Date : 2025-02-27

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 25B13-PTH03
Customer Identification : Organic Thyme Thymol - Greece - TO0106R
Type : Essential Oil
Source : *Thymus vulgaris ct. Thymol*
Customer : Plant Therapy

Checked an approved by:

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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Gas Chromatographic Analysis

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID
ISO
Results : See analysis summary (next page)
Analyst : Sylvain Mercier, M. Sc., Chimiste 2014-005
Date : 2025-02-26

Physicochemical data

Refractive index : 1.5006 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2025-02-14

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
Isobutyral	0.01	Aliphatic aldehyde
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	0.01	Aliphatic aldehyde
Methyl 2-methylbutyrate	0.06	Aliphatic ester
(3*Z*)-Hexenol	0.16	Aliphatic alcohol
Hashishene	tr	Monoterpene
Tricyclene	0.11	Monoterpene
α-Thujene	0.55	Monoterpene
α-Pinene	0.89	Monoterpene
β-Fenchene	0.02	Monoterpene
Unknown	0.01	Monoterpene
Camphene	1.75	Monoterpene
α-Fenchene	0.03	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
β-Pinene	0.21	Monoterpene
Sabinene	0.11	Monoterpene
Unknown	0.04	Monoterpene
Octen-3-ol	0.86	Aliphatic alcohol
Octan-3-one	0.07	Aliphatic ketone
Myrcene	1.81	Monoterpene
Octan-3-ol	0.02	Aliphatic alcohol
Pseudolimonene	0.09	Monoterpene
α-Phellandrene	0.17	Monoterpene
Δ3-Carene	0.14	Monoterpene
α-Terpinene	1.26	Monoterpene
meta-Cymene	0.06	Monoterpene
Carvomenthene	0.02	Aliphatic alcohol
para-Cymene	16.73	Monoterpene
Limonene	0.49	Monoterpene
1,8-Cineole	1.10	Monoterpenic ether
β-Phellandrene	0.05	Monoterpene
(*E*)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	6.30	Monoterpene
2-Methylbutyl butyrate	0.01	Aliphatic ester
cis-Sabinene hydrate	0.08	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Terpinolene	0.16	Monoterpene
trans-Linalool oxide (fur.)	0.02	Monoterpenic alcohol
trans-Sabinene hydrate	0.05	Monoterpenic alcohol
Linalool	5.14	Monoterpenic alcohol

Nonanal	0.01	Aliphatic aldehyde
Hotrienol	0.02	Monoterpenic alcohol
endo-Fenchol	0.02	Monoterpenic alcohol
Unknown	0.03	Unknown
Camphor	1.32	Monoterpenic ketone
trans-Pinocarveol	0.03	Monoterpenic alcohol
Camphene hydrate	0.01	Monoterpenic alcohol
trans-Chrysanthemal	0.02	Monoterpenic aldehyde
Unknown	0.02	Oxygenated monoterpene
Isoborneol	0.01	Monoterpenic alcohol
Borneol	1.74	Monoterpenic alcohol
Lavandulol	0.03	Monoterpenic alcohol
Terpinen-4-ol	0.63	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	0.20	Monoterpenic alcohol
Bornyl formate	0.01	Monoterpenic ester
Thymol methyl ether	0.39	Monoterpenic ether
Neral	0.02	Monoterpenic aldehyde
Carvacrol methyl ether	0.39	Monoterpenic ether
Carvone	0.16	Monoterpenic ketone
Geraniol	0.02	Monoterpenic alcohol
Geranial	0.03	Monoterpenic aldehyde
Decanol	0.04	Aliphatic alcohol
Bornyl acetate	0.02	Monoterpenic ester
Thymol analogue I (isothymol?)	0.03	Monoterpenic alcohol
Thymol	45.12	Monoterpenic alcohol
Thymol analogue III	0.02	Monoterpenic alcohol
Carvacrol	2.58	Monoterpenic alcohol
α-Cubebene	0.06	Sesquiterpene
Thymyl acetate	0.01	Monoterpenic ester
Eugenol	0.16	Phenylpropanoid
α-Copaene	0.09	Sesquiterpene
Unknown	0.03	Unknown
Isocaryophyllene	0.03	Sesquiterpene
α-Gurjunene	0.01	Sesquiterpene
β-Caryophyllene	6.50	Sesquiterpene
Aromadendrene	0.04	Sesquiterpene
Unknown	0.01	Oxygenated monoterpene
α-Humulene	0.09	Sesquiterpene
allo-Aromadendrene	0.05	Sesquiterpene
Thymohydroquinone isomer?	0.06	Simple phenolic
γ-Muurolene	0.04	Sesquiterpene
Germacrene D	0.04	Sesquiterpene
β-Selinene	0.01	Sesquiterpene
Bicyclogermacrene	0.06	Sesquiterpene

Viridiflorene	0.01	Sesquiterpene
γ-Cadinene	0.02	Sesquiterpene
(*Z*)-γ-Bisabolene	0.01	Sesquiterpene
Cubebol	0.06	Sesquiterpenic alcohol
δ-Cadinene	0.20	Sesquiterpene
trans-Calamenene	0.03	Sesquiterpene
trans-Cadina-1,4-diene	0.03	Sesquiterpene
Geranyl butyrate	0.01	Monoterpenic ester
Caryophyllenyl alcohol	0.01	Sesquiterpenic alcohol
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.15	Sesquiterpenic ether
Caryophyllene oxide isomer	0.01	Sesquiterpenic ether
1-epi-Cubenol	0.03	Sesquiterpenic alcohol
τ-Cadinol	0.02	Sesquiterpenic alcohol
α-Cadinol	0.01	Sesquiterpenic alcohol
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	0.01	Sesquiterpenic alcohol
Unknown	0.01	Unknown
Unknown	0.02	Unknown
Unknown	0.05	Unknown
Unknown	0.01	Unknown
meta-Camphorene	0.01	Diterpene
Unknown	0.01	Unknown
Unknown	0.01	Unknown
Consolidated total	**99.64**	

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

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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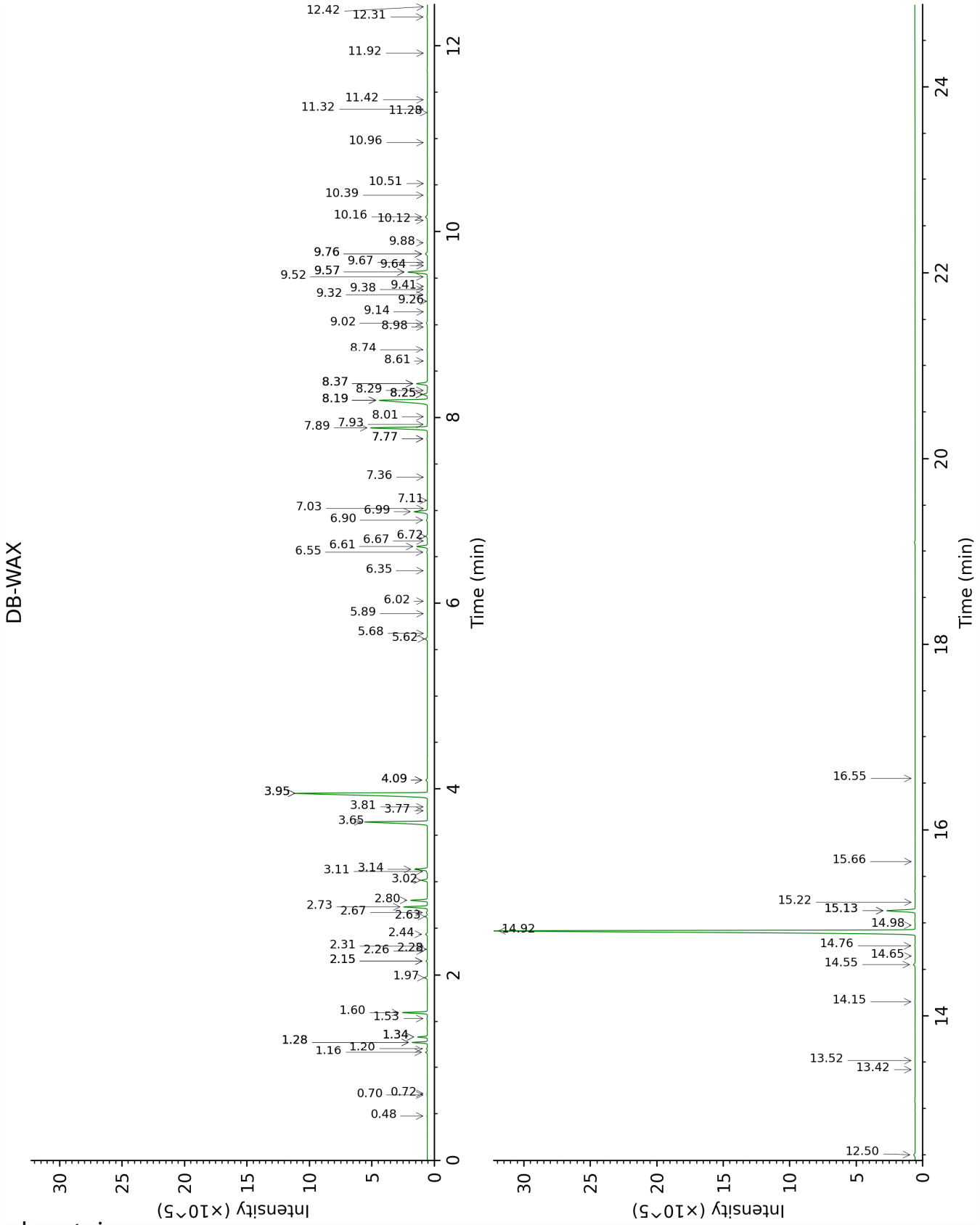
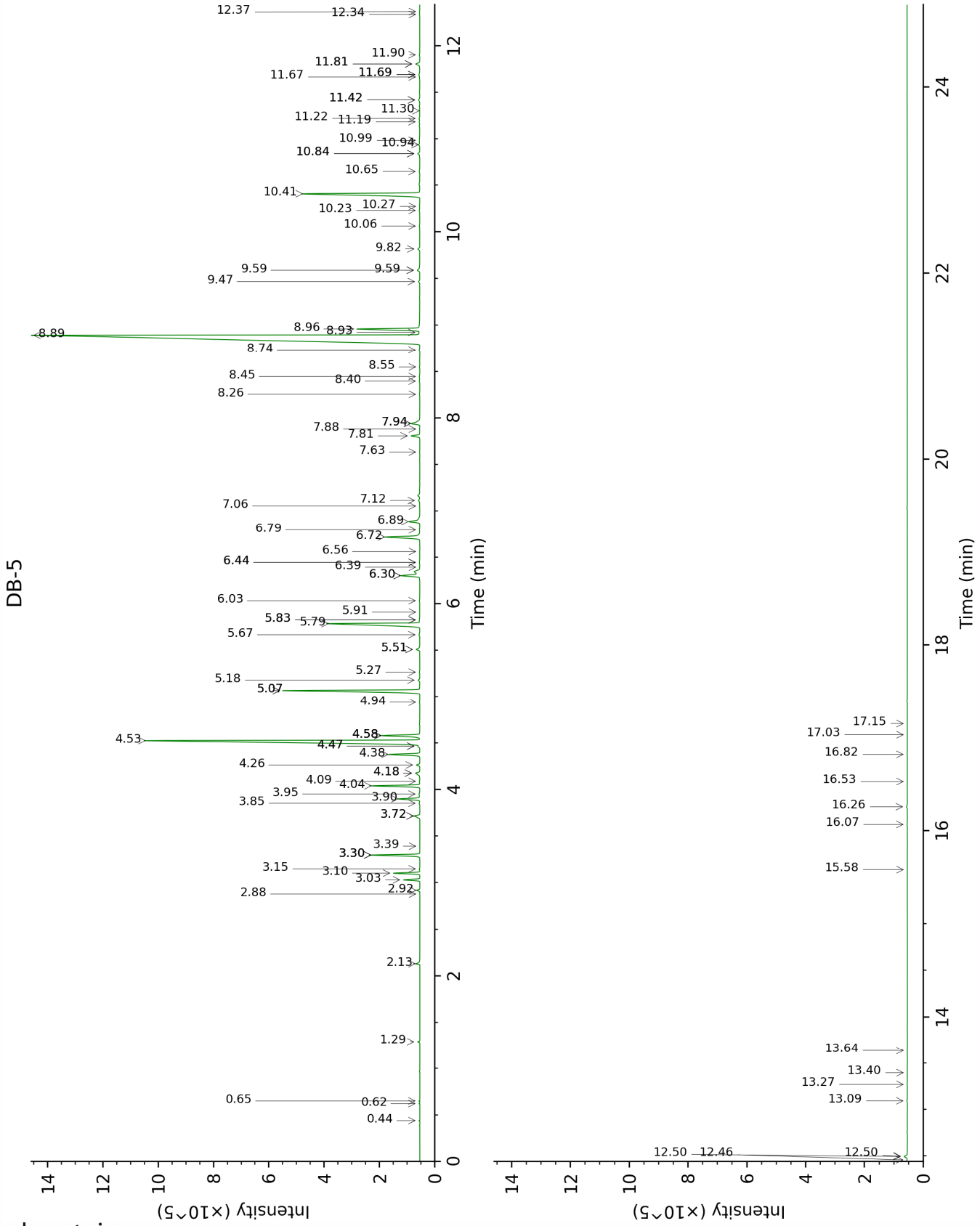

DB-WAX
Intensity (×10^5)
Time (min)
12.42
12.31
11.92
11.42
11.32
11.28
10.96
10.51
10.39
10.16
10.12
9.88
9.76
9.67
9.64
9.52
9.57
9.38
9.41
9.32
9.26
9.14
9.02
8.98
8.74
8.61
8.37
8.29
8.25
8.19
8.01
7.89
7.93
7.77
7.36
7.11
7.03
6.99
6.90
6.72
6.67
6.61
6.55
6.35
6.02
5.89
5.68
5.62
4.09
3.95
3.81
3.77
3.65
3.14
3.11
3.02
2.80
2.73
2.67
2.63
2.44
2.31
2.26
2.28
2.15
1.97
1.60
1.53
1.34
1.28
1.20
1.16
0.72
0.70
0.48
16.55
15.66
15.22
15.13
14.98
14.92
14.76
14.65
14.55
14.15
13.52
13.42
12.50


DB-5
Time (min)
Intensity (×10^5)
12.37
12.34
11.90
11.81
11.67
11.69
11.42
11.30
11.22
11.19
10.99
10.94
10.84
10.65
10.41
10.23
10.27
10.06
9.82
9.59
9.59
9.47
8.89
8.96
8.93
8.74
8.55
8.45
8.40
8.26
7.88
7.94
7.81
7.63
7.06
7.12
6.89
6.79
6.72
6.56
6.44
6.39
6.30
6.03
5.91
5.83
5.79
5.67
5.51
5.27
5.18
5.07
4.94
4.58
4.53
4.47
4.38
4.26
4.18
4.09
4.04
3.95
3.90
3.85
3.72
3.39
3.30
3.15
3.10
3.03
2.92
2.88
2.13
1.29
0.65
0.62
0.44
17.15
17.03
16.82
16.53
16.26
16.07
15.58
13.64
13.40
13.27
13.09
12.50
12.46
12.50

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Isobutyral	0.48	785.2	0.02	0.44	539.7	0.01
Isovaleral	0.72	889.8	0.01	0.62	643.1	0.01
2-Methylbutyral	0.70	883.4	0.01	0.65	653.3	0.01
Methyl 2-methylbutyrate	1.20	979.1	0.05	1.29	775.9	0.06
(3*Z*)-Hexenol	5.62	1350.9	0.19	2.13	858.2	0.16
Hashishene	1.28*	991.9	[0.93]	2.88	917.4	tr
Tricyclene	1.16	972.4	0.11	2.92	920.1	0.11
α-Thujene	1.34*	1001.8	[0.56]	3.03	927.5	0.55
α-Pinene	1.28*	991.9	[0.93]	3.10	932.3	0.89
β-Fenchene	1.34*	1001.8	[0.56]	3.15	935.3	0.02
Unknown SAOF I [m/z 91, 92 (47), 65 (11)... 134 (1)]	2.26	1095.3	0.01	3.30*	945.2	[1.78]
Camphene	1.60	1028.3	1.75	3.30*	945.2	[1.78]
α-Fenchene	1.53	1021.8	0.03	3.30*	945.2	[1.78]
Thuja-2,4(10)-diene	2.15*	1084.4	[0.10]	3.39	951.4	0.01
β-Pinene	1.97	1066.2	0.21	3.72*	972.9	[0.32]
Sabinene	2.15*	1084.4	[0.10]	3.72*	972.9	[0.32]
Unknown ORVU I [m/z 93, 79 (73), 67 (49), 95 (42), 91 (41), 121 (38)...]	2.28	1097.3	0.03	3.85	982.0	0.04
Octen-3-ol	6.61	1423.0	0.89	3.90	985.1	0.86
Octan-3-one	3.81	1218.9	0.04	3.95	988.5	0.07
Myrcene	2.73	1134.5	1.82	4.04	994.3	1.81
Octan-3-ol	5.89	1370.4	0.02	4.09	997.5	0.02
Pseudolimonene	2.67	1129.6	0.09	4.18*	1003.3	[0.27]
α-Phellandrene	2.63	1126.2	0.17	4.18*	1003.3	[0.27]
Δ3-Carene	2.44	1111.1	0.14	4.26	1008.9	0.14
α-Terpinene	2.80	1140.1	1.26	4.38	1016.0	1.26
meta-Cymene	3.95*	1229.7	[16.81]	4.47*	1021.6	[0.08]
Carvomenthene	2.31	1100.7	0.02	4.47*	1021.6	[0.08]
para-Cymene	3.95*	1229.7	[16.81]	4.52	1025.3	16.73
Limonene	3.02	1157.3	0.49	4.58*	1028.7	[1.64]
1,8-Cineole	3.14	1166.6	1.10	4.58*	1028.7	[1.64]
β-Phellandrene	3.11	1164.7	0.05	4.58*	1028.7	[1.64]
(*E*)-β-Ocimene	3.77	1215.9	0.02	4.94	1051.2	0.02
γ-Terpinene	3.64	1207.0	6.30	5.07*	1059.4	[6.31]
2-Methylbutyl butyrate	4.09*	1240.2	[0.14]	5.07*	1059.4	[6.31]
cis-Sabinene hydrate	6.72	1431.1	0.12	5.18	1066.4	0.08
cis-Linalool oxide	6.35	1403.7	0.03	5.27	1071.8	0.02

(fur.)						
Terpinolene	4.09*	1240.2	[0.14]	5.51*	1087.1	[0.19]
trans-Linalool oxide (fur.)	6.67	1427.4	0.02	5.51*	1087.1	[0.19]
trans-Sabinene hydrate	7.77*	1509.9	[0.05]	5.67	1096.9	0.05
Linalool	7.89	1519.1	5.15	5.79	1104.4	5.14
Nonanal	5.68	1355.1	0.01	5.83*	1106.9	[0.03]
Hotrienol	8.61	1574.9	0.02	5.83*	1106.9	[0.03]
endo-Fenchol	8.19*	1542.1	[6.46]	5.91	1112.2	0.02
Unknown CYFL II [m/z 81, 79 (19), 41 (12), 92 (8), 77 (8)...]	6.02	1380.0	0.02	6.03	1120.1	0.03
Camphor	6.99	1451.4	1.32	6.30*†	1137.2	[0.92]
trans-Pinocarveol	8.98	1603.8	0.03	6.30*†	1137.2	[0.92]
Camphene hydrate	8.25*	1546.9	[0.39]	6.39	1143.0	0.01
trans-Chrysanthemal	7.02	1453.9	0.02	6.44*	1146.3	[0.03]
Unknown DRMO V [m/z 123, 81 (60), 67 (49), 95 (36), 41 (29), 68 (25)...152 (2)]	7.11	1460.3	0.02	6.44*	1146.3	[0.03]
Isoborneol	9.14	1617.0	0.01	6.56	1153.7	0.01
Borneol	9.57*	1651.7	[1.94]	6.72	1163.6	1.74
Lavandulol	9.38	1636.4	0.03	6.80	1168.6	0.03
Terpinen-4-ol	8.37*	1556.0	[1.02]	6.89	1174.6	0.63
para-Cymen-8-ol	11.32	1798.4	0.02	7.06	1185.3	0.01
α-Terpineol	9.57*	1651.7	[1.94]	7.12†	1189.1	0.08
Bornyl formate	7.77*	1509.9	[0.05]	7.64	1223.1	0.01
Thymol methyl ether	8.25*	1546.9	[0.39]	7.81	1234.7	0.39
Neral	9.26	1626.2	0.04	7.88	1239.6	0.02
Carvacrol methyl ether	8.37*	1556.0	[1.02]	7.94*	1243.6	[0.55]
Carvone	9.76*	1667.4	[0.21]	7.94*	1243.6	[0.55]
Geraniol	11.42	1807.4	0.02	8.26	1264.5	0.02
Geranial	9.88	1677.1	0.04	8.40	1274.0	0.03
Decanol	10.51	1729.9	0.02	8.45	1277.3	0.04
Bornyl acetate	8.01	1528.4	0.02	8.55	1284.2	0.02
Thymol analogue I (isothymol?)	14.76	2118.9	0.04	8.74	1296.7	0.03
Thymol	14.92	2135.0	44.75	8.90	1307.5	45.12
Thymol analogue III	14.98	2141.0	0.01	8.93	1309.6	0.02
Carvacrol	15.13*	2156.8	[2.59]	8.96	1312.2	2.58
α-Cubebene	6.55	1418.4	0.07	9.47	1347.9	0.06
Thymyl acetate	11.28	1795.3	0.01	9.59*	1356.4	[0.15]
Eugenol	14.55	2098.5	0.16	9.59*	1356.4	[0.15]

α-Copaene	6.90	1444.6	0.09	9.82	1372.5	0.09
Unknown MEPU VII [m/z 148, 133 (66), 105 (46), 43 (33), 77 (15)...]				10.06	1389.7	0.03
Isocaryophyllene	7.93	1521.9	0.04	10.23	1401.4	0.03
α-Gurjunene	7.36	1478.9	0.02	10.27	1404.5	0.01
β-Caryophyllene	8.19*	1542.1	[6.46]	10.41	1414.5	6.50
Aromadendrene	8.29	1550.3	0.03	10.65	1432.8	0.04
Unknown THVU I [m/z 151, 166 (40), 105 (26)...]				10.84*	1447.1	[0.11]
α-Humulene	9.02	1607.2	0.09	10.84*	1447.1	[0.11]
allo-Aromadendrene	8.74	1584.8	0.05	10.94	1454.3	0.05
Thymohydroquinone isomer?				10.99	1457.7	0.06
γ-Muurolene	9.32	1631.9	0.05	11.19	1472.5	0.04
Germacrene D	9.52	1647.5	0.04	11.22	1475.2	0.04
β-Selinene	9.64	1657.2	0.01	11.30	1481.3	0.01
Bicyclogermacrene	9.76*	1667.4	[0.21]	11.42*	1490.0	[0.07]
Viridiflorene	9.41	1639.1	0.01	11.42*	1490.0	[0.07]
γ-Cadinene	10.12	1696.5	0.03	11.67	1508.5	0.02
(*Z*)-γ-Bisabolene	9.67	1660.1	0.01	11.69*	1510.6	[0.06]
Cubebol	12.31	1886.5	0.06	11.69*	1510.6	[0.06]
δ-Cadinene	10.16	1699.6	0.20	11.81*	1519.5	[0.22]
trans-Calamenene	10.96	1767.9	0.03	11.81*	1519.5	[0.22]
trans-Cadina-1,4-diene	10.39	1719.3	0.03	11.90	1527.2	0.03
Geranyl butyrate	11.92	1852.0	0.02	12.34	1561.2	0.01
Caryophyllenyl alcohol	13.42	1989.0	0.01	12.37	1563.6	0.01
Spathulenol	14.16	2059.8	0.04	12.46	1570.6	0.03
Caryophyllene oxide	12.50	1903.9	0.15	12.50*	1573.6	[0.16]
Caryophyllene oxide isomer	12.42	1896.5	0.01	12.50*	1573.6	[0.16]
1-epi-Cubenol	13.52	1998.0	0.02	13.09	1621.3	0.03
τ-Cadinol	14.65	2107.7	0.01	13.27	1635.9	0.02
α-Cadinol	15.22	2165.8	0.01	13.40	1646.3	0.01
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	16.55	2304.1	0.01	13.64	1666.2	0.01
Unknown UNKN XX [m/z 81, 136 (68), 135 (58), 150 (44), 93 (34), 121 (30)...]				15.58	1834.4	0.01
Unknown THVU XVI				16.07	1878.6	0.02

[m/z 81, 136 (62), 135 (56), 150 (39), 93 (33), 121 (24)...]						
Unknown THVU III [m/z 136, 81 (96), 135 (76), 93 (48), 150 (47), 121 (43), 137 (28)...]				16.26	1895.9	0.05
Unknown ORVU X [m/z 136, 81 (81), 150 (74), 135 (52), 93 (46), 121 (42)...]	15.66	2210.3	0.01	16.53	1921.2	0.01
meta-Camphorene	15.13*	2156.8	[2.59]	16.82	1949.0	0.01
Unknown THVU IV [m/z 201, 159 (37), 148 (27), 173 (22), 41 (20)... 284 (16)]				17.03	1969.0	0.01
Unknown THVU VI [m/z 135, 150 (61), 81 (45), 69 (37), 41 (24), 136 (21), 93 (19)...]				17.15	1980.4	0.01
Total reported		99.08%			99.59%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is 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