Date : 2026-05-21

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26D07-PTH10
Customer Identification : Pine - Austria - P70115
Type : Essential Oil
Source : *Pinus sylvestris*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 2026-04-14 to make a correction in the sample identification section.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

628 Boulevard du Saguenay Ouest, Saguenay (Qc) G7J 1H4 | www.phytochemia.com

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 : 2026-04-14

Physicochemical data

Refractive index : 1.4708 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-04-08

Conclusion

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

628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com

Analysis Summary - Consolidated Contents

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

Identification	%	Class
Toluene	0.01	Simple phenolic
Santene	0.12	Normonoterpene
Tricyclene	0.16	Monoterpene
α-Thujene	0.05	Monoterpene
α-Pinene	51.09	Monoterpene
α-Fenchene	0.07	Monoterpene
Camphene	2.12	Monoterpene
Thuja-2,4(10)-diene	0.05	Monoterpene
Unknown	0.01	Monoterpene
β-Pinene	10.44	Monoterpene
Sabinene	0.05	Monoterpene
Unknown	0.08	Monoterpene
Myrcene	4.90	Monoterpene
2,7-Dimethyl-2,6-octadiene	0.06	Monoterpene
Octan-3-ol	0.02	Aliphatic alcohol
Pseudolimonene	0.23	Monoterpene
α-Phellandrene	0.09	Monoterpene
Δ3-Carene	11.56	Monoterpene
1,4-Cineole	0.03	Monoterpenic ether
α-Terpinene	0.23	Monoterpene
Carvomenthene	0.03	Aliphatic alcohol
para-Cymene	0.80	Monoterpene
Limonene	8.76	Monoterpene
β-Phellandrene	0.82	Monoterpene
1,8-Cineole	0.09	Monoterpenic ether
(*Z*)-β-Ocimene	0.01	Monoterpene
(*E*)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	0.17	Monoterpene
Unknown	0.01	Oxygenated monoterpene
Fenchone	0.02	Monoterpenic ketone
para-Cymenene	0.01	Monoterpene
Terpinolene	0.73	Monoterpene
α-Pinene oxide	0.01	Monoterpenic ether
Linalool	0.02	Monoterpenic alcohol
endo-Fenchol	0.05	Monoterpenic alcohol
trans-Pinocarveol	0.04	Monoterpenic alcohol
Camphor	0.02	Monoterpenic ketone
trans-Verbenol	0.05	Monoterpenic alcohol
Camphene hydrate	0.01	Monoterpenic alcohol
Isoborneol	0.01	Monoterpenic alcohol

Pinocamphone	0.01	Monoterpenic ketone
Pinocarvone	0.02	Monoterpenic ketone
Borneol	0.13	Monoterpenic alcohol
Terpinen-4-ol	0.03	Monoterpenic alcohol
meta-Cymen-8-ol	0.01	Monoterpenic alcohol
para-Cymen-8-ol	0.02	Monoterpenic alcohol
α-Terpineol	0.48	Monoterpenic alcohol
Myrtenal	0.01	Monoterpenic aldehyde
Myrtenol	0.02	Monoterpenic alcohol
Methylchavicol	0.03	Phenylpropanoid
Verbenone	0.02	Monoterpenic ketone
trans-Carveol	0.01	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Thymol methyl ether	tr	Monoterpenic ether
Carvone	tr	Monoterpenic ketone
Isobornyl acetate	0.01	Monoterpenic ester
Bornyl acetate	2.09	Monoterpenic ester
α-Longipinene	0.05	Sesquiterpene
α-Cubebene	0.03	Sesquiterpene
Longicyclene	0.04	Sesquiterpene
α-Ylangene	0.01	Sesquiterpene
α-Copaene	0.07	Sesquiterpene
β-Bourbonene	0.02	Sesquiterpene
Geranyl acetate	0.02	Monoterpenic ester
Longifolene	0.83	Sesquiterpene
β-Caryophyllene	1.99	Sesquiterpene
β-Copaene	0.02	Sesquiterpene
α-Humulene	0.17	Sesquiterpene
cis-Muurola-4(15),5-diene	0.02	Sesquiterpene
trans-Cadina-1(6),4-diene	0.03	Sesquiterpene
γ-Muurolene	0.02	Sesquiterpene
α-Muurolene	0.02	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
trans-Calamenene	0.01	Sesquiterpene
δ-Cadinene	0.12	Sesquiterpene
trans-Cadina-1,4-diene	0.02	Sesquiterpene
Caryophyllene oxide isomer	0.01	Sesquiterpenic ether
Caryophyllene oxide	0.04	Sesquiterpenic ether
Longiborneol	0.01	Sesquiterpenic alcohol
Humulene epoxide II	0.01	Sesquiterpenic ether
1-epi-Cubenol	0.01	Sesquiterpenic alcohol
Bulnesol	0.03	Sesquiterpenic alcohol
meta-Camphorene	0.02	Diterpene
para-Camphorene	0.01	Diterpene
Isoabienol?	0.01	Diterpenic alcohol

Consolidated total	99.64	

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

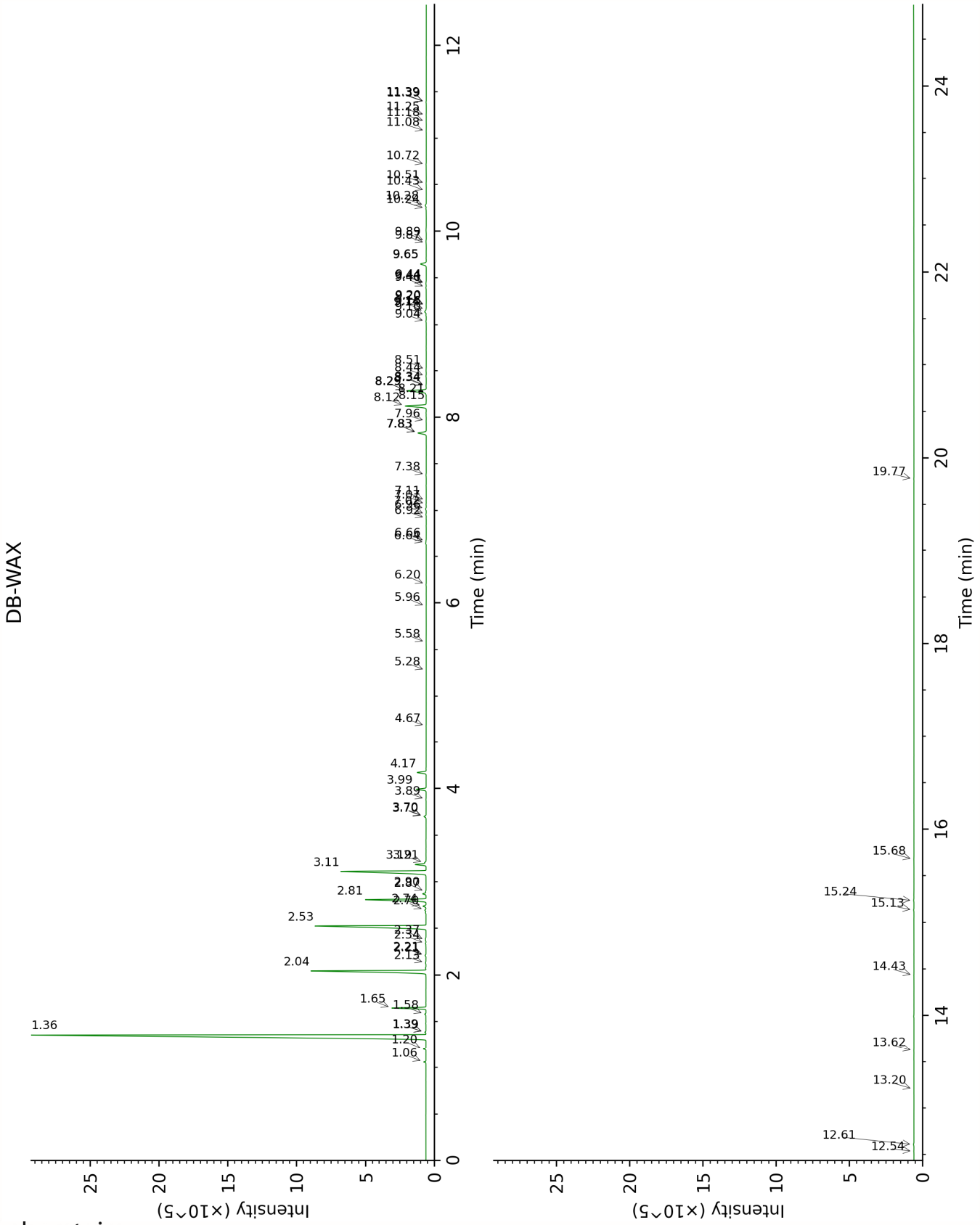
Note: no correction factor was applied

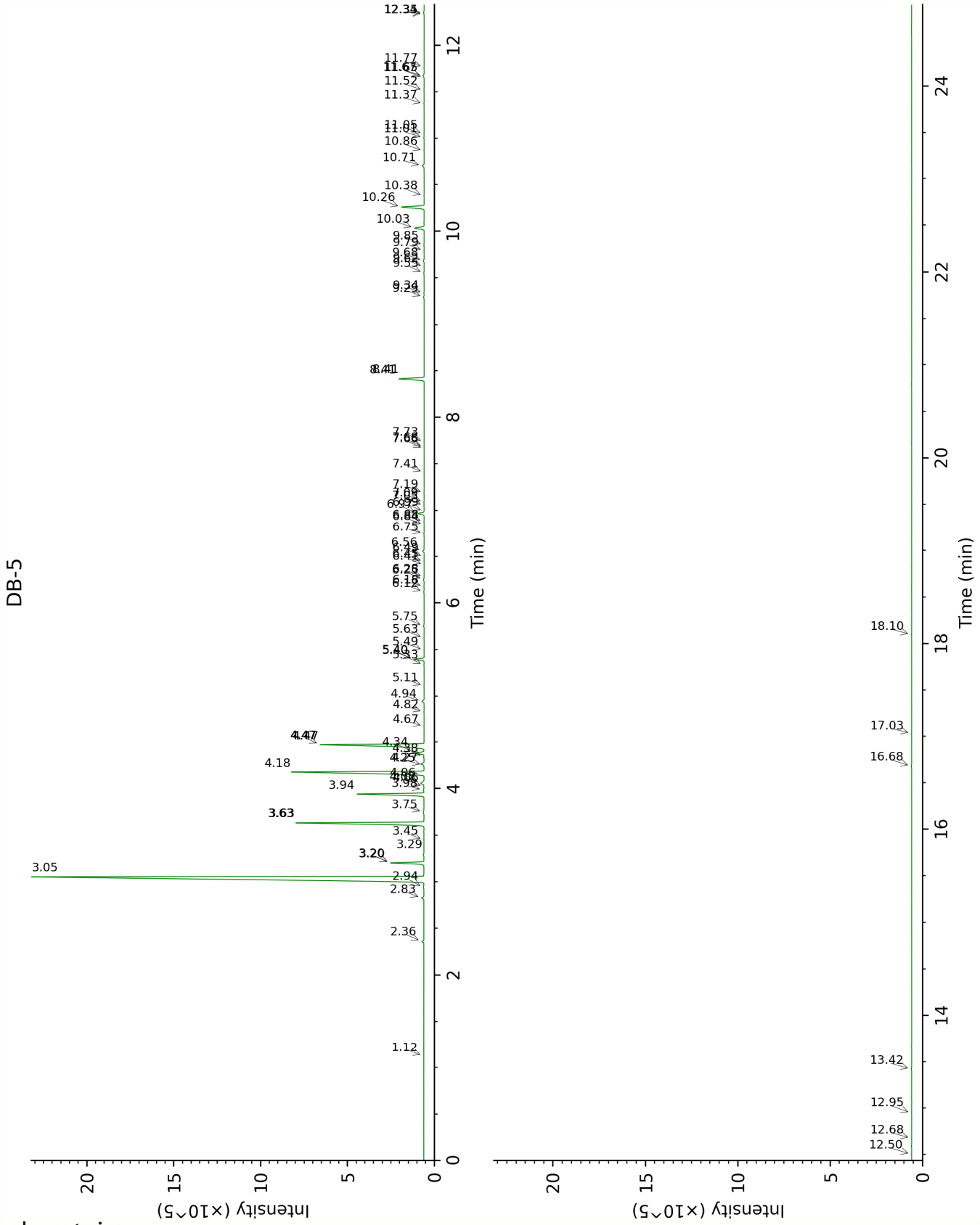
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com

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

628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com


DB-WAX
Time (min)
Intensity (×10^5)
1.36
2.04
2.53
2.81
3.11
19.77
15.68
15.24
15.13
14.43
13.62
13.20
12.61
12.54


DB-5
Time (min)
Intensity (×10^5)
12.35
11.77
11.67
11.52
11.37
11.05
10.86
10.71
10.38
10.26
10.03
9.85
8.41
7.73
7.41
7.19
6.75
6.56
5.75
5.63
5.49
5.40
5.11
4.94
4.82
4.67
4.34
4.25
4.18
3.94
3.75
3.63
3.45
3.29
3.20
3.05
2.94
2.83
2.36
1.12
18.10
17.03
16.68
13.42
12.95
12.68
12.50

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Toluene	1.39*	1001.1	[0.06]	1.12	759.0	0.01
Santene	1.06	948.5	0.12	2.36	883.1	0.12
Tricyclene	1.20	971.4	0.16	2.83	918.9	0.16
α-Thujene	1.39*	1001.1	[0.06]	2.94	926.5	0.05
α-Pinene	1.36	996.1	51.12	3.05	934.1	51.09
α-Fenchene	1.58	1021.1	0.07	3.20*	944.1	[2.19]
Camphene	1.65	1027.6	2.12	3.20*	944.1	[2.19]
Thuja-2,4(10)-diene	2.21*	1083.3	[0.06]	3.29	950.0	0.05
Unknown BOSE VIII [m/z 121, 93 (86), 79 (71), 67 (62), 55 (49)... 136 (24)]				3.45	960.7	0.01
β-Pinene	2.04	1066.8	10.44	3.63*	972.9	[10.49]
Sabinene	2.21*	1083.3	[0.06]	3.63*	972.9	[10.49]
Unknown ORVU I [m/z 93, 79 (73), 67 (49), 95 (42), 91 (41), 121 (38)...]	2.34	1096.0	0.04	3.75	980.7	0.08
Myrcene	2.81	1134.4	4.89	3.94	993.7	4.90
2,7-Dimethyl-2,6-octadiene	2.13	1075.2	0.04	3.98	996.6	0.06
Octan-3-ol	5.96	1366.5	tr	4.02	998.9	0.02
Pseudolimonene	2.74	1128.9	0.23	4.06*	1001.4	[0.34]
α-Phellandrene	2.70	1125.5	0.09	4.06*	1001.4	[0.34]
Δ3-Carene	2.53	1112.3	11.56	4.18	1009.3	11.56
1,4-Cineole	2.90	1141.2	0.03	4.25	1014.0	0.03
α-Terpinene	2.87	1139.4	0.23	4.27	1014.9	0.23
Carvomenthene	2.37	1099.5	0.03	4.34	1019.6	0.03
para-Cymene	3.99	1226.4	0.79	4.38	1022.2	0.80
Limonene	3.11	1158.3	8.76	4.47*	1028.0	[9.77]
β-Phellandrene	3.19	1164.1	0.82	4.47*	1028.0	[9.77]
1,8-Cineole	3.21	1165.7	0.09	4.47*	1028.0	[9.77]
(*Z*)-β-Ocimene	3.70*	1204.9	[0.17]	4.67	1040.5	0.01
(*E*)-β-Ocimene	3.89	1218.5	0.01	4.82	1050.2	0.02
γ-Terpinene	3.70*	1204.9	[0.17]	4.94	1057.5	0.17
Unknown PIMA I [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	4.67	1276.7	0.01	5.11	1068.4	0.01

628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com

Fenchone	5.58	1338.3	0.01	5.34	1082.8	0.02
para-Cymenene	6.20	1383.4	0.01	5.40*	1086.6	[0.75]
Terpinolene	4.17	1239.8	0.73	5.40*	1086.6	[0.75]
α-Pinene oxide	5.28	1316.5	0.01	5.49	1092.9	0.01
Linalool	7.96	1515.4	0.01	5.63	1101.4	0.02
endo-Fenchol	8.29*	1540.8	[2.06]	5.75	1109.6	0.05
trans-Pinocarveol	9.04	1599.4	0.03	6.12	1133.2	0.04
Camphor	7.06	1447.8	0.02	6.18	1137.2	0.02
trans-Verbenol	9.40	1628.7	0.04	6.25	1141.8	0.05
Camphene hydrate	8.34*	1544.6	[0.02]	6.28	1143.5	0.01
Isoborneol	9.20*	1613.0	[0.02]	6.41	1152.1	0.01
Pinocamphone	7.11	1450.9	0.01	6.45	1154.5	0.01
Pinocarvone	7.83*	1505.4	[0.84]	6.49	1157.6	0.02
Borneol	9.65*	1649.4	[0.62]	6.56	1161.7	0.13
Terpinen-4-ol	8.44	1553.0	0.02	6.75	1174.1	0.03
meta-Cymen-8-ol	11.39*	1795.6	[0.03]	6.84	1180.4	0.01
para-Cymen-8-ol	11.39*	1795.6	[0.03]	6.88	1183.0	0.02
α-Terpineol	9.65*	1649.4	[0.62]	6.97	1188.4	0.48
Myrtenal	8.51	1558.5	0.01	6.99	1189.8	0.01
Myrtenol	10.72	1738.3	0.02	7.05	1193.8	0.02
Methylchavicol	9.16	1609.3	0.02	7.09	1196.2	0.03
Verbenone	9.44*	1632.3	[0.04]	7.19	1202.9	0.02
trans-Carveol	11.25	1783.8	0.01	7.41	1217.8	0.01
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	11.18	1778.0	0.01	7.66	1235.0	0.01
Thymol methyl ether	8.34*	1544.6	[0.02]	7.68	1236.3	tr
Carvone	9.87	1667.4	0.01	7.73	1239.9	tr
Isobornyl acetate	8.15	1530.4	0.01	8.41*	1286.5	[2.04]
Bornyl acetate	8.12	1528.0	2.09	8.41*	1286.5	[2.04]
α-Longipinene	6.64	1416.1	0.05	9.29	1345.0	0.05
α-Cubebene	6.66	1417.6	0.03	9.34	1348.3	0.03
Longicyclene	6.96	1439.6	0.03	9.55	1363.4	0.04
α-Ylangene	6.92	1436.7	0.01	9.62	1368.3	0.01
α-Copaene	7.02	1444.1	0.06	9.68	1372.8	0.07
β-Bourbonene	7.38	1471.4	0.02	9.79	1380.4	0.02
Geranyl acetate	10.43	1713.7	0.01	9.85	1384.5	0.02
Longifolene	7.83*	1505.4	[0.84]	10.03	1397.7	0.83

β-Caryophyllene	8.29*	1540.8	[2.06]	10.26	1414.1	1.99
β-Copaene	8.21	1534.9	0.01	10.38	1423.0	0.02
α-Humulene	9.14	1607.7	0.17	10.71	1447.9	0.17
cis-Muurola-4(15),5-diene	9.20*	1613.0	[0.02]	10.86	1459.6	0.02
trans-Cadina-1(6),4-diene	9.10	1604.7	0.03	11.01	1470.4	0.03
γ-Muurolene	9.44*	1632.3	[0.04]	11.05	1473.8	0.02
α-Muurolene	9.89	1669.3	0.03	11.37	1497.7	0.02
γ-Cadinene	10.24	1697.8	0.04	11.52	1508.7	0.03
trans-Calamenene	11.08	1769.1	0.01	11.65	1519.6	0.01
δ-Cadinene	10.28	1700.6	0.10	11.67	1521.0	0.12
trans-Cadina-1,4-diene	10.51	1720.5	0.02	11.77	1528.7	0.02
Caryophyllene oxide isomer	12.54	1897.3	0.01	12.34	1573.7	0.01
Caryophyllene oxide	12.61	1904.0	0.04	12.35	1574.9	0.04
Longiborneol	14.43	2076.3	0.01	12.50	1586.8	0.01
Humulene epoxide II	13.20	1959.1	tr	12.68	1600.4	0.01
1-epi-Cubenol	13.62	1997.6	0.01	12.95	1622.6	0.01
Bulnesol	15.13	2145.8	0.03	13.42	1661.8	0.03
meta-Camphorene	15.24	2156.2	0.03	16.68	1952.1	0.02
para-Camphorene	15.68	2200.7	0.01	17.03	1985.9	0.01
Isoabienol?	19.78	2656.5	0.01	18.10	2091.1	0.01
Total reported		99.43%			99.68%	

*: 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