 95 (54), 119	5.86	1099	0.01	5.92	1370	0.01

(50), 91 (47)... 149 (8)...]						
Linalool	5.91	1102	0.23	7.93*	1520	0.28
Verbenol analog?	5.97	1106	0.01	8.12*	1536	0.04
Unknown [m/z 41, 67 (75), 69 (59), 79 (55), 81 (44), 71 (41)... 150 (5)]	6.06	1112	0.01	6.06	1380	0.01
trans-para-Mentha-2,8-dien-1-ol	6.17	1119	0.01	8.76	1585	0.01
Limona ketone	6.30	1127	0.01	7.70	1502	0.01
cis-Limonene oxide	6.33	1129	0.01	6.26	1395	0.01
cis-para-Mentha-2,8-dien-1-ol	6.41*	1134	0.04	9.27	1626	0.02
trans-Limonene oxide	6.41*	1134	[0.04]	6.42	1407	0.01
trans-para-Menth-2-en-1-ol	6.44	1136	0.04	8.82	1589	0.03
trans-Verbenol	6.55	1143	0.02	9.34*†	1632	0.13
meta-Mentha-4,6-dien-8-ol	6.59*	1146	0.02	9.14	1615	0.01
1,4-Dimethyl-4-acetylcyclohexene	6.59*	1146	[0.02]	7.24	1468	tr
Sabinaketone	6.71	1153	0.01	8.56	1569	0.01
Pinocarvone	6.75	1156	0.01	7.74*	1506	[0.01]
Borneol	6.80	1159	0.02	9.56*	1649	1.92
cis-Sabinol	6.92	1167	0.02	10.67	1742	0.03
Terpinen-4-ol	7.04	1174	0.04	8.41*	1557	0.06
Cryptone	7.11	1179	0.01	9.03*	1606	0.03
meta-Cymen-8-ol	7.17	1182	0.02	11.35	1800	0.01
para-Cymen-8-ol	7.21	1185	0.03	11.39	1802	0.02
Myrtenal	7.27*	1189	0.17	8.49	1564	0.02
α-Terpineol	7.27*	1189	[0.17]	9.56*	1649	[1.92]
Unknown [m/z 67, 41 (99), 109 (98), 43 (97), 81 (94), 91 (93)...152 (12)]	7.32	1192	0.01			
Myrtenol	7.36	1194	0.02	10.71	1745	0.01
trans-Isopiperitenol	7.41	1197	0.01	10.19*	1701	0.07
cis-α-Phellandrene epoxide (iPr vs Me)	7.43	1199	0.03	10.88*	1759	0.19
Verbenone	7.46	1201	0.01	9.42*	1638	0.07
Unknown [m/z 109, 91 (100), 81 (88), 94 (75), 119 (74), 96 (73), 41 (63)... 150 (2)]	7.50	1203	0.03	10.62	1738	0.03
Car-2-en-4-one?	7.65	1213	0.03	9.34*†	1632	[0.13]
trans-Carveol	7.73	1218	0.02	11.24	1790	0.02
cis-Carveol	7.90	1230	0.01	11.58	1819	0.01
Cuminal	7.97	1234	0.01	10.43	1721	0.01
Carvone	8.02	1238	0.01	9.83*	1671	0.10
Car-3-en-2-one	8.18*	1248	0.04	10.19*	1701	[0.07]

Unknown [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	8.18*	1248	[0.04]	10.95	1765	0.04
(7*Z*)-Undecen-2-one	8.62	1278	0.01			
Bornyl acetate	8.68	1282	0.01	8.06	1530	0.01
Cuminol	8.79	1289	0.01	14.02	2044	0.01
2-Undecanone	8.86	1294	0.01	8.41*	1557	[0.06]
Car-3-en-5-one	8.98	1302	0.02	11.93	1850	0.02
para-Menth-5-en-1,2-diol isomer III	9.15	1313	0.01	15.01*	2140	0.01
Unknown [m/z 91, 79 (94), 77 (72), 41 (37), 93 (31)... 152 (1)]	9.29	1323	0.01			
δ-Elemene isomer	9.37	1329	0.01	6.64	1423	0.02
Bicycloelemene	9.42	1332	0.08	6.82	1437	0.08
δ-Elemene	9.46	1335	1.87	6.76*	1432	2.06
α-Cubebene	9.62	1347	0.06	6.56	1417	0.06
Cyclosativene I	9.80	1359	0.01	6.68*	1427	[0.09]
Cyclosativene II	9.84	1362	0.19	6.76*	1432	[2.06]
α-Copaene	9.97	1372	0.10	6.92	1444	0.10
β-Bourbonene	10.08	1379	0.01	7.28	1471	0.01
cis-β-Elemene	10.12	1382	0.03	8.12*	1536	[0.04]
β-Cubebene	10.18	1386	0.04	7.55	1491	0.04
β-Elemene	10.22	1389	0.82	8.24*	1544	17.67
Unknown [m/z 71, 100 (92), 111 (79), 69 (46), 109 (45)...]	10.32	1396	0.02	16.96	2341	0.02
Isocaryophyllene	10.39	1401	0.01	7.93*	1520	[0.28]
α-Gurjunene	10.43	1404	0.08	7.38	1478	0.08
cis-α-Bergamotene	10.60*	1416	16.75	8.01	1527	0.02
β-Caryophyllene	10.60*	1416	[16.75]	8.24*	1544	[17.67]
β-Copaene	10.70	1424	0.02	8.24*	1544	[17.67]
Aromadendrene	10.79	1430	0.03	8.32	1551	0.01
trans-α-Bergamotene	10.85*	1435	0.26	8.24*	1544	[17.67]
α-Guaiene	10.85*	1435	[0.26]	8.24*	1544	[17.67]
Unknown [m/z 41, 97 (78), 69 (77), 43 (71), 125 (67), 55 (56)... 168 (39)]	10.90	1438	0.02	16.92	2337	0.01
Unknown [m/z 139, 69 (60), 41 (51), 43 (47), 119 (41)... 204 (1)]	10.96	1443	0.01			
α-Humulene	11.02	1447	1.10	9.06	1609	1.10
allo-Aromadendrene	11.09	1453	0.02	8.80	1588	0.01
β-Santalene	11.15*	1457	0.05	8.91*	1597	0.02
(*E*)-β-Farnesene	11.15*	1457	[0.05]	9.34*†	1632	[0.13]
γ-Gurjunene	11.27	1466	0.02	8.91*	1597	[0.02]
trans-Cadina-1(6),4-diene	11.31	1469	0.01	9.03*	1606	[0.03]
γ-Muurolene	11.34	1471	0.04	9.36†	1633	[0.13]

Germacrene D	11.40	1475	1.96	9.56*	1649	[1.92]
β-Selinene	11.46	1480	1.30	9.64	1656	1.44
α-Selinene	11.58*	1489	0.97	9.72	1662	0.90
epi-Cubebol	11.58*	1489	[0.97]	11.78	1837	0.02
Bicyclogermacrene	11.58*	1489	[0.97]	9.83*	1671	[0.10]
Viridiflorene	11.58*	1489	[0.97]	9.42*	1638	[0.07]
Epizonarene	11.58*	1489	[0.97]	9.67	1659	0.03
α-Muurolene	11.67	1496	0.02	9.83*	1671	[0.10]
Germacrene A	11.70	1498	0.16	10.14*	1697	0.24
β-Bisabolene	11.83	1508	0.07	9.93	1679	0.06
γ-Cadinene	11.86*	1510	0.07	10.14*	1697	[0.24]
Cubebol	11.86*	1510	[0.07]	12.35	1887	0.02
δ-Cadinene	11.97*	1519	0.08	10.19*	1701	[0.07]
trans-Calamenene	11.97*	1519	[0.08]	11.01	1770	0.02
Zonarene	11.97*	1519	[0.08]	10.14*	1697	[0.24]
trans-Cadina-1,4-diene	12.07	1527	0.01	10.45	1723	0.02
α-Cadinene	12.14	1532	0.01	10.55	1732	0.01
α-Calacorene	12.19	1536	0.01	11.87	1845	0.02
(*E*)-α-Bisabolene	12.25	1541	0.01	10.50	1727	0.02
Isocaryophyllene epoxide B	12.29*	1544	0.05	11.91	1849	0.03
α-Elemol	12.29*	1544	[0.05]	13.84	2026	0.02
Germacrene B	12.35	1549	0.16	10.88*	1759	[0.19]
(*E*)-Nerolidol	12.54	1563	0.01	13.56	1999	0.01
Caryophyllene oxide	12.67*	1574	0.40	12.54	1905	0.32
Caryophyllene oxide isomer	12.67*	1574	[0.40]	12.47	1898	0.07
Globulol	12.71	1577	0.01	13.68	2011	0.04
Ledol	12.91	1593	0.03	13.14	1960	0.03
Humulene epoxide II	13.00	1599	0.03	13.19	1965	0.03
α-Corocalene	13.18	1614	0.02	13.46	1990	0.01
Alismol	13.30*	1624	0.28	15.54	2193	0.28
Caryophylladienol I	13.30*	1624	[0.28]	15.86	2226	0.03
Isospathulenol	13.38	1631	0.06	15.28	2166	0.02
τ-Cadinol	13.45*	1636	0.01	14.69	2108	0.01
τ-Muurolol	13.45*	1636	[0.01]	14.85	2124	0.01
α-Muurolol	13.50	1640	0.01	15.01*	2140	[0.01]
α-Cadinol	13.58*	1647	0.03	15.23	2162	0.01
Selin-11-en-4α-ol	13.58*	1647	[0.03]	15.42	2180	0.02
trans-Calamenen-10-ol	13.73	1659	0.02	16.63*	2306	0.02
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	13.81	1666	0.01	16.63*	2306	[0.02]
Cadalene	13.83	1668	0.02	15.12	2151	0.02
Dehydrojinkoh-eremol	13.88	1672	0.01	16.11	2252	0.01
Eudesma-4(15),7-dien-1β-ol	13.95	1677	0.05	15.80	2220	0.01
α-Bisabolol	14.00	1682	0.01	15.19*	2158	0.02
Unknown [m/z 43, 108 (62), 93 (51), 41	14.05	1686	0.01	16.51	2293	0.01

(42), 109 (37), 69 (36)...]						
Phytone	15.88	1845	0.02	14.48	2087	0.02
meta-Camphorene	16.99	1948	0.02	15.19*	2158	[0.02]
para-Camphorene	17.35	1982	0.01	15.60	2199	0.01
Total identified		**99.01%**			**99.00%**	
Total reported		**99.18%**			**99.12%**	

*: 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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