Date : 2026-04-24

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26C23-PTH01
Customer Identification : Oregano - Turkey - O40114
Type : Essential Oil
Source : *Origanum vulgare ct. Carvacrol*
Customer : Plant Therapy

Checked an approved by:

Sylvain Mercier, M. Sc., Chimiste 2014-005

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

This report is an update of the version first issued on 2026-03-30 to make a correction in the sample identification section.

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 : Jean-Christophe Fortin, M. Sc.
Date : 2026-03-25

Physicochemical data

Refractive index : 1.5128 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-03-24

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	0.01	Aliphatic aldehyde
Methyl 2-methylbutyrate	0.01	Aliphatic ester
Tricyclene	tr	Monoterpene
α-Thujene	0.38	Monoterpene
α-Pinene	1.25	Monoterpene
Unknown	0.01	Monoterpene
Camphene	0.04	Monoterpene
α-Fenchene	tr	Monoterpene
Sabinene	0.01	Monoterpene
β-Pinene	0.01	Monoterpene
Unknown	0.02	Monoterpene
Octen-3-ol	0.04	Aliphatic alcohol
Octan-3-one	0.02	Aliphatic ketone
2,7-Dimethyl-2,6-octadiene	0.01	Monoterpene
Myrcene	0.83	Monoterpene
Octan-3-ol	tr	Aliphatic alcohol
α-Phellandrene	0.04	Monoterpene
Pseudolimonene	0.04	Monoterpene
Δ3-Carene	0.02	Monoterpene
α-Terpinene	1.26	Monoterpene
para-Cymene	6.96	Monoterpene
Limonene	0.10	Monoterpene
1,8-Cineole	0.26	Monoterpenic ether
β-Phellandrene	0.03	Monoterpene
ortho-Cymene	0.01	Monoterpene
(*Z*)-β-Ocimene	0.01	Monoterpene
(*E*)-β-Ocimene	0.01	Monoterpene
γ-Terpinene	5.08	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
para-Mentha-3,8-diene	0.01	Monoterpene
cis-Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Fenchone	0.01	Monoterpenic ketone
para-Cymenene	0.03	Monoterpene
Terpinolene	0.04	Monoterpene
trans-Linalool oxide (fur.)	tr	Monoterpenic alcohol
trans-Sabinene hydrate	0.01	Monoterpenic alcohol
Linalool	1.40	Monoterpenic alcohol
Hotrienol	0.02	Monoterpenic alcohol
endo-Fenchol	0.01	Monoterpenic alcohol

cis-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
trans-Pinocarveol	0.02	Monoterpenic alcohol
trans-para-Menth-2-en-1-ol	0.02	Monoterpenic alcohol
Camphor	0.02	Monoterpenic ketone
Isoborneol	tr	Monoterpenic alcohol
Borneol	0.28	Monoterpenic alcohol
Terpinen-4-ol	1.22	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	0.01	Monoterpenic alcohol
Myrtenal	0.01	Monoterpenic aldehyde
cis-Dihydrocarvone	0.06	Monoterpenic ketone
trans-Piperitol	0.01	Monoterpenic alcohol
Thymol methyl ether	0.01	Monoterpenic ether
Carvone	0.01	Monoterpenic ketone
Carvacrol methyl ether	0.04	Monoterpenic ether
Geraniol	0.01	Monoterpenic alcohol
Geranial	0.01	Monoterpenic aldehyde
Bornyl acetate	0.04	Monoterpenic ester
Thymol analogue I (isothymol?)	0.02	Monoterpenic alcohol
Thymol	3.78	Monoterpenic alcohol
Thymol analogue II	0.03	Monoterpenic alcohol
Carvacrol	71.30	Monoterpenic alcohol
2-Methyl-5-(propan-2-ylidene)cyclohexane-1,4-diol ?	0.07	Monoterpenic alcohol
Thymol analogue III	0.03	Monoterpenic alcohol
2-Methyl-6-propylphenol?	0.02	Miscellaneous
Eugenol	0.01	Phenylpropanoid
α-Copaene	0.01	Sesquiterpene
Carvacryl acetate	0.05	Monoterpenic ester
β-Bourbonene	0.01	Sesquiterpene
β-Elemene	tr	Sesquiterpene
Geranyl acetate	0.01	Monoterpenic ester
Isocaryophyllene	0.01	Sesquiterpene
Methyleugenol	0.02	Phenylpropanoid
β-Caryophyllene	2.73	Sesquiterpene
β-Copaene	0.02	Sesquiterpene
Aromadendrene	0.04	Sesquiterpene
α-Humulene	0.03	Sesquiterpene
γ-Muurolene	0.01	Sesquiterpene
allo-Aromadendr-9-ene	0.01	Sesquiterpene
α-Selinene	0.02	Sesquiterpene
β-Bisabolene	0.62	Sesquiterpene
γ-Cadinene	0.04	Sesquiterpene
δ-Cadinene	0.01	Sesquiterpene
(*E*)-α-Bisabolene	0.02	Sesquiterpene

Spathulenol	0.04	Sesquiterpenic alcohol
Caryophyllene oxide	0.18	Sesquiterpenic ether
Caryophyllene oxide isomer	0.02	Sesquiterpenic ether
Humulene epoxide II	0.01	Sesquiterpenic ether
Caryophylladienol II	0.01	Sesquiterpenic alcohol
τ-Cadinol	0.05	Sesquiterpenic alcohol
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	0.02	Sesquiterpenic alcohol
Phytone	0.01	Terpenic ketone
Unknown	0.02	Unknown
Unknown	0.03	Unknown
Unknown	0.07	Unknown
Unknown	0.02	Unknown
meta-Camphorene	0.03	Diterpene
Unknown	0.02	Unknown
Unknown	0.01	Unknown
para-Camphorene	0.01	Diterpene
Unknown	0.01	Unknown
Unknown	0.01	Unknown
Consolidated total	**99.38**	

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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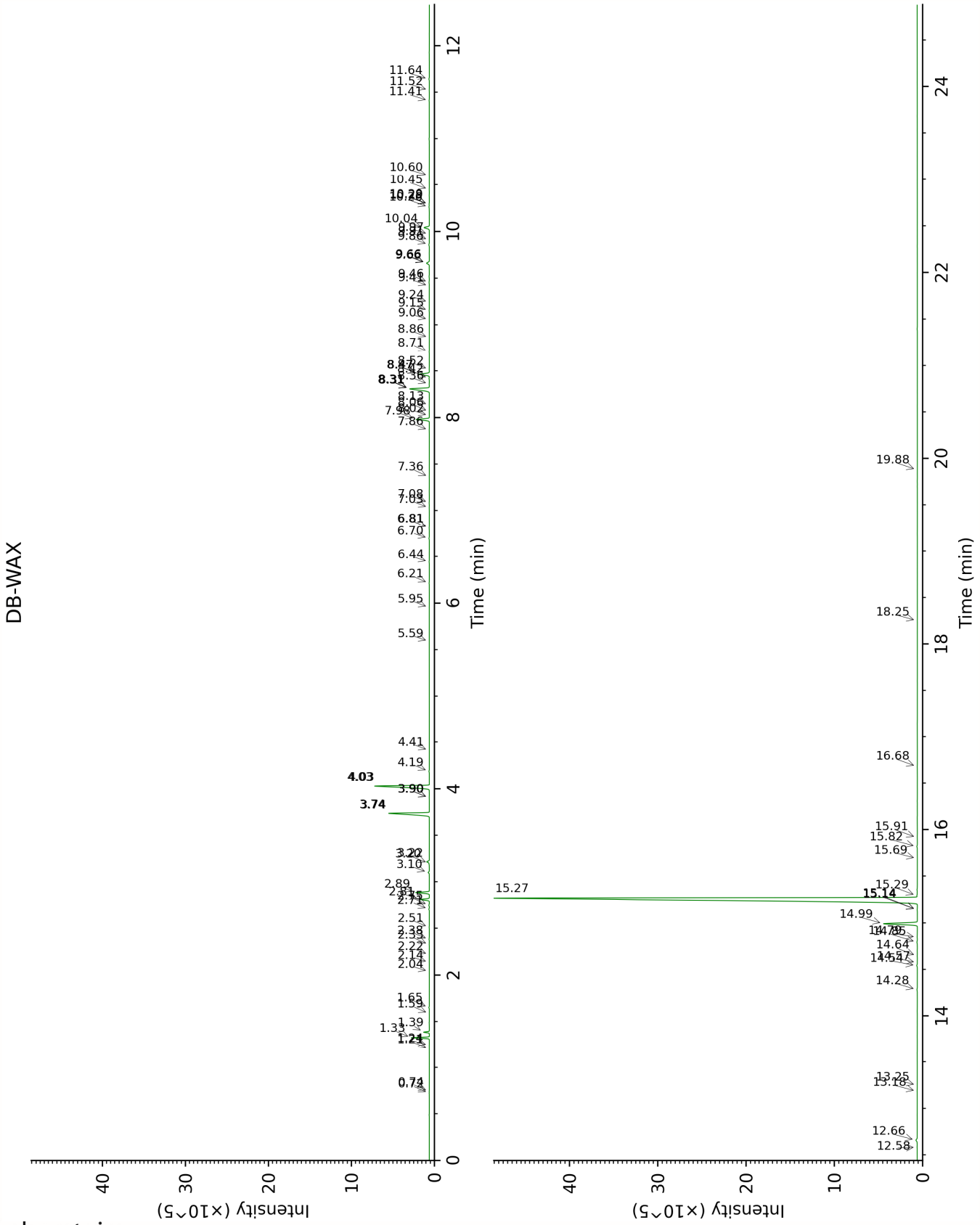
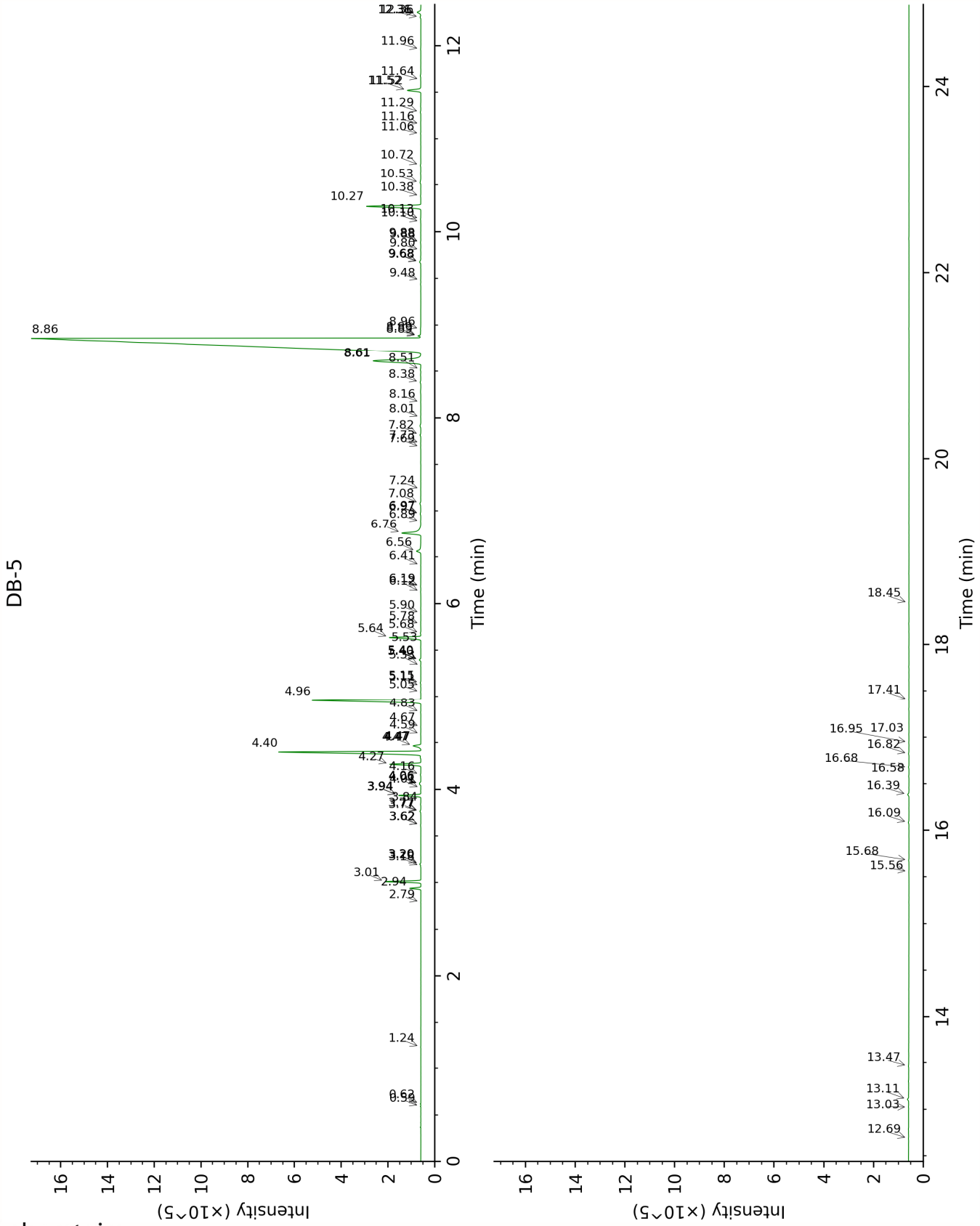

DB-WAX
Time (min)
Intensity (×10^5)
11.64
11.52
11.41
10.60
10.45
10.04
9.66
9.46
9.24
9.15
9.06
8.86
8.71
8.31
7.86
7.36
6.81
6.70
6.44
6.21
5.95
5.59
4.41
4.19
4.03
3.90
3.74
3.10
2.89
2.51
2.22
2.14
2.04
1.65
1.59
1.39
1.33
1.21
0.74
19.88
18.25
16.68
15.91
15.82
15.69
15.29
15.27
15.14
14.99
14.64
14.28
13.25
13.16
12.66
12.58


DB-5
Time (min)
Intensity (×10^5)
8.86
8.61
10.27
4.96
4.40
5.64
3.94
3.01
18.45
17.41
16.95
17.03
16.82
16.68
16.58
16.39
16.09
15.68
15.56
13.47
13.11
13.03
12.69

FULL ANALYSIS DATA

Isovaleral	Column DB-WAX			Column DB-5		
	0.74	887.5	0.01	0.59	643.4	0.01
2-Methylbutyral	0.72	881.0	0.01	0.62	653.5	0.01
Methyl 2-methylbutyrate	1.24	977.8	tr	1.24	775.5	0.01
Tricyclene	1.21	972.2	tr	2.79	916.4	tr
α-Thujene	1.39	1001.1	0.38	2.94	926.4	0.38
α-Pinene	1.33	991.4	1.25	3.01	931.2	1.25
Unknown SAOF I [m/z 91, 92 (47), 65 (11)... 134 (1)]	2.33	1094.7	0.01	3.18	942.3	0.01
Camphene	1.65	1028.1	0.04	3.20*	943.7	[0.04]
α-Fenchene	1.59	1021.6	tr	3.20*	943.7	[0.04]
Sabinene	2.22	1084.0	0.01	3.62*	971.9	[0.02]
β-Pinene	2.04	1066.2	0.01	3.62*	971.9	[0.02]
Unknown ORVU I [m/z 93, 79 (73), 67 (49), 95 (42), 91 (41), 121 (38)...]	2.38	1100.3	0.02	3.77*	981.8	[0.04]
Octen-3-ol	6.70	1420.1	0.04	3.77*	981.8	[0.04]
Octan-3-one	3.90*	1219.8	[0.01]	3.84	986.7	0.02
2,7-Dimethyl-2,6-octadiene	2.14	1076.0	0.01	3.94*	993.3	[0.84]
Myrcene	2.81	1134.6	0.83	3.94*	993.3	[0.84]
Octan-3-ol	5.95	1365.6	0.01	4.01	998.5	tr
α-Phellandrene	2.71	1126.4	0.04	4.06*	1001.6	[0.09]
Pseudolimonene	2.75	1129.8	0.04	4.06*	1001.6	[0.09]
Δ3-Carene	2.51	1111.2	0.02	4.16	1008.1	0.02
α-Terpinene	2.89	1140.5	1.25	4.27	1015.1	1.26
para-Cymene	4.03*	1229.1	[6.98]	4.40	1023.4	6.96
Limonene	3.10	1157.4	0.10	4.47*	1027.6	[0.40]
1,8-Cineole	3.22	1166.5	0.26	4.47*	1027.6	[0.40]
β-Phellandrene	3.20	1165.2	0.03	4.47*	1027.6	[0.40]
ortho-Cymene	4.41	1257.4	0.01	4.59	1035.4	0.01
(*Z*)-β-Ocimene	3.74*	1207.5	[5.04]	4.67	1040.4	0.01
(*E*)-β-Ocimene	3.90*	1219.8	[0.01]	4.83	1050.6	0.01
γ-Terpinene	3.74*	1207.5	[5.04]	4.96	1058.7	5.08
cis-Sabinene hydrate	6.81*	1428.7	[0.02]	5.05	1064.7	0.01
para-Mentha-3,8-diene	4.03*	1229.1	[6.98]	5.11	1068.7	0.01
cis-Linalool oxide (fur.)	6.44	1401.2	0.02	5.15	1071.0	0.03
Fenchone	5.59	1339.3	0.01	5.33	1082.5	0.01
para-Cymenene	6.21	1384.5	0.03	5.40*	1086.7	[0.07]

Terpinolene	4.19	1240.8	0.04	5.40*	1086.7	[0.07]
trans-Linalool oxide (fur.)	6.81*	1428.7	[0.02]	5.40*	1086.7	[0.07]
trans-Sabinene hydrate	7.86	1507.8	0.01	5.53	1095.0	0.01
Linalool	7.98	1516.9	1.40	5.64	1102.1	1.40
Hotrienol	8.71	1573.7	0.02	5.68	1105.0	0.02
endo-Fenchol	8.31*	1542.5	[2.76]	5.78	1111.5	0.01
cis-para-Menth-2-en-1-ol	8.02	1520.0	0.01	5.90	1119.1	0.01
trans-Pinocarveol	9.06	1601.1	0.01	6.12	1133.6	0.02
trans-para-Menth-2-en-1-ol	8.86	1585.9	0.02	6.19*	1137.7	[0.02]
Camphor	7.08	1449.3	0.02	6.19*	1137.7	[0.02]
Isoborneol	9.24	1616.1	0.01	6.41	1152.2	tr
Borneol	9.66*	1650.4	[0.35]	6.56	1162.1	0.28
Terpinen-4-ol	8.47*	1554.9	[1.25]	6.76	1174.8	1.22
para-Cymen-8-ol	11.41	1797.2	0.03	6.89	1183.2	0.01
α-Terpineol	9.66*	1650.4	[0.35]	6.97*	1188.6	[0.03]
Myrtenal	8.52	1558.9	0.01	6.97*	1188.6	[0.03]
cis-Dihydrocarvone	8.42	1551.2	0.04	7.08	1195.9	0.06
trans-Piperitol	10.29*	1701.9	[0.03]	7.24	1205.9	0.01
Thymol methyl ether	8.36	1546.4	0.02	7.69	1236.7	0.01
Carvone	9.91	1670.4	0.01	7.73	1239.6	0.01
Carvacrol methyl ether	8.47*	1554.9	[1.25]	7.82	1245.7	0.04
Geraniol	11.52	1806.9	0.01	8.01	1258.5	0.01
Geranial	9.97	1675.6	0.01	8.16	1269.4	0.01
Bornyl acetate	8.13	1528.8	0.01	8.38	1284.3	0.04
Thymol analogue I (isothymol?)	14.85	2116.9	0.03	8.51	1293.3	0.02
Thymol	14.99	2131.5	3.78	8.61*	1300.2	[3.81]
Thymol analogue II	15.14*	2146.5	[0.02]	8.61*	1300.2	[3.81]
Carvacrol	15.26	2159.1	71.21	8.86	1314.0	71.30
2-Methyl-5-(propan-2-ylidene)cyclohexane-1,4-diol ?	14.54	2086.9	0.07	8.89*	1316.0	[0.10]
Thymol analogue III	15.14*	2146.5	[0.02]	8.89*	1316.0	[0.10]
2-Methyl-6-propylphenol?				8.96	1321.1	0.02
Eugenol	14.64	2097.0	0.02	9.48	1358.3	0.01
α-Copaene	7.03	1445.2	0.01	9.68*	1372.2	[0.07]
Carvacryl acetate	11.64	1817.7	0.05	9.68*	1372.2	[0.07]
β-Bourbonene	7.36	1470.0	0.01	9.80	1381.3	0.01

β-Elemene	8.31*	1542.5	[2.76]	9.88*	1387.0	[0.02]
Geranyl acetate	10.45	1715.3	0.01	9.88*	1387.0	[0.02]
Isocaryophyllene	8.06	1523.4	0.01	10.10	1402.7	0.01
Methyleugenol	13.18	1957.4	0.02	10.14	1404.9	0.02
β-Caryophyllene	8.31*	1542.5	[2.76]	10.27	1415.1	2.73
β-Copaene	8.31*	1542.5	[2.76]	10.38	1423.3	0.02
Aromadendrene	8.47*	1554.9	[1.25]	10.53	1434.2	0.04
α-Humulene	9.16	1608.9	0.02	10.72	1448.5	0.03
γ-Muurolene	9.46	1633.6	0.03	11.06	1474.0	0.01
allo-Aromadendr-9-ene	9.41	1630.2	0.01	11.16	1481.9	0.01
α-Selinene	9.86	1666.4	0.05	11.29	1491.4	0.02
β-Bisabolene	10.04	1681.5	0.62	11.52*	1509.1	[0.66]
γ-Cadinene	10.26	1699.3	0.04	11.52*	1509.1	[0.66]
δ-Cadinene	10.29*	1701.9	[0.03]	11.64	1518.2	0.01
(*E*)-α-Bisabolene	10.60	1728.4	0.01	11.96	1544.0	0.02
Spathulenol	14.28	2061.9	0.04	12.31	1571.2	0.04
Caryophyllene oxide	12.66	1908.5	0.18	12.36*	1575.3	[0.22]
Caryophyllene oxide isomer	12.58	1901.6	0.02	12.36*	1575.3	[0.22]
Humulene epoxide II	13.25	1963.3	tr	12.69	1601.3	0.01
Caryophylladienol II	15.91	2225.3	0.02	13.02	1629.1	0.01
τ-Cadinol	14.79	2111.5	0.06	13.11	1636.0	0.05
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	16.68	2305.2	0.02	13.47	1665.8	0.02
Phytone	14.57	2090.1	0.01	15.56	1848.1	0.01
Unknown ORVU II [m/z 81, 150 (90), 136 (88), 135 (74), 93 (54), 121 (41)...]				15.68	1859.3	0.02
Unknown ORVU III [m/z 81, 150 (83), 136 (81), 135 (67), 93 (48), 121 (36)...]				16.08	1896.1	0.03
Unknown ORVU X [m/z 136, 81 (81), 150 (74), 135 (52), 93 (46), 121 (42)...]	15.82	2215.3	0.06	16.38	1924.2	0.07
Unknown ORVU XV [m/z 81, 136 (71), 150 (57), 93 (47), 135 (42)...]				16.58	1942.5	0.02
meta-Camphorene	15.29	2161.8	0.07	16.68	1952.2	0.03
Unknown ORVU IV [m/z 151, 135 (46),				16.82	1965.9	0.02

109 (41), 43 (26), 150 (24), 107 (23)...]						
Unknown ORVU XVI [m/z 150, 135 (59), 81 (32), 136 (26), 257 (21)...]				16.95	1977.8	0.01
para-Camphorene	15.69	2202.0	0.01	17.03	1985.4	0.01
Unknown ORVU VI [m/z 135, 150 (66), 43 (38), 109 (27), 93 (25), 137 (20)...]	18.25	2478.6	0.01	17.41	2022.3	0.01
Unknown MOFI VI [m/z 69, 41 (74), 166 (36), 91 (32), 105 (28), 43 (25)...]	19.88	2668.9	0.01	18.45	2126.8	0.01
Total reported		99.09%			99.38%	

*: 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

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