Date : 2026-11-17

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26I08-PTH02
Customer Identification : Lime Steam Distilled - Mexico - LL0115
Type : Essential Oil
Source : *Citrus aurantifolia ct. Distilled*
Customer : Plant Therapy

Checked and 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 2026-09-14 to make a modification 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 : 2026-09-14

Physicochemical data

Refractive index : 1.476 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-09-08

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
4,5-Dihydrotoluene	tr	Alkene
1-Methylcyclohexa-1,3-diene	0.02	Alkene
3-Methylenecyclohexadiene	tr	Alkene
Hexanal	tr	Aliphatic aldehyde
Octane	tr	Alkane
Cyclofenchene	tr	Monoterpene
Bornylene	0.01	Monoterpene
Nonane	0.01	Alkane
Tricyclene	0.01	Monoterpene
α-Thujene	0.02	Monoterpene
α-Pinene	0.66	Monoterpene
α-Fenchene	0.07	Monoterpene
Camphene	0.19	Monoterpene
1,4-Dimethyl-4-vinylcyclohexene?	0.01	Monoterpene
Unknown	0.02	Monoterpene
Sabinene	0.18	Monoterpene
β-Pinene	2.09	Monoterpene
3-Methyl-3-cyclohexenone	0.02	Aliphatic ketone
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Dehydro-1,8-cineole	0.01	Monoterpenic ether
trans-Dehydroxylinalool oxide	0.02	Monoterpenic ether
Myrcene	1.16	Monoterpene
Octanal	0.03	Aliphatic aldehyde
Menthatriene isomer I	0.02	Monoterpene
Pseudolimonene	0.02	Monoterpene
α-Phellandrene	0.16	Monoterpene
Δ3-Carene	0.07	Monoterpene
α-Terpinene	[1.92]	Monoterpene
1,4-Cineole	[1.92]	Monoterpenic ether
para-Cymene	2.61	Monoterpene
Limonene	54.74	Monoterpene
β-Phellandrene	0.24	Monoterpene
1,8-Cineole	0.66	Monoterpenic ether
(*Z*?)-Citroxide	0.01	Monoterpenic ether
(*Z*)-β-Ocimene	0.09	Monoterpene
(*E*?)-Citroxide	0.10	Monoterpenic ether
(*E*)-β-Ocimene	0.21	Monoterpene
γ-Terpinene	11.94	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
Unknown	0.02	Oxygenated monoterpene

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para-Mentha-3,8-diene	0.01	Monoterpene
cis-Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Octanol	0.02	Aliphatic alcohol
Terpinolene isomer	0.26	Monoterpene
para-Cymenene	0.21	Monoterpene
Terpinolene	9.25	Monoterpene
trans-Sabinene hydrate	tr	Monoterpenic alcohol
Linalool	0.06	Monoterpenic alcohol
Nonanal	0.03	Aliphatic aldehyde
endo-Fenchol	0.64	Monoterpenic alcohol
trans-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
Myrcenol	0.01	Monoterpenic alcohol
Limona ketone	0.01	Normonoterpenic ketone
allo-Ocimene	tr	Monoterpene
cis-Limonene oxide	0.03	Monoterpenic ether
1-Terpineol	0.24	Monoterpenic alcohol
trans-Limonene oxide	0.02	Monoterpenic ether
cis-β-Terpineol	0.40	Monoterpenic alcohol
Epoxyterpinolene	0.11	Monoterpenic ether
Unknown	0.02	Unknown
Isoborneol	0.02	Monoterpenic alcohol
Citronellal	0.01	Monoterpenic aldehyde
(*Z*)-Ocimenol	0.01	Monoterpenic alcohol
Borneol	0.52	Monoterpenic alcohol
trans-β-Terpineol	0.14	Monoterpenic alcohol
Isoneral	0.01	Monoterpenic aldehyde
α-Phellandren-8-ol	0.02	Monoterpenic alcohol
(*E*)-Ocimenol	0.03	Monoterpenic alcohol
Isopinocamphone	0.01	Monoterpenic ketone
Terpinen-4-ol	0.12	Monoterpenic alcohol
4-Methylacetophenone	0.02	Simple phenolic
para-Cymen-8-ol	0.10	Monoterpenic alcohol
α-Terpineol	7.03	Monoterpenic alcohol
γ-Terpineol	0.84	Monoterpenic alcohol
Decanal	0.01	Aliphatic aldehyde
trans-Carveol	0.02	Monoterpenic alcohol
2,3-Epoxyneral?	0.02	Monoterpenic aldehyde
Nerol	tr	Monoterpenic alcohol
cis-Carveol	0.02	Monoterpenic alcohol
Unknown	0.03	Oxygenated monoterpene
Neral	0.03	Monoterpenic aldehyde
Geraniol	0.01	Monoterpenic alcohol
trans-Ascaridole glycol	0.01	Monoterpenic alcohol
Geranial	0.03	Monoterpenic aldehyde
Unknown	0.04	Oxygenated monoterpene

cis-Ascaridole glycol	0.02	Monoterpenic alcohol
Unknown	0.07	Unknown
Undecanal	0.01	Aliphatic aldehyde
Unknown	0.01	Monoterpenic alcohol
δ-Elemene	0.01	Sesquiterpene
Citronellyl acetate	0.01	Monoterpenic ester
Neryl acetate	0.01	Monoterpenic ester
7-Cubebene	0.01	Sesquiterpene
Geranyl acetate	0.01	Monoterpenic ester
β-Elemene	0.01	Sesquiterpene
Dodecanal	0.01	Aliphatic aldehyde
cis-α-Bergamotene	0.01	Sesquiterpene
β-Caryophyllene	0.79	Sesquiterpene
α-Santalene	0.01	Sesquiterpene
trans-α-Bergamotene	0.17	Sesquiterpene
α-Humulene	0.01	Sesquiterpene
β-Santalene	0.01	Sesquiterpene
(*E*)-β-Farnesene	0.01	Sesquiterpene
Selina-4,11-diene	0.01	Sesquiterpene
Germacrene D	0.01	Sesquiterpene
β-Selinene	0.01	Sesquiterpene
α-Selinene	0.01	Sesquiterpene
δ-Selinene	0.02	Sesquiterpene
(*Z*)-α-Bisabolene	0.02	Sesquiterpene
β-Bisabolene	0.14	Sesquiterpene
(3*E*,6*E*)-α-Farnesene	0.09	Sesquiterpene
(*Z*)-γ-Bisabolene	0.01	Sesquiterpene
δ-Cadinene	0.01	Sesquiterpene
Selina-4,7(11)-diene	0.02	Sesquiterpene
Selina-3,7(11)-diene	0.01	Sesquiterpene
(*E*)-α-Bisabolene	0.01	Sesquiterpene
Germacrene B	0.01	Sesquiterpene
Caryophyllenyl alcohol	0.02	Sesquiterpenic alcohol
Caryophyllene oxide	0.04	Sesquiterpenic ether
10-epi-γ-Eudesmol	0.01	Sesquiterpenic alcohol
Alismol	0.01	Sesquiterpenic alcohol
γ-Eudesmol	0.01	Sesquiterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene
α-Bisabolol	tr	Sesquiterpenic alcohol
Consolidated total	**99.53**	

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.

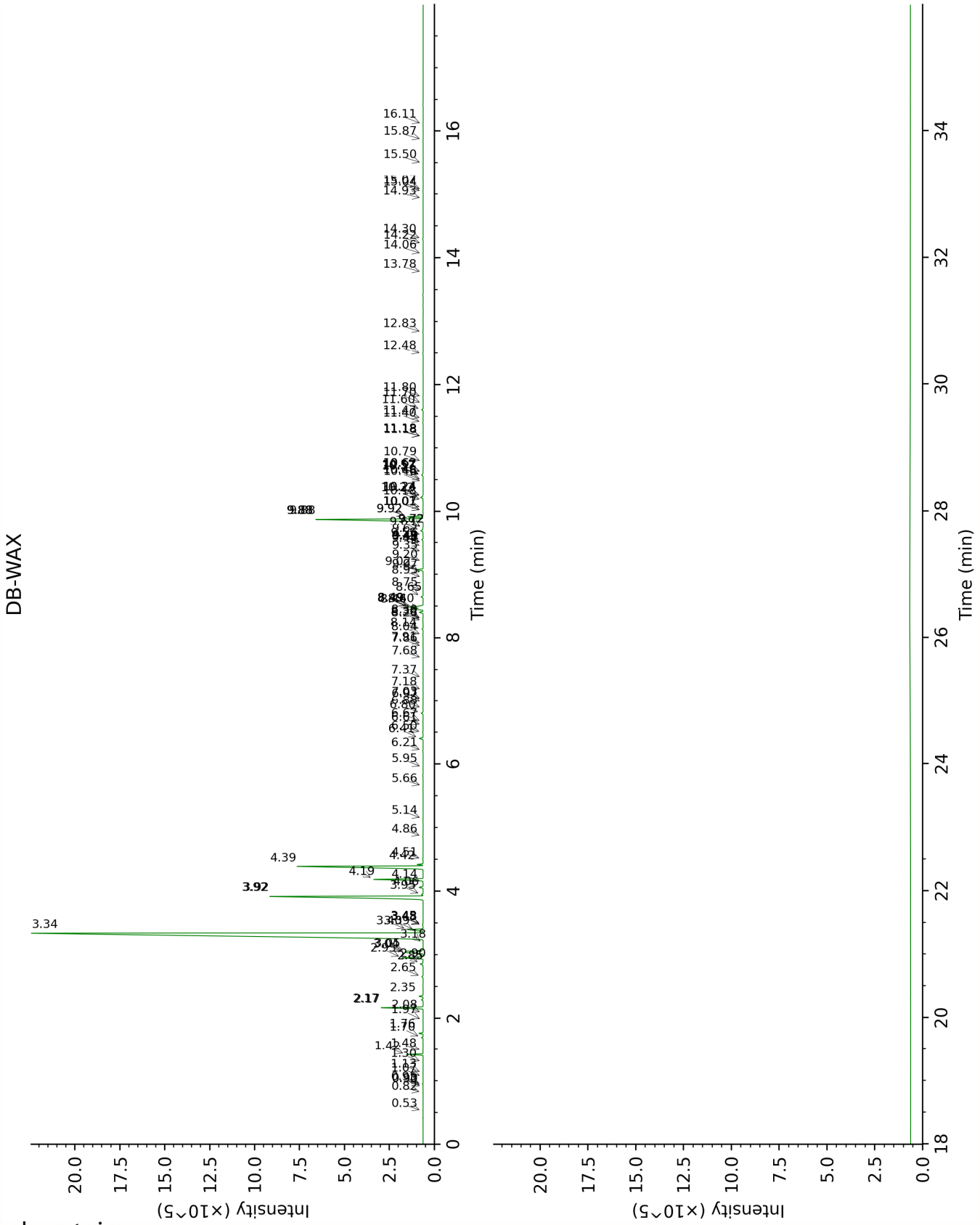
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

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

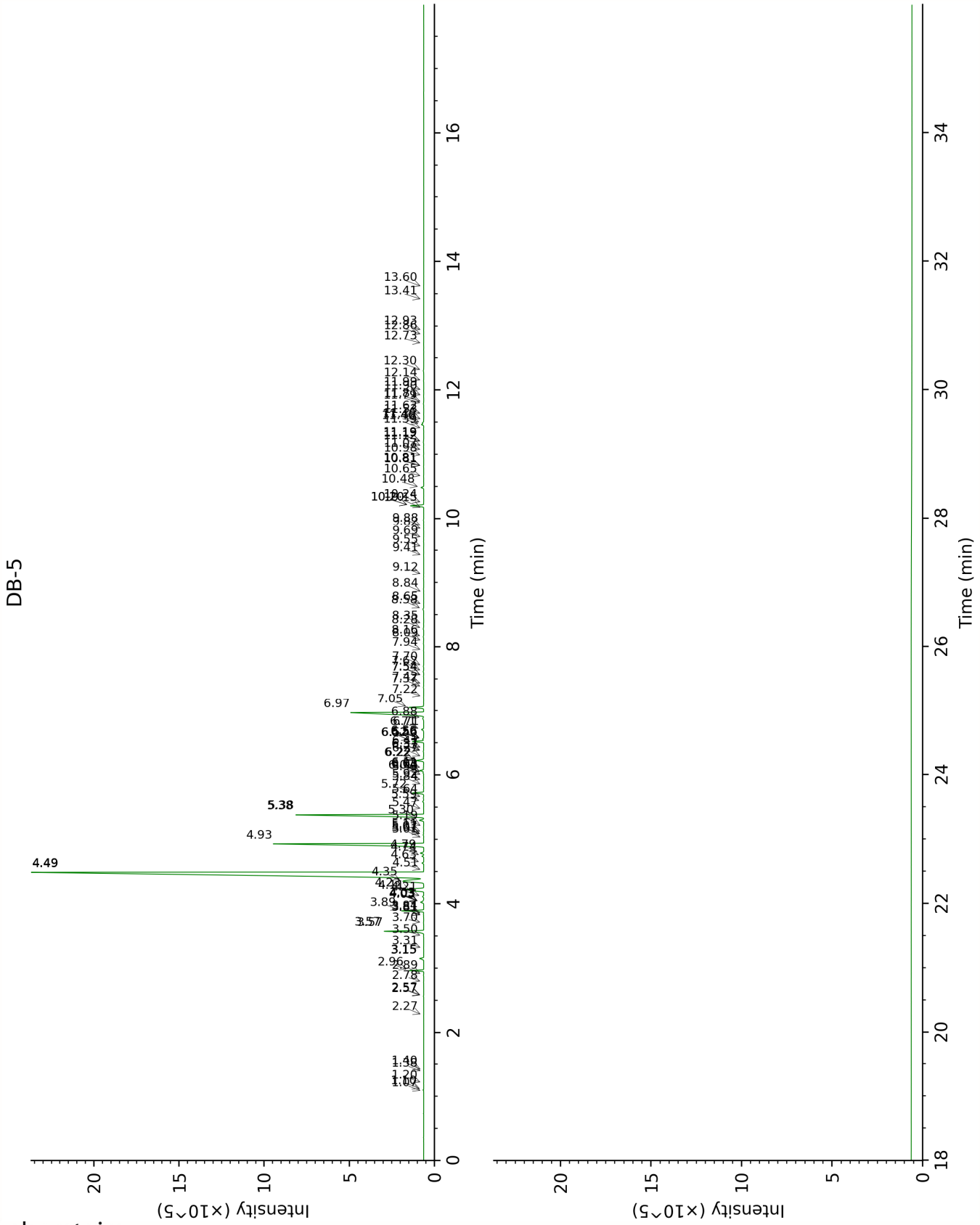
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This page was intentionally left blank. The following pages present the complete data of the analysis.

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DB-5
Intensity (×10^5)
Time (min)
4.49
5.38
4.93
6.97

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
4,5-Dihydrotoluene	0.93	913.2	tr	1.07	755.6	tr
1-Methylcyclohexa-1,3-diene	0.95	916.9	0.02	1.10	759.8	0.02
3-Methylenecyclohexadiene	1.07	935.0	tr	1.20	775.3	tr
Hexanal	1.97	1046.3	tr	1.38	801.1	tr
Octane	0.53	781.5	0.01	1.40	804.6	tr
Cyclofenchene	0.90	908.8	0.01	2.27	879.2	tr
Bornylene	1.13	944.7	0.01	2.57*	904.7	[0.02]
Nonane	0.82	893.0	0.01	2.57*	904.7	[0.02]
Tricyclene	1.30	971.4	0.01	2.78	919.4	0.01
α-Thujene	1.48	999.0	0.01	2.89	926.7	0.02
α-Pinene	1.42	990.9	0.66	2.96	931.5	0.66
α-Fenchene	1.70	1019.9	0.07	3.15*	944.1	[0.27]
Camphene	1.76	1026.3	0.19	3.15*	944.1	[0.27]
1,4-Dimethyl-4-vinylcyclohexene?	2.08	1057.6	0.01	3.31	954.6	0.01
Unknown CIAU I [m/z 93, 91 (60), 121 (55), 136 (42), 79 (40)]	2.17*	1065.9	[2.02]	3.50	967.3	0.02
Sabinene	2.35	1083.6	0.18	3.57*	972.6	[2.27]
β-Pinene	2.17*	1065.9	[2.02]	3.57*	972.6	[2.27]
3-Methyl-3-cyclohexenone	6.21	1373.9	0.02	3.70	981.3	0.02
6-Methyl-5-hepten-2-one	5.14	1298.3	0.01	3.81*	988.4	[0.01]
Dehydro-1,8-cineole	3.18	1151.1	0.01	3.81*	988.4	[0.01]
trans-Dehydroxylinalool oxide	3.45	1172.9	0.02	3.84	990.3	0.02
Myrcene	2.95	1133.4	1.16	3.89	994.0	1.16
Octanal	4.51	1251.7	0.03	4.03*	1003.1	[0.23]
Menthatriene isomer I	3.48*	1175.0	[0.03]	4.03*	1003.1	[0.23]
Pseudolimonene	2.90	1129.1	0.02	4.03*	1003.1	[0.23]
α-Phellandrene	2.85	1125.7	0.16	4.03*	1003.1	[0.23]
Δ3-Carene	2.65	1110.2	0.07	4.11	1008.7	0.07
α-Terpinene	3.05†	1141.3	0.78	4.21†	1014.7	0.80
1,4-Cineole	3.04†	1140.3	1.16	4.23†	1015.9	1.13
para-Cymene	4.19	1228.2	2.62	4.35	1023.9	2.61
Limonene	3.34	1163.9	54.74	4.49*	1032.6	[55.74]
β-Phellandrene	3.39	1167.6	0.24	4.49*	1032.6	[55.74]
1,8-Cineole	3.40	1168.4	0.66	4.49*	1032.6	[55.74]
(*Z*?)-Citroxide	3.48*	1175.0	[0.03]	4.51	1034.2	0.01
(*Z*)-β-Ocimene	3.92*	1208.5	[12.04]	4.63	1041.8	0.09
(*E*?)-Citroxide	3.95	1210.7	0.08	4.74	1048.5	0.10

(*E*)-β-Ocimene	4.06	1219.0	0.21	4.79	1051.6	0.21
γ-Terpinene	3.92*	1208.5	[12.04]	4.93	1060.8	11.94
cis-Sabinene hydrate	6.97	1429.0	0.01	5.01	1066.0	0.01
Unknown PIMA I [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	4.86	1277.7	0.02	5.07*	1069.7	[0.03]
para-Mentha-3,8-diene	4.14	1224.9	0.01	5.07*	1069.7	[0.03]
cis-Linalool oxide (fur.)	6.61	1402.4	0.02	5.11	1072.0	0.02
Octanol	8.26	1524.8	0.02	5.19	1077.2	0.02
Terpinolene isomer	4.42	1245.4	0.25	5.30	1084.1	0.26
para-Cymenene	6.41	1387.7	0.21	5.38*	1089.5	[9.49]
Terpinolene	4.39	1243.2	9.25	5.38*	1089.5	[9.49]
trans-Sabinene hydrate	8.04	1508.1	0.02	5.47	1094.9	tr
Linalool	8.14	1515.3	0.06	5.59	1102.6	0.06
Nonanal	5.95	1355.4	0.01	5.64	1106.3	0.03
endo-Fenchol	8.46	1539.6	0.66	5.72	1111.3	0.64
trans-para-Mentha-2,8-dien-1-ol	9.02	1582.6	0.01	5.84	1119.0	0.02
Myrcenol	8.95	1577.4	0.01	5.92	1124.0	0.01
Limona ketone	7.86	1493.9	0.01	5.99	1128.7	0.01
allo-Ocimene	5.66	1334.6	tr	6.03*	1131.5	[0.04]
cis-Limonene oxide	6.50	1394.5	0.03	6.03*	1131.5	[0.04]
1-Terpineol	8.40	1535.6	0.21	6.07	1133.9	0.24
trans-Limonene oxide	6.67	1406.6	0.02	6.11	1136.4	0.02
cis-β-Terpineol	9.07	1586.9	0.40	6.22*	1144.1	[0.51]
Epoxyterpinolene	6.80	1416.6	0.11	6.22*	1144.1	[0.51]
Unknown MEAL II [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.88	1422.4	0.02	6.27	1147.2	0.02
Isoborneol	9.44	1615.7	0.02	6.37*	1153.3	[0.03]
Citronellal	7.03*	1433.2	[0.01]	6.37*	1153.3	[0.03]
(*Z*)-Ocimenol	9.49*	1620.4	[0.02]	6.41	1156.3	0.01
Borneol	9.88*	1651.1	[7.59]	6.52*	1163.3	[0.66]
trans-β-Terpineol	9.69	1635.9	0.14	6.52*	1163.3	[0.66]
Isoneral	7.91	1497.5	0.01	6.56*	1165.7	[0.06]
α-Phellandren-8-ol	10.24*	1680.4	[0.02]	6.56*	1165.7	[0.06]
(*E*)-Ocimenol	9.72*	1638.5	[0.03]	6.56*	1165.7	[0.06]
Isopinocamphone	7.68	1480.9	0.01	6.56*	1165.7	[0.06]
Terpinen-4-ol	8.65	1554.1	0.12	6.71*	1175.4	[0.14]
4-Methylacetophenone	10.57*	1707.8	[0.11]	6.71*	1175.4	[0.14]
para-Cymen-8-ol	11.60	1794.6	0.09	6.88	1186.6	0.10
α-Terpineol	9.88*	1651.1	[7.59]	6.97	1192.6	7.03
γ-Terpineol	9.92*	1654.5	[0.85]	7.05	1197.9	0.84
Decanal	7.37	1458.2	0.01	7.22	1209.1	0.01

trans-Carveol	11.47	1782.8	0.02	7.37	1219.4	0.02
2,3-Epoxyneral?				7.42	1222.7	0.02
Nerol	11.18*	1758.7	[0.01]	7.54*	1231.3	[0.01]
cis-Carveol	11.80	1812.0	0.02	7.54*	1231.3	[0.01]
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	11.40	1777.2	0.03	7.62	1236.2	0.03
Neral	9.55	1624.6	0.08	7.70	1241.7	0.03
Geraniol	11.70	1803.1	0.01	7.94	1258.4	0.01
trans-Ascaridole glycol	14.30	2039.9	0.04	8.09	1268.4	0.01
Geranial	10.18	1675.1	0.02	8.16	1273.3	0.03
Unknown CIAU V [m/z 95, 67 (45), 41 (42), 110 (42), 43 (41), 59 (36)]	12.48	1872.0	0.03	8.28	1281.6	0.04
cis-Ascaridole glycol	14.93	2101.3	0.01	8.35	1286.8	0.02
Unknown CICA VI [m/z 112, 97 (93), 83 (60), 43 (46), 41 (20), 69 (19)...]	14.06	2017.4	0.01	8.58	1302.6	0.07
Undecanal	8.75	1561.8	0.01	8.65	1307.4	0.01
Unknown MEAL I [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]	15.07	2115.0	0.01	8.84	1316.6	0.01
δ-Elemene	7.03*	1433.2	[0.01]	9.12	1336.3	0.01
Citronellyl acetate	9.49*	1620.4	[0.02]	9.41	1357.4	0.01
Neryl acetate	10.24*	1680.4	[0.02]	9.55	1367.3	0.01
7-Cubebene	7.18	1444.0	0.01	9.69	1377.4	0.01
Geranyl acetate	10.62*	1711.6	[0.02]	9.82	1386.7	0.01
β-Elemene	8.49*	1542.0	[0.96]	9.88	1390.5	0.01
Dodecanal	10.07	1666.5	0.02	10.16	1410.8	0.01
cis-α-Bergamotene	8.30*	1527.4	[0.03]	10.20*	1414.3	[0.81]
β-Caryophyllene	8.49*	1542.0	[0.96]	10.20*	1414.3	[0.81]
α-Santalene	8.30*	1527.4	[0.03]	10.24	1417.5	0.01
trans-α-Bergamotene	8.49*	1542.0	[0.96]	10.48	1435.6	0.17
α-Humulene	9.35	1609.2	0.02	10.66	1448.4	0.01
β-Santalene	9.20	1597.2	0.01	10.81*	1460.3	[0.01]
(*E*)-β-Farnesene	9.62	1630.1	0.01	10.81*	1460.3	[0.01]
Selina-4,11-diene	9.49*	1620.4	[0.02]	10.98	1472.7	0.01
Germacrene D	9.88*	1651.1	[7.59]	11.07	1479.4	0.01
β-Selinene	9.92*	1654.5	[0.85]	11.12	1483.2	0.01
α-Selinene	10.01*	1661.9	[0.02]	11.19*	1488.6	[0.03]
δ-Selinene	9.72*	1638.5	[0.03]	11.19*	1488.6	[0.03]
(*Z*)-α-Bisabolene	10.46	1698.5	0.01	11.39	1504.0	0.02
β-Bisabolene	10.22	1678.7	0.16	11.46	1509.5	0.14
(3*E*,6*E*)-α-Farnesene	10.57*	1707.8	[0.11]	11.49	1511.5	0.09
(*Z*)-γ-Bisabolene	10.01*	1661.9	[0.02]	11.53	1514.8	0.01

δ-Cadinene	10.50	1701.1	0.01	11.62	1522.2	0.01
Selina-4,7(11)-diene	10.57*	1707.8	[0.11]	11.79	1535.1	0.02
Selina-3,7(11)-diene	10.62*	1711.6	[0.02]	11.81	1536.8	0.01
(*E*)-α-Bisabolene	10.79	1725.5	0.01	11.90	1544.3	0.01
Germacrene B	11.18*	1758.7	[0.01]	11.99	1551.5	0.01
Caryophyllenyl alcohol	13.78	1989.9	0.01	12.14	1563.1	0.02
Caryophyllene oxide	12.83	1903.2	0.03	12.30	1575.6	0.04
10-epi-γ-Eudesmol	14.22	2032.5	0.01	12.73	1609.8	0.01
Alismol	15.87	2195.3	0.01	12.86	1621.0	0.01
γ-Eudesmol	15.04	2111.8	0.01	12.93	1626.6	0.01
Unknown CILI II [m/z 69, 95 (100), 41 (89), 109 (68), 67 (61)...222]	16.11	2220.5	0.01	13.41	1666.2	0.01
α-Bisabolol	15.50	2157.8	0.01	13.60	1682.7	tr
Total reported		99.37%			99.67%	

*: 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