Date : 2026-03-02

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26A19-PTH03
Customer Identification : Petitgrain - Paraguay - P60111R
Type : Essential Oil
Source : *Citrus aurantium subsp. amara*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 2026-01-21 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 : 2026-01-21

Physicochemical data

Refractive index : 1.4592 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-01-20

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
Ethanol	0.02	Aliphatic alcohol
2-Methyl-3-buten-2-ol	tr	Aliphatic alcohol
2-Ethylfuran	tr	Furan
(3*Z*)-Hexenol	0.01	Aliphatic alcohol
(2*E*)-Hexenol	tr	Aliphatic alcohol
Hexanol	0.02	Aliphatic alcohol
α-Thujene	0.02	Monoterpene
α-Pinene	0.15	Monoterpene
Camphene	0.01	Monoterpene
β-Pinene	1.71	Monoterpene
Sabinene	0.55	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	1.61	Monoterpene
α-Phellandrene	0.03	Monoterpene
Δ3-Carene	0.30	Monoterpene
α-Terpinene	0.04	Monoterpene
meta-Cymene	0.01	Monoterpene
para-Cymene	0.02	Monoterpene
1,8-Cineole	0.05	Monoterpenic ether
Limonene	2.41	Monoterpene
β-Phellandrene	0.05	Monoterpene
(*Z*)-β-Ocimene	0.63	Monoterpene
(*E*)-β-Ocimene	2.17	Monoterpene
Unknown	0.01	Monoterpene
γ-Terpinene	0.06	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.05	Monoterpenic alcohol
trans-Linalool oxide (fur.)	0.04	Monoterpenic alcohol
Terpinolene	0.37	Monoterpene
Linalool	23.38	Monoterpenic alcohol
Hotrienol	0.04	Monoterpenic alcohol
cis-para-Menth-2-en-1-ol	0.02	Monoterpenic alcohol
allo-Ocimene	0.02	Monoterpene
neo-allo-Ocimene	0.01	Monoterpene
trans-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
(*E*)-Myroxide	0.02	Monoterpenic ether
Citronellal	0.03	Monoterpenic aldehyde
Terpinen-4-ol	0.10	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	3.25	Monoterpenic alcohol

Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	0.02	Monoterpenic alcohol
(3*E*,5*E*)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.02	Monoterpenic alcohol
Nerol	1.27	Monoterpenic alcohol
Citronellol	0.04	Monoterpenic alcohol
Neral	0.06	Monoterpenic aldehyde
Linalyl acetate	48.90	Monoterpenic ester
Geraniol	3.46	Monoterpenic alcohol
Geranial	0.10	Monoterpenic aldehyde
Geranyl formate	0.02	Monoterpenic ester
4-Vinylguaiacol	0.03	Simple phenolic
Methyl anthranilate	0.03	Phenolic ester
Hodiendiol derivative	0.02	Oxygenated monoterpene
Linalyl propionate	0.05	Monoterpenic ester
α-Terpinyl acetate	0.14	Monoterpenic ester
Neryl acetate	2.82	Monoterpenic ester
α-Copaene	0.01	Sesquiterpene
Geranyl acetate	3.48	Monoterpenic ester
β-Elemene	0.04	Sesquiterpene
β-Caryophyllene	1.07	Sesquiterpene
Aromadendrene	0.05	Sesquiterpene
α-Humulene	0.10	Sesquiterpene
Geranylacetone	0.01	Monoterpenic ketone
(*E*)-β-Farnesene	0.03	Sesquiterpene
Germacrene D	0.02	Sesquiterpene
Bicyclogermacrene	0.25	Sesquiterpene
(3*Z*,6*E*)-α-Farnesene	0.02	Sesquiterpene
γ-Cadinene	0.01	Sesquiterpene
(3*E*,6*E*)-α-Farnesene	0.03	Sesquiterpene
trans-Calamenene	0.01	Sesquiterpene
δ-Cadinene	0.04	Sesquiterpene
(*E*)-Nerolidol	0.05	Sesquiterpenic alcohol
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.05	Sesquiterpenic ether
α-Cadinol	0.01	Sesquiterpenic alcohol
Mint sulfide	0.01	Sesquiterpenic sulfide
Phytol	0.07	Diterpenic alcohol
Consolidated total	**99.67**	

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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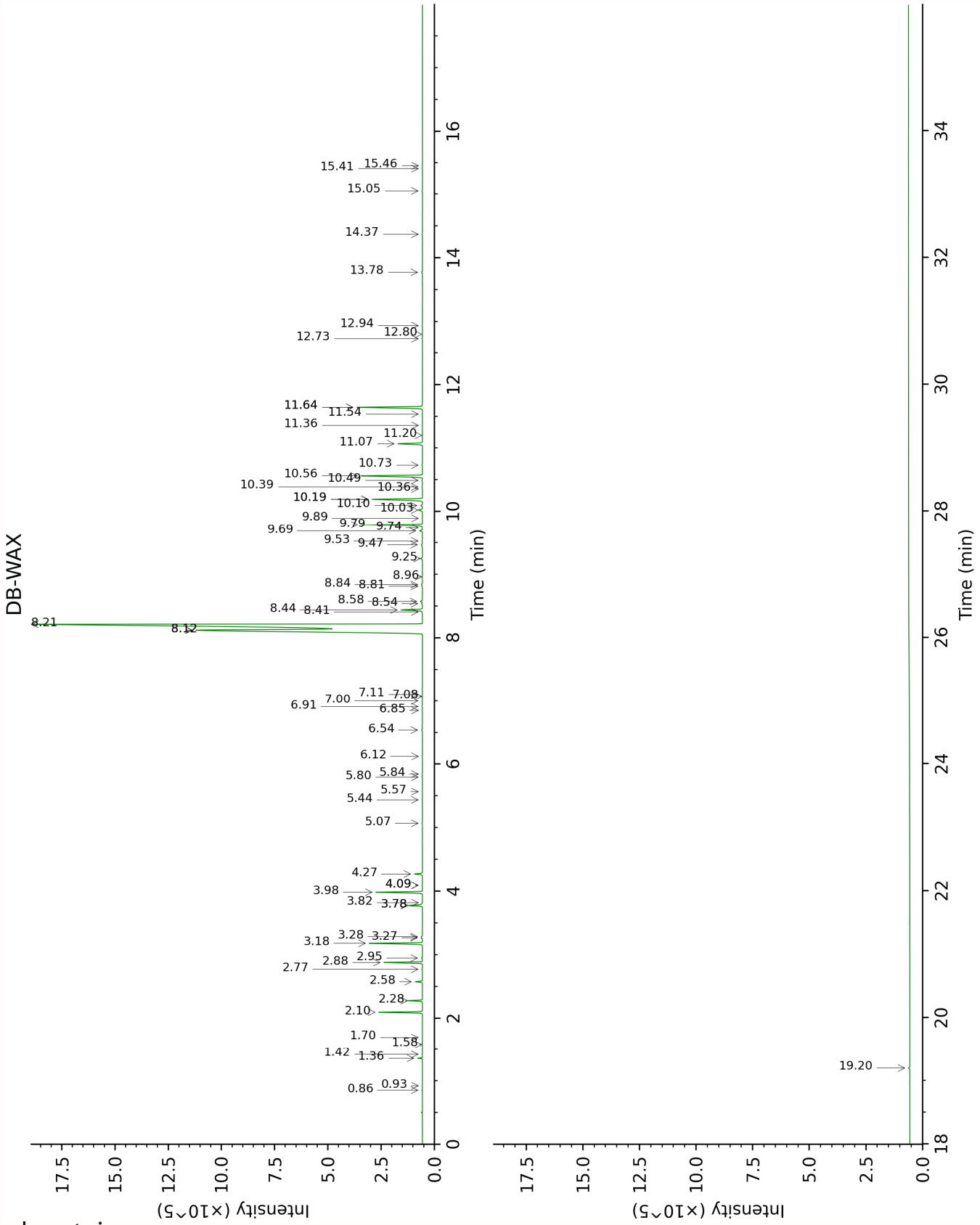
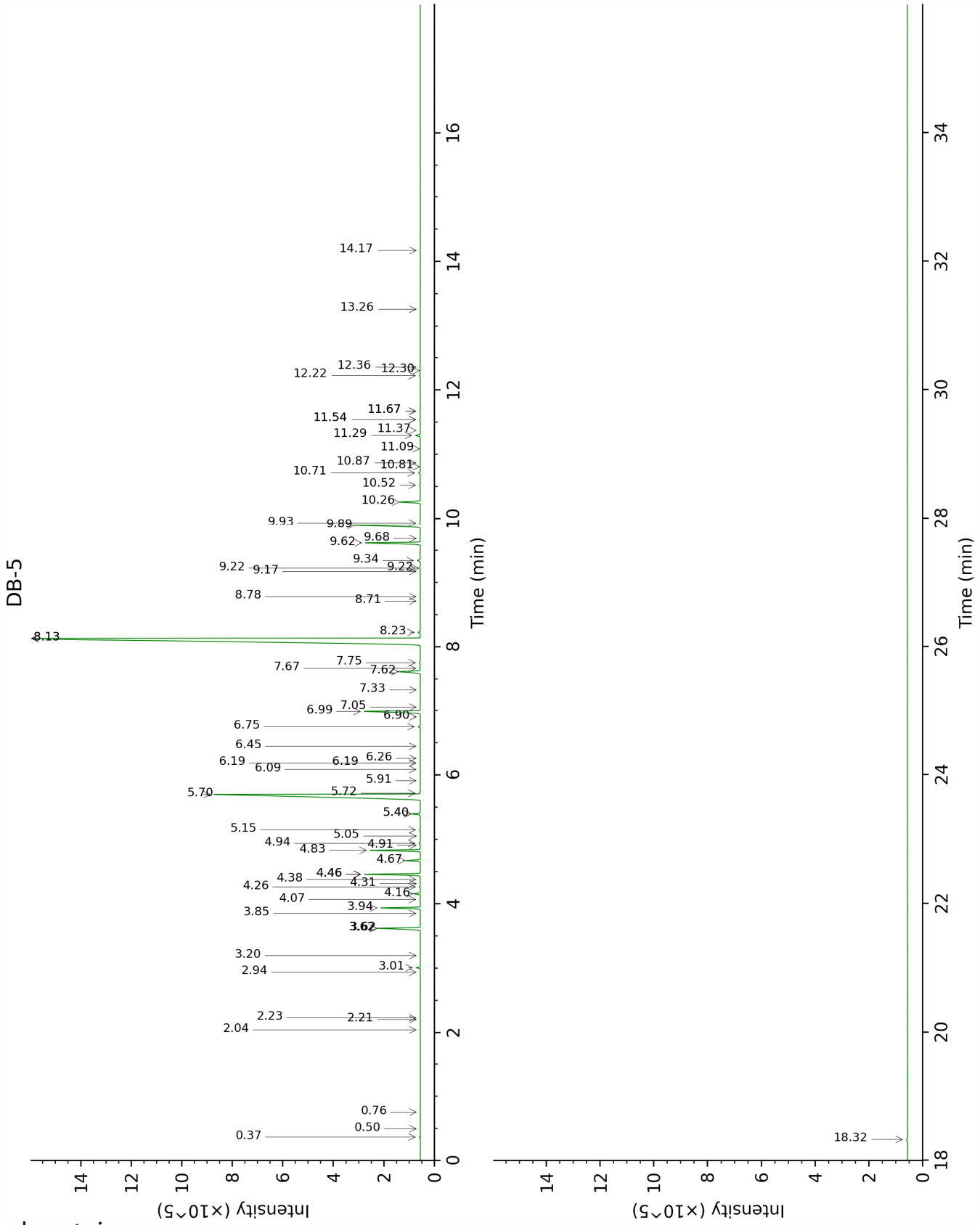

DB-WAX
Time (min)
Intensity (×10^5)
8.21
8.12
15.41
15.46
15.05
14.37
13.78
12.94
12.73
12.80
11.64
11.54
11.36
11.20
11.07
10.73
10.56
10.49
10.39
10.36
10.19
10.10
10.03
9.89
9.79
9.74
9.69
9.53
9.47
9.25
8.96
8.84
8.81
8.58
8.54
8.44
8.41
7.11
7.08
7.00
6.91
6.85
6.54
6.12
5.84
5.80
5.57
5.44
5.07
4.27
4.09
3.98
3.82
3.78
3.28
3.27
3.18
2.95
2.88
2.77
2.58
2.28
2.10
1.70
1.58
1.42
1.36
0.93
0.86
19.20



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FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Ethanol	0.86	909.4	0.01	0.37	506.0	0.02
2-Methyl-3-buten-2-ol	1.58	1016.3	tr	0.50	607.3	tr
2-Ethylfuran	0.92	920.5	tr	0.76	702.7	tr
(3*Z*)-Hexenol	5.80	1350.6	0.02	2.04	855.9	0.01
(2*E*)-Hexenol	6.12	1374.1	0.01	2.20	869.6	tr
Hexanol	5.44	1324.9	0.02	2.23	871.8	0.02
α-Thujene	1.42	1000.2	0.01	2.94	926.2	0.02
α-Pinene	1.36	991.2	0.15	3.01	930.9	0.15
Camphene	1.70	1027.2	0.01	3.20	943.6	0.01
β-Pinene	2.10	1066.8	1.71	3.62*	972.1	[2.27]
Sabinene	2.28	1084.9	0.55	3.62*	972.1	[2.27]
6-Methyl-5-hepten-2-one	5.07	1300.3	0.02	3.85	987.7	0.02
Myrcene	2.88	1134.9	1.59	3.94	993.4	1.61
α-Phellandrene	2.77	1126.5	0.02	4.07	1002.3	0.03
Δ3-Carene	2.58	1111.2	0.29	4.16	1008.1	0.30
α-Terpinene	2.95	1140.4	0.04	4.26	1014.9	0.04
meta-Cymene	4.09*	1228.5	[0.03]	4.31	1018.0	0.01
para-Cymene	4.09*	1228.5	[0.03]	4.38	1022.3	0.02
1,8-Cineole	3.28	1166.8	0.05	4.46*	1027.3	[2.53]
Limonene	3.18	1158.7	2.41	4.46*	1027.3	[2.53]
β-Phellandrene	3.27	1165.4	0.05	4.46*	1027.3	[2.53]
(*Z*)-β-Ocimene	3.78*	1205.2	[0.69]	4.67	1040.9	0.63
(*E*)-β-Ocimene	3.98	1220.5	2.16	4.83	1051.0	2.17
Unknown CUSE I [m/z 93, 91 (54), 92 (31), 77 (29), 79 (17), 43 (13), 41 (10), 136 (9)]	3.82	1208.4	0.01	4.91	1056.0	0.01
γ-Terpinene	3.78*	1205.2	[0.69]	4.94	1058.0	0.06
cis-Sabinene hydrate	6.85	1426.9	0.01	5.05	1065.2	0.01
cis-Linalool oxide (fur.)	6.54	1403.9	0.05	5.15	1071.4	0.05
trans-Linalool oxide (fur.)	6.91	1431.4	0.04	5.40*	1087.2	[0.40]
Terpinolene	4.27	1241.5	0.37	5.40*	1087.2	[0.40]
Linalool	8.12*†	1522.2	[27.24]	5.70	1106.5	23.38
Hotrienol	8.81	1575.7	0.03	5.72	1107.7	0.04
cis-para-Menth-2-en-1-ol	8.12*†	1522.2	[27.24]	5.91	1120.4	0.02
allo-Ocimene	5.57	1334.3	0.02	6.09	1131.8	0.02

neo-allo-Ocimene	5.84	1354.1	0.01	6.19*	1138.3	[0.04]
trans-para-Menth-2-en-1-ol	8.96	1587.2	0.01	6.19*	1138.3	[0.04]
(*E*)-Myroxide	7.11	1446.2	0.01	6.26	1143.0	0.02
Citronellal	7.00	1438.1	0.03	6.45	1155.2	0.03
Terpinen-4-ol	8.58	1557.2	0.10	6.75	1175.1	0.10
para-Cymen-8-ol	11.54	1799.5	0.02	6.90	1185.0	0.01
α-Terpineol	9.79	1653.4	3.25	6.99	1190.6	3.25
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	12.80	1912.3	0.01	7.05	1194.9	0.02
(3*E*,5*E*)-2,6-Dimethylocta-3,5,7-trien-2-ol	11.36	1784.2	0.01	7.33	1213.4	0.02
Nerol	11.07	1759.8	1.28	7.62	1232.9	1.27
Citronellol	10.73	1731.3	0.02	7.67	1236.4	0.04
Neral	9.47	1627.6	0.07	7.76	1242.4	0.06
Linalyl acetate	8.21*†	1529.3	[45.05]	8.13*	1268.3	[52.33]
Geraniol	11.64*	1808.9	[3.47]	8.13*	1268.3	[52.33]
Geranial	10.10	1678.3	0.09	8.23	1274.9	0.10
Geranyl formate	9.89	1662.0	0.02	8.71	1308.3	0.02
4-Vinylguaiacol	15.05	2126.3	0.04	8.78	1309.5	0.03
Methyl anthranilate	15.41	2162.5	0.02	9.17	1337.3	0.03
Hodiendiol derivative	12.94	1924.7	0.02	9.22*	1340.9	[0.07]
Linalyl propionate	8.84	1577.8	0.05	9.22*	1340.9	[0.07]
α-Terpinyl acetate	9.69	1645.4	0.15	9.34	1349.3	0.14
Neryl acetate	10.19*	1686.2	[2.83]	9.62	1368.8	2.82
α-Copaene	7.08	1443.9	0.01	9.68	1373.7	0.01
Geranyl acetate	10.56	1717.0	3.49	9.89	1388.4	3.48
β-Elemene	8.41	1544.4	0.02	9.93	1391.3	0.04
β-Caryophyllene	8.44	1546.8	1.09	10.26	1415.2	1.07
Aromadendrene	8.54	1554.5	0.04	10.52	1434.7	0.05
α-Humulene	9.25	1610.0	0.09	10.71	1449.1	0.10
Geranylacetone	11.64*	1808.9	[3.47]	10.81	1456.4	0.01
(*E*)-β-Farnesene	9.53	1632.4	0.03	10.87	1460.8	0.03
Germacrene D	9.74	1649.5	0.02	11.09	1477.3	0.02
Bicyclogermacrene	10.02	1672.6	0.25	11.30	1492.8	0.25
(3*Z*,6*E*)-α-Farnesene	10.19*	1686.2	[2.83]	11.37	1498.6	0.02
γ-Cadinene	10.36	1699.6	0.01	11.54*	1511.4	[0.04]
(3*E*,6*E*)-α-Farnesene	10.49	1711.0	0.03	11.54*	1511.4	[0.04]
trans-Calamenene	11.20	1771.1	0.01	11.67*	1521.8	[0.04]

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δ-Cadinene	10.39	1702.3	0.04	11.67*	1521.8	[0.04]
(*E*)-Nerolidol	13.78	2002.2	0.05	12.22	1565.4	0.05
Spathulenol	14.37	2059.6	0.02	12.30	1571.5	0.03
Caryophyllene oxide	12.73	1905.8	0.03	12.36	1575.8	0.05
α-Cadinol	15.46	2167.1	0.01	13.26	1649.6	0.01
Mint sulfide				14.17	1726.0	0.01
Phytol	19.20	2574.7	0.07	18.32	2114.6	0.07
Total reported		99.49%			99.69%	

*: 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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