

Date : 2025-11-10

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25I15-PTH03

Customer Identification : Lavender ORGANIC - Greece - L50121R

Type : Essential Oil

Source : *Lavandula angustifolia*

Customer : Plant Therapy

Checked and approved by:

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

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This report is an update of the first version issued on September 29, 2025 to correct a mistake in the sample identification section.



Laboratoire
PhytoChemia

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 : 2025-09-24

PHYSICOCHEMICAL DATA

Refractive index : 1.4621 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Kassandra Baker

Date : 2025-09-16

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
3-Buten-2-one	0.01	Aliphatic ketone
2-Methyl-3-buten-2-ol	0.03	Aliphatic alcohol
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	0.01	Aliphatic aldehyde
Isoamyl alcohol	0.01	Aliphatic alcohol
Toluene	0.01	Simple phenolic
Butyl acetate	0.02	Aliphatic ester
Methyl hexyl ether	0.11	Aliphatic ether
(3Z)-Hexenol	0.03	Aliphatic alcohol
Hexanol	0.08	Aliphatic alcohol
Tricyclene	0.03	Monoterpene
α -Thujene	0.13	Monoterpene
α -Pinene	0.31	Monoterpene
α -Fenchene	0.01	Monoterpene
Camphene	0.20	Monoterpene
Butyl isobutyrate	0.02	Aliphatic ester
Sabinene	0.04	Monoterpene
β -Pinene	0.05	Monoterpene
Octen-3-ol	0.21	Aliphatic alcohol
Octan-3-one	1.19	Aliphatic ketone
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Myrcene	0.65	Monoterpene
Butyl butyrate	0.11	Aliphatic ester
Octan-3-ol	0.20	Aliphatic alcohol
Pseudolimonene	0.01	Monoterpene
α -Phellandrene	0.04	Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	0.01	Monoterpenic ether
Δ^3 -Carene	0.12	Monoterpene
α -Terpinene	0.05	Monoterpene
Hexyl acetate	0.56	Aliphatic ester
<i>meta</i> -Cymene	0.06	Monoterpene
<i>para</i> -Cymene	0.25	Monoterpene
β -Phellandrene	0.13	Monoterpene
Limonene	0.32	Monoterpene
1,8-Cineole	0.92	Monoterpenic ether
Lavender lactone	0.01	Aliphatic lactone
(Z)- β -Ocimene	5.47	Monoterpene
(E)- β -Ocimene	3.34	Monoterpene
γ -Terpinene	0.17	Monoterpene
<i>cis</i> -Sabinene hydrate	0.07	Monoterpenic alcohol

<i>cis</i> -Linalool oxide (fur.)	0.17	Monoterpenic alcohol
Octanol	0.02	Aliphatic alcohol
α -Pinene oxide analog	0.02	Monoterpenic ether
<i>trans</i> -Linalool oxide (fur.)	0.14	Monoterpenic alcohol
Terpinolene	0.09	Monoterpene
Rosefuran	0.06	Monoterpenic ether
Linalool	31.68	Monoterpenic alcohol
(<i>Z</i>)-6-Methyl-3,5-heptadien-2-one	0.05	Aliphatic ketone
β -Thujone	0.04	Monoterpenic ketone
Octen-3-yl acetate	0.86	Aliphatic ester
Unknown	0.03	Unknown
Octan-3-yl acetate	0.10	Aliphatic ester
allo-Ocimene	0.11	Monoterpene
(<i>Z</i>)-Myroxide	0.06	Monoterpenic ether
Camphor	0.33	Monoterpenic ketone
(<i>E</i>)-Myroxide	0.03	Monoterpenic ether
Unknown	0.03	Oxygenated monoterpene
Hexyl isobutyrate	0.09	Aliphatic ester
Nerol oxide	0.01	Aliphatic ether
Borneol	0.66	Monoterpenic alcohol
<i>cis</i> -Linalool oxide (pyr.)	0.02	Monoterpenic alcohol
Lavandulol	0.88	Monoterpenic alcohol
Terpinen-4-ol	4.66	Monoterpenic alcohol
(3 <i>E</i> ,5 <i>Z</i>)-Undeca-1,3,5-triene	0.01	Alkene
<i>meta</i> -Cymen-8-ol	0.08	Monoterpenic alcohol
Cryptone	0.10	Normonoterpenic ketone
<i>para</i> -Cymen-8-ol	0.05	Monoterpenic alcohol
α -Terpineol	0.94	Monoterpenic alcohol
Hexyl butyrate	0.37	Aliphatic ester
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	0.01	Monoterpenic alcohol
Verbenone	0.02	Monoterpenic ketone
Unknown	0.04	Unknown
(3 <i>E</i> ,5 <i>E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.05	Monoterpenic alcohol
<i>trans</i> -Carveol	0.04	Monoterpenic alcohol
Bornyl formate	0.05	Monoterpenic ester
Nerol	0.15	Monoterpenic alcohol
Hexyl 2-methylbutyrate	0.03	Aliphatic ester
Cuminal	0.04	Monoterpenic aldehyde
Carvone	0.03	Monoterpenic ketone
Neral	0.01	Monoterpenic aldehyde
Hexyl isovalerate	0.04	Aliphatic ester
Geraniol	0.36	Monoterpenic alcohol
Linalyl acetate	28.90	Monoterpenic ester
Geranial	0.03	Monoterpenic aldehyde

Bornyl acetate	0.16	Monoterpenic ester
Cuminol	0.02	Monoterpenic alcohol
Lavandulyl acetate	3.69	Monoterpenic ester
Hexyl tiglate	0.04	Aliphatic ester
Hodiendiol derivative	0.03	Oxygenated monoterpene
Unknown	0.04	Oxygenated monoterpene
Unknown	0.04	Oxygenated monoterpene
Neryl acetate	0.27	Monoterpenic ester
α -Copaene	0.02	Sesquiterpene
β -Bourbonene	0.06	Sesquiterpene
Geranyl acetate	0.46	Monoterpenic ester
Hexyl hexanoate	0.12	Aliphatic ester
7-epi-Sesquithujene	0.08	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
Sesquithujene	0.02	Sesquiterpene
β -Caryophyllene	3.06	Sesquiterpene
α -Santalene	0.40	Sesquiterpene
Coumarin	0.02	Coumarin
<i>trans</i> - α -Bergamotene	0.14	Sesquiterpene
Sesquisabinene A	0.04	Sesquiterpene
α -Humulene	0.11	Sesquiterpene
Lavandulyl butyrate?	0.11	Monoterpenic ester
(<i>E</i>)- β -Farnesene	2.77	Sesquiterpene
Germacrene D	0.28	Sesquiterpene
<i>trans</i> - β -Bergamotene	0.05	Sesquiterpene
Isodaucene	0.01	Sesquiterpene
Lavandulyl isovalerate	0.02	Monoterpenic ester
β -Bisabolene	0.01	Sesquiterpene
γ -Cadinene	0.09	Sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
δ -Cadinene	0.03	Sesquiterpene
Isocaryophyllene epoxide B	0.03	Sesquiterpenic ether
(<i>E</i>)-Nerolidol	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	0.24	Sesquiterpenic ether
Caryophyllene oxide isomer	0.04	Sesquiterpenic ether
Humulene epoxide II	0.01	Sesquiterpenic ether
τ -Cadinol	0.04	Sesquiterpenic alcohol
Consolidated total	99.08	

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

Note: no correction factor was applied

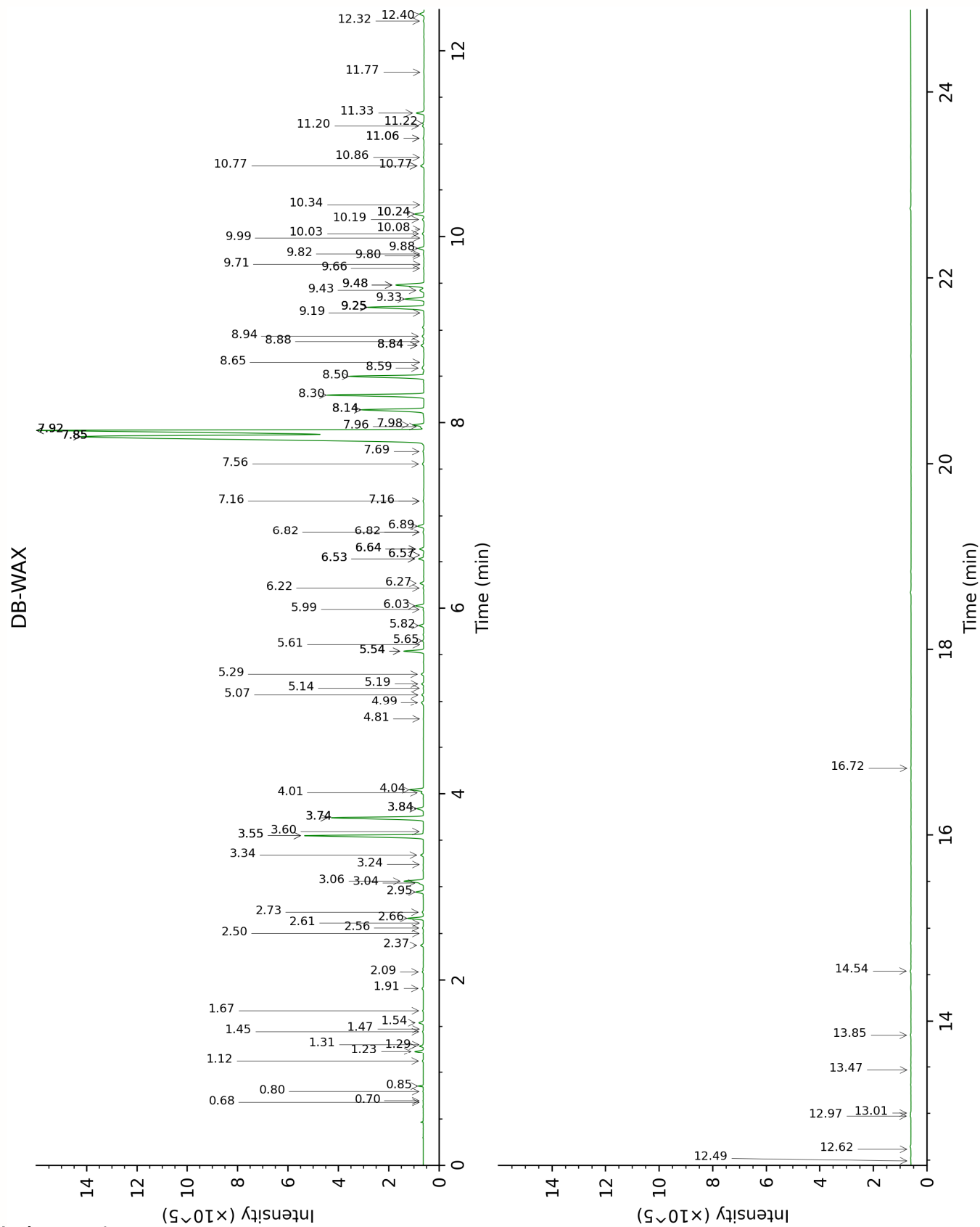
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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.

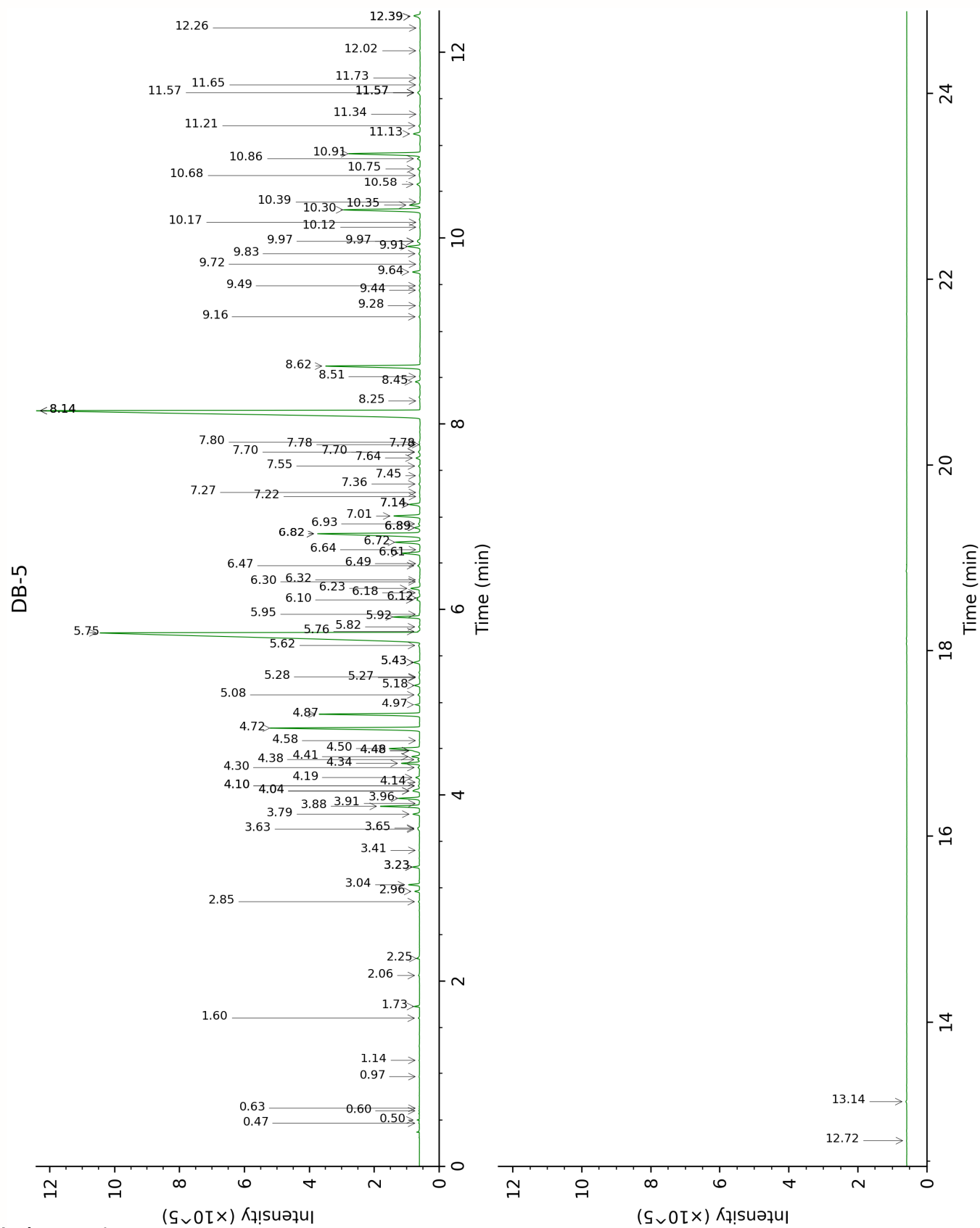
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is

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.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

3-Buten-2-one	Column DB-WAX			Column DB-5		
	0.80	913.8	0.01	0.47	575.8	0.01
2-Methyl-3-buten-2-ol	1.45	1017.0	0.03	0.50	606.1	0.03
Isovaleral	0.70	888.2	0.01	0.60	642.7	0.01
2-Methylbutyral	0.68	881.6	tr	0.63	652.7	0.01
Isoamyl alcohol	3.24	1181.0	0.01	0.97	733.8	0.01
Toluene	1.31	1002.6	0.01	1.14	759.0	0.01
Butyl acetate	1.67	1040.3	0.03	1.60	817.0	0.02
Methyl hexyl ether	0.85	924.0	0.11	1.73	827.6	0.11
(3Z)-Hexenol	5.54*	1350.8	[0.88]	2.06	855.6	0.03
Hexanol	5.19	1325.2	0.08	2.24	871.1	0.08
Tricyclene	1.12	971.1	0.03	2.86	918.9	0.03
α -Thujene	1.29	1000.5	0.13	2.96	926.2	0.13
α -Pinene	1.23	990.3	0.31	3.04	931.0	0.31
α -Fenchene	1.47	1019.9	0.01	3.23*	943.7	[0.21]
Camphene	1.54	1027.0	0.20	3.23*	943.7	[0.21]
Butyl isobutyrate	2.50	1121.0	0.01	3.41	955.7	0.02
Sabinene	2.09	1083.6	0.05	3.63	971.0	0.04
β -Pinene	1.91	1065.2	0.07	3.64	971.8	0.05
Octen-3-ol	6.53*	1423.7	[0.23]	3.80	981.8	0.21
Octan-3-one	3.74*	1220.3	[4.48]	3.88	987.5	1.19
6-Methyl-5-hepten-2-one	4.81	1300.3	0.01	3.91	989.5	0.01
Myrcene	2.66	1134.2	0.63	3.96	993.2	0.65
Butyl butyrate	3.34	1189.2	0.11	4.04*	998.6	[0.30]
Octan-3-ol	5.82	1370.8	0.20	4.04*	998.6	[0.30]
Pseudolimonene	2.61	1130.0	0.01	4.10*	1002.2	[0.04]
α -Phellandrene	2.56	1125.8	0.04	4.10*	1002.2	[0.04]
cis-Dehydroxylinalool oxide	3.60	1209.3	0.01	4.14	1004.8	0.01
Δ^3 -Carene	2.37	1110.7	0.12	4.19	1008.1	0.12
α -Terpinene	2.73	1139.4	0.05	4.30	1014.9	0.05
Hexyl acetate	4.04	1242.9	0.58	4.34	1017.7	0.56
meta-Cymene	3.84*	1227.7	[0.30]	4.38	1020.3	0.06
para-Cymene	3.84*	1227.7	[0.30]	4.41	1022.3	0.25
β -Phellandrene	3.04	1164.8	0.13	4.48*†	1026.3	[0.15]
Limonene	2.95	1157.0	0.32	4.48*†	1026.3	[0.15]
1,8-Cineole	3.06	1166.4	0.92	4.50†	1027.8	1.22
Lavender lactone	8.88	1604.2	0.04	4.58	1033.2	0.01
(Z)- β -Ocimene	3.55*	1206.0	[5.58]	4.72	1041.7	5.47
(E)- β -Ocimene	3.74*	1220.3	[4.48]	4.87	1051.2	3.34

γ -Terpinene	3.55*	1206.0	[5.58]	4.97	1057.9	0.17
<i>cis</i> -Sabinene hydrate	6.64*	1431.5	[0.20]	5.08	1064.9	0.07
<i>cis</i> -Linalool oxide (fur.)	6.27	1403.9	0.17	5.18	1071.3	0.17
Octanol	7.92*†	1528.8	[25.04]	5.27	1076.7	0.02
α -Pinene oxide analog	5.14	1321.9	0.02	5.28	1077.2	0.02
<i>trans</i> -Linalool oxide (fur.)	6.64*	1431.5	[0.20]	5.43*	1087.0	[0.24]
Terpinolene	4.01	1240.5	0.09	5.43*	1087.0	[0.24]
Rosefuran	5.65	1358.9	0.05	5.62	1098.7	0.06
Linalool	7.85*†	1523.6	[35.51]	5.75	1107.3	31.68
(<i>Z</i>)-6-Methyl-3,5-heptadien-2-one	7.92*†	1528.8	[25.04]	5.76	1108.3	0.05
β -Thujone	5.99	1383.5	0.04	5.82	1111.5	0.04
Octen-3-yl acetate	5.54*	1350.8	[0.88]	5.92	1118.4	0.86
Unknown LAAN I [m/z 82, 81 (72), 43 (64), 54 (32), 41 (20)...]	9.25*	1634.1	[2.81]	5.95	1120.2	0.03
Octan-3-yl acetate	4.99	1310.6	0.10	6.10	1130.3	0.10
allo-Ocimene	5.29	1332.8	0.10	6.12	1131.6	0.11
(<i>Z</i>)-Myroxide	6.57*	1426.7	[0.04]	6.18	1135.2	0.06
Camphor	6.89	1450.6	0.31	6.23	1138.3	0.33
(<i>E</i>)-Myroxide	6.82*	1445.2	[0.06]	6.30	1142.9	0.03
Unknown CALU I [m/z 95, 43 (74), 109 (72), 82 (62), 110 (50)... 152 (14)]	6.64*	1431.5	[0.20]	6.32	1144.2	0.03
Hexyl isobutyrate	5.07	1316.6	0.08	6.47	1154.1	0.09
Nerol oxide	6.57*	1426.7	[0.04]	6.49	1155.6	0.01
Borneol	9.48*	1653.7	[1.60]	6.60	1162.8	0.66
<i>cis</i> -Linalool oxide (pyr.)	9.99	1694.8	0.03	6.64	1165.3	0.02
Lavandulol	9.33	1641.4	0.86	6.72	1170.5	0.88
Terpinen-4-ol	8.30	1558.5	4.66	6.82*	1176.4	[4.67]
(3 <i>E</i> ,5 <i>Z</i>)-Undeca-1,3,5-triene	5.61	1355.9	0.01	6.82*	1176.4	[4.67]
<i>meta</i> -Cymen-8-ol	11.20	1797.9	0.08	6.89*	1181.1	[0.18]
Cryptone	8.84*	1600.9	[0.17]	6.89*	1181.1	[0.18]
<i>para</i> -Cymen-8-ol	11.22	1800.4	0.07	6.93	1183.8	0.05
α -Terpineol	9.48*	1653.7	[1.60]	7.01	1189.3	0.94

Hexyl butyrate	6.03	1386.3	0.37	7.14*	1197.4	[0.39]
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	12.49	1914.2	0.01	7.14*	1197.4	[0.39]
Verbenone	9.25*	1634.1	[2.81]	7.22	1203.0	0.02
Unknown SASC VII [m/z 43, 71 (66), 59 (52), 41 (47), 68 (46)...]	7.16*	1470.8	[0.04]	7.27	1205.8	0.04
(3E,5E)-2,6-Dimethylocta-3,5,7-trien-2-ol	11.06*	1786.5	[0.05]	7.36	1211.9	0.05
trans-Carveol	11.06*	1786.5	[0.05]	7.45	1218.0	0.04
Bornyl formate	7.69	1511.2	0.05	7.55	1225.1	0.05
Nerol	10.77*	1761.2	[0.19]	7.64	1231.0	0.15
Hexyl 2-methylbutyrate	6.22	1400.1	0.03	7.70*	1235.3	[0.07]
Cuminal	10.24*	1716.4	[0.44]	7.70*	1235.3	[0.07]
Carvone	9.66	1668.3	0.03	7.78*	1240.8	[0.03]
Neral	9.19	1629.2	0.01	7.78*	1240.8	[0.03]
Hexyl isovalerate	6.53*	1423.7	[0.23]	7.80	1242.5	0.04
Geraniol	11.33	1810.1	0.36	8.14*	1265.7	[29.26]
Linalyl acetate	7.92*†	1528.8	[25.04]	8.14*	1265.7	[29.26]
Geranial	9.82	1680.9	0.04	8.25	1272.8	0.03
Bornyl acetate	7.96	1532.1	0.14	8.45	1286.9	0.16
Cuminol	13.85	2042.5	0.04	8.51	1290.7	0.02
Lavandulyl acetate	8.50	1574.4	3.68	8.62	1298.4	3.69
Hexyl tiglate	8.65	1586.1	0.03	9.16	1333.1	0.04
Hodiendiol derivative	12.62	1925.9	0.01	9.28	1341.5	0.03
Unknown SASC II [m/z 43, 79 (47), 71 (31), 94 (27), 81 (23), 41 (22)... 197 (0)]	10.77*	1761.2	[0.19]	9.44	1353.3	0.04
Unknown SASC III [m/z 43, 79 (46), 71 (30), 94 (25), 41 (23), 81 (21)... 197 (0)]	10.86	1768.9	0.04	9.49	1356.7	0.04
Neryl acetate	9.88	1685.8	0.27	9.64	1367.2	0.27
α-Copaene	6.82*	1445.2	[0.06]	9.72	1373.1	0.02
β-Bourbonene	7.16*	1470.8	[0.04]	9.83	1381.1	0.06
Geranyl acetate	10.24*	1716.4	[0.44]	9.91	1386.5	0.46

Hexyl hexanoate	8.59	1581.2	0.12	9.97*	1390.5	[0.15]
7-epi-Sesquithujene	7.56	1500.7	0.08	9.97*	1390.5	[0.15]
Isocaryophyllene	7.85*†	1523.6	[35.51]	10.12	1401.2	0.02
Sesquithujene	7.85*†	1523.6	[35.51]	10.17	1404.9	0.02
β-Caryophyllene	8.14*	1546.2	[3.12]	10.30	1414.9	3.06
α-Santalene	7.98	1533.5	0.47	10.35	1418.7	0.40
Coumarin	16.72	2335.4	0.02	10.39	1421.1	0.02
trans-α-Bergamotene	8.14*	1546.2	[3.12]	10.58	1435.3	0.14
Sesquisabinene A	8.84*	1600.9	[0.17]	10.68	1443.0	0.04
α-Humulene	8.94	1608.8	0.09	10.75	1448.3	0.11
Lavandulyl butyrate?	10.18	1711.4	0.08	10.86	1456.5	0.11
(E)-β-Farnesene	9.25*	1634.1	[2.81]	10.91	1460.5	2.77
Germacrene D	9.43	1649.0	0.27	11.13	1476.5	0.28
trans-β-Bergamotene	9.25*	1634.1	[2.81]	11.21	1483.0	0.05
Isodaucene	9.71	1671.8	0.01	11.34	1492.3	0.01
Lavandulyl isovalerate	10.34	1724.8	0.02	11.57*	1509.8	[0.13]
β-Bisabolene	9.80	1679.2	0.01	11.57*	1509.8	[0.13]
γ-Cadinene	10.03	1698.5	0.09	11.57*	1509.8	[0.13]
Unknown CULO LIV [m/z 121, 93 (56), 91 (12), 94 (11), 122 (10)...220]	12.97	1959.2	0.04	11.65	1516.4	0.03
δ-Cadinene	10.08	1702.5	0.03	11.73	1522.2	0.03
Isocaryophyllene epoxide B	11.77	1849.2	0.03	12.02	1545.3	0.03
(E)-Nerolidol	13.47	2005.6	0.01	12.26	1564.6	0.01
Caryophyllene oxide	12.40	1905.4	0.24	12.39*	1575.0	[0.30]
Caryophyllene oxide isomer	12.32	1898.5	0.04	12.39*	1575.0	[0.30]
Humulene epoxide II	13.01	1962.2	0.03	12.72	1600.8	0.01
τ-Cadinol	14.54	2109.7	0.04	13.14	1635.4	0.04
Total reported		98.51%			99.05%	

*: 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