Date : 2023-11-10

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 23K03-PTH02
Customer Identification : Coriander - Russia - CK0110R
Type : Essential Oil
Source : *Coriandrum sativum*
Customer : Plant Therapy

Checked an approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

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 : Sylvain Mercier, M. Sc., Chimiste 2014-005
Date : 2023-11-08

Physicochemical data

Refractive index : 1.4642 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2023-11-06

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
Methyl 2-methylbutyrate	0.01	Aliphatic ester
Nonane	0.01	Alkane
Tricyclene	0.03	Monoterpene
α-Thujene	0.04	Monoterpene
α-Pinene	5.54	Monoterpene
Camphene	1.01	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
β-Pinene	0.48	Monoterpene
Sabinene	0.21	Monoterpene
6-Methyl-5-hepten-2-one	0.03	Aliphatic ketone
Myrcene	0.97	Monoterpene
6-Methyl-5-hepten-2-ol	0.05	Aliphatic alcohol
Pseudolimonene	0.01	Monoterpene
α-Phellandrene	0.02	Monoterpene
Octanal	0.02	Aliphatic aldehyde
Δ3-Carene	0.01	Monoterpene
α-Terpinene	0.06	Monoterpene
para-Cymene	1.29	Monoterpene
β-Phellandrene	0.11	Monoterpene
Limonene	2.72	Monoterpene
1,8-Cineole	0.03	Monoterpenic ether
(*Z*)-β-Ocimene	0.05	Monoterpene
(*E*)-β-Ocimene	0.09	Monoterpene
γ-Terpinene	3.76	Monoterpene
cis-Sabinene hydrate	0.04	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.17	Monoterpenic alcohol
Isoterpinolene	0.02	Monoterpene
para-Cymenene	0.01	Monoterpene
trans-Linalool oxide (fur.)	0.14	Monoterpenic alcohol
Terpinolene	0.61	Monoterpene
Linalool	72.10	Monoterpenic alcohol
Camphor	5.26	Monoterpenic ketone
Isopulegol	0.05	Monoterpenic alcohol
Citronellal	0.04	Monoterpenic aldehyde
(2*E*)-Nonenal	0.01	Aliphatic aldehyde
Borneol	0.12	Monoterpenic alcohol
cis-Linalool oxide (pyr.)	0.01	Monoterpenic alcohol
Terpinen-4-ol	0.11	Monoterpenic alcohol
Nonanol	0.02	Aliphatic alcohol
trans-Linalool oxide (pyr.)	0.01	Monoterpenic alcohol

para-Cymen-8-ol	0.02	Monoterpenic alcohol
Myrtenal	0.01	Monoterpenic aldehyde
α-Terpineol	0.28	Monoterpenic alcohol
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	0.02	Monoterpenic alcohol
Myrtenol	0.03	Monoterpenic alcohol
Verbenone	0.04	Monoterpenic ketone
Decanal	0.02	Aliphatic aldehyde
Octyl acetate	0.02	Aliphatic ester
Nerol	0.06	Monoterpenic alcohol
Citronellol	0.05	Monoterpenic alcohol
Neral	0.03	Monoterpenic aldehyde
(*Z*)-Isogeraniol	0.01	Monoterpenic alcohol
Geraniol	1.12	Monoterpenic alcohol
(2*E*)-Decenal	0.05	Aliphatic aldehyde
Geranial	0.04	Monoterpenic aldehyde
Decanol	0.01	Aliphatic alcohol
Myrtenyl acetate	0.13	Monoterpenic ester
Citronellyl acetate	0.01	Monoterpenic ester
Neryl acetate	0.03	Monoterpenic ester
trans-Myrtanyl acetate	0.01	Monoterpenic ester
β-Cubebene	0.01	Sesquiterpene
Geranyl acetate	2.41	Monoterpenic ester
β-Caryophyllene	0.07	Sesquiterpene
α-Humulene	tr	Sesquiterpene
(2*E*)-Dodecenal	0.01	Aliphatic aldehyde
Caryophyllene oxide	0.01	Sesquiterpenic ether
Unknown	0.01	Unknown
Consolidated total	**99.80**	

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

Note: no correction factor was applied

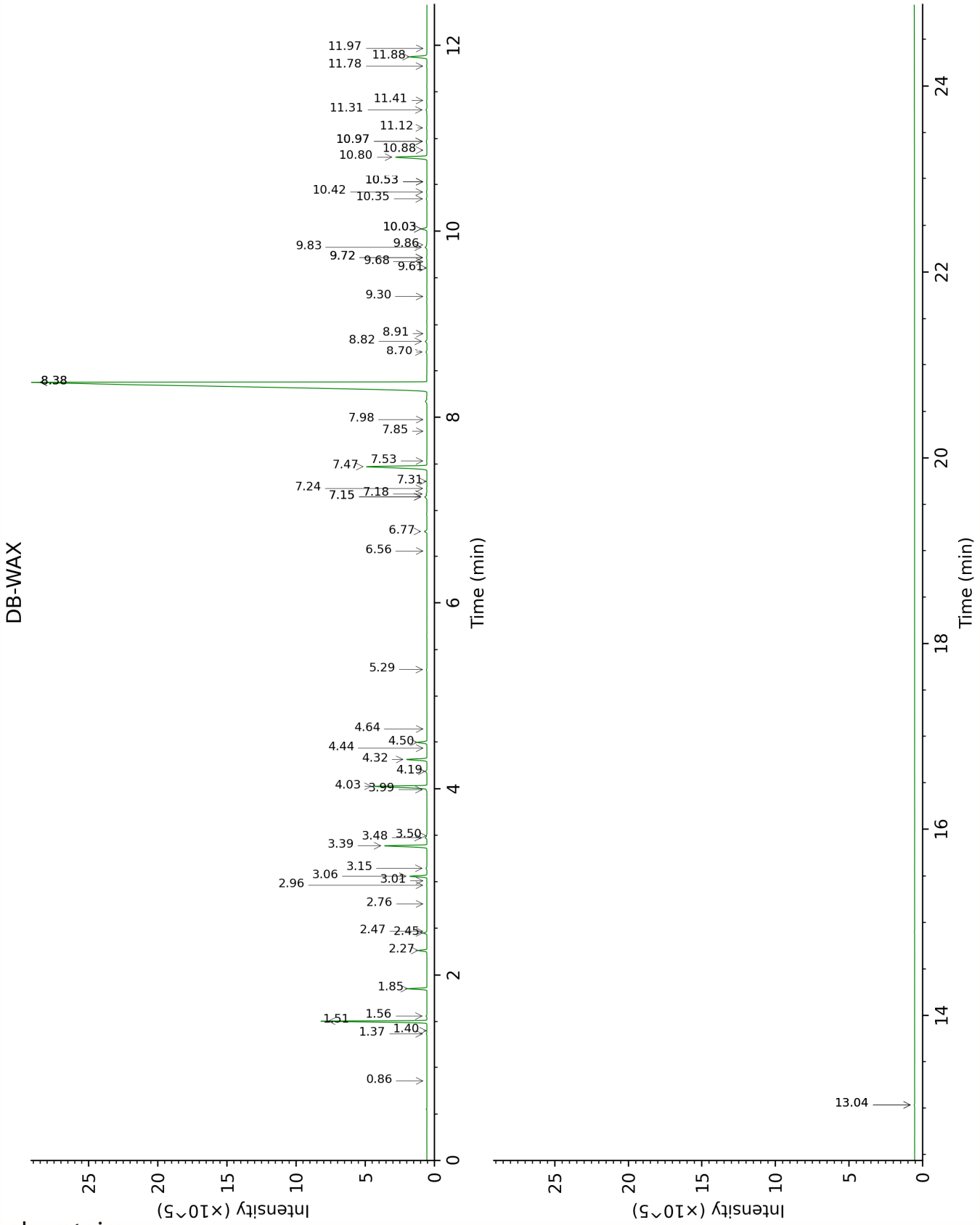
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

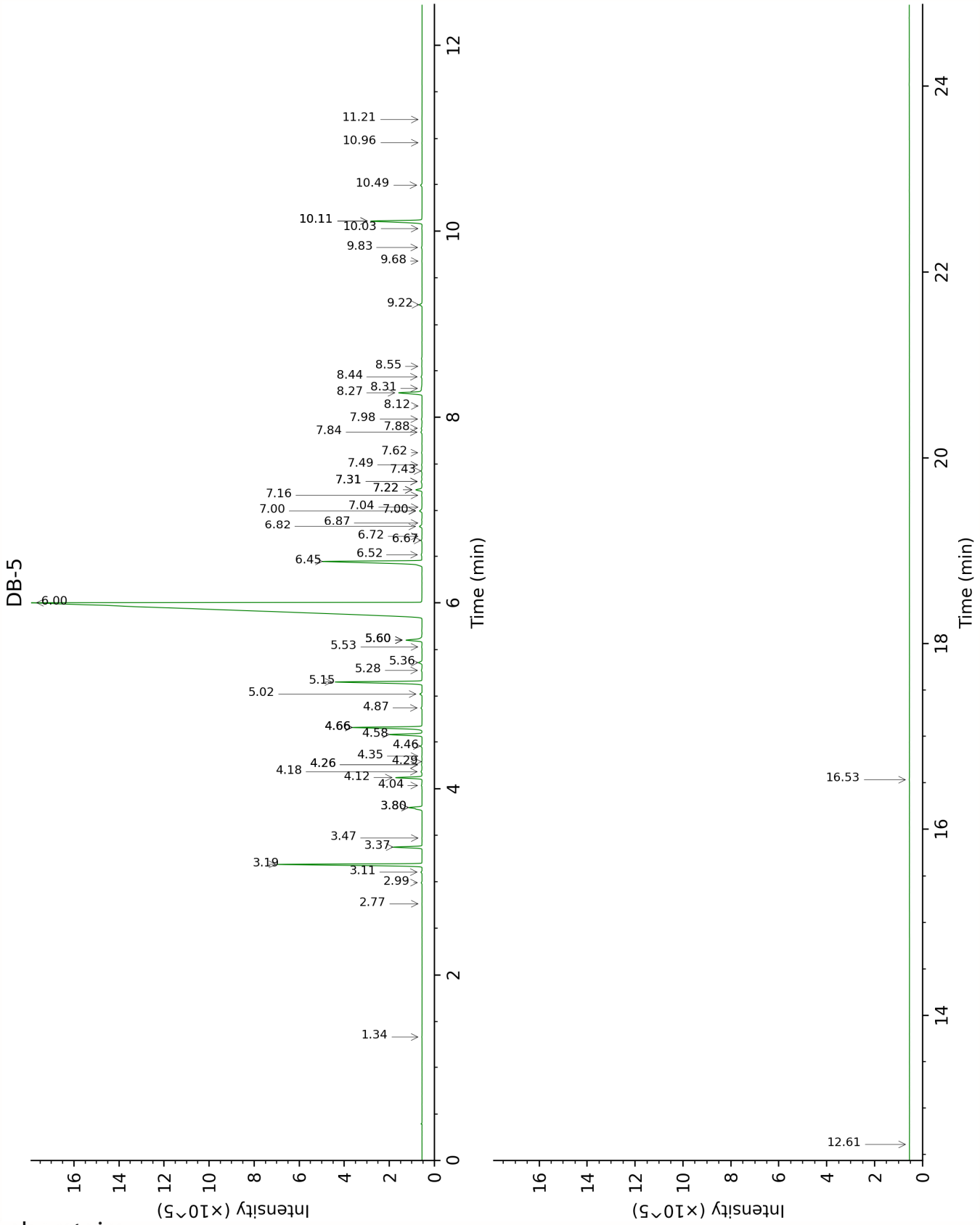
Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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

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



Laboratoire PhytoChemia
Plus que des analyses... des conseils
628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com


DB-5
Time (min)
Intensity (×10^5)
11.21
10.96
10.49
10.11
10.03
9.83
9.68
9.22
8.55
8.44
8.27
8.31
8.12
7.98
7.88
7.84
7.62
7.49
7.43
7.31
7.22
7.16
7.04
7.00
7.00
6.87
6.82
6.72
6.67
6.52
6.45
6.00
5.60
5.53
5.36
5.28
5.15
5.02
4.87
4.66
4.58
4.46
4.35
4.29
4.26
4.18
4.12
4.04
3.80
3.47
3.37
3.19
3.11
2.99
2.77
1.34
16.53
12.61

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Methyl 2-methylbutyrate	1.40	978.3	tr	1.34	775.0	0.01
Nonane	0.86	891.9	tr	2.77	904.4	0.01
Tricyclene	1.37	973.3	0.03	2.99	919.5	0.03
α-Thujene	1.56	1000.7	0.04	3.11	926.9	0.04
α-Pinene	1.51	993.9	5.52	3.19	932.4	5.54
Camphene	1.86	1028.4	1.00	3.37	944.5	1.01
Thuja-2,4(10)-diene	2.47	1086.4	0.01	3.47	950.9	0.01
β-Pinene	2.26	1067.0	0.48	3.80*	972.4	[0.68]
Sabinene	2.45	1084.7	0.21	3.80*	972.4	[0.68]
6-Methyl-5-hepten-2-one	5.29	1294.5	0.04	4.04	987.9	0.03
Myrcene	3.06	1133.2	0.97	4.12	993.5	0.97
6-Methyl-5-hepten-2-ol	7.18	1432.9	0.05	4.18	997.6	0.05
Pseudolimonene	3.01	1129.5	0.01	4.26*	1002.5	[0.03]
α-Phellandrene	2.96	1125.9	0.02	4.26*	1002.5	[0.03]
Octanal	4.64	1248.9	tr	4.29	1004.7	0.02
Δ3-Carene	2.76	1110.7	0.01	4.35	1008.4	0.01
α-Terpinene	3.15	1139.6	0.06	4.46	1015.2	0.06
para-Cymene	4.32	1225.9	1.29	4.58	1022.9	1.29
β-Phellandrene	3.48	1164.5	0.11	4.66*	1027.6	[2.87]
Limonene	3.39	1157.9	2.72	4.66*	1027.6	[2.87]
1,8-Cineole	3.50	1166.1	0.03	4.66*	1027.6	[2.87]
(*Z*)-β-Ocimene	3.99	1203.0	0.03	4.87	1040.7	0.05
(*E*)-β-Ocimene	4.19	1216.8	0.09	5.02	1050.4	0.09
γ-Terpinene	4.03	1205.5	3.77	5.15	1058.6	3.76
cis-Sabinene hydrate	7.15*	1430.7	[0.18]	5.28	1066.2	0.04
cis-Linalool oxide (fur.)	6.77	1402.9	0.17	5.36	1071.5	0.17
Isoterpinolene	4.44	1234.4	0.01	5.53	1082.0	0.02
para-Cymenene	6.56	1387.8	0.01	5.60*	1086.6	[0.75]
trans-Linalool oxide (fur.)	7.15*	1430.7	[0.18]	5.60*	1086.6	[0.75]
Terpinolene	4.50	1238.8	0.61	5.60*	1086.6	[0.75]
Linalool	8.38*	1521.9	[71.84]	6.00	1111.7	72.10
Camphor	7.47	1454.4	5.11	6.45	1139.9	5.26
Isopulegol	8.38*	1521.9	[71.84]	6.52	1144.5	0.05
Citronellal	7.24	1437.3	0.03	6.67	1154.3	0.04
(2*E*)-Nonenal	7.85	1482.3	0.01	6.72	1157.0	0.01
Borneol	10.03*	1650.7	[0.38]	6.82	1163.8	0.12
cis-Linalool	10.53*	1691.1	[0.02]	6.87	1166.6	0.01

oxide (pyr.)						
Terpinen-4-ol	8.82	1556.1	0.11	7.00*	1174.9	[0.13]
Nonanol	9.72*	1626.0	[0.03]	7.00*	1174.9	[0.13]
trans-Linalool oxide (pyr.)	10.88	1720.1	0.02	7.04	1177.5	0.01
para-Cymen-8-ol	11.78	1796.0	0.03	7.16	1185.5	0.02
Myrtenal	8.91	1562.4	0.01	7.22*	1189.4	[0.29]
α-Terpineol	10.03*	1650.7	[0.38]	7.22*	1189.4	[0.29]
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	13.04*	1907.1	[0.03]	7.31*	1195.0	[0.05]
Myrtenol	11.12	1740.2	0.03	7.31*	1195.0	[0.05]
Verbenone	9.86	1637.0	0.03	7.43	1202.2	0.04
Decanal	7.53	1458.9	0.02	7.49	1206.4	0.02
Octyl acetate	7.31	1442.8	0.02	7.62	1215.1	0.02
Nerol	11.31	1756.4	0.07	7.84	1229.8	0.06
Citronellol	10.97*	1728.0	[0.07]	7.88	1232.6	0.05
Neral	9.72*	1626.0	[0.03]	7.98	1239.2	0.03
(*Z*)-Isogeraniol	11.41	1764.9	0.02	8.12	1248.6	0.01
Geraniol	11.88	1804.8	1.23	8.26	1258.0	1.12
(2*E*)-Decenal	9.30	1592.8	0.02	8.31	1261.2	0.05
Geranial	10.35	1676.5	0.04	8.44	1269.5	0.04
Decanol	10.97*	1728.0	[0.07]	8.55	1276.9	0.01
Myrtenyl acetate	9.83	1634.9	0.13	9.22	1322.4	0.13
Citronellyl acetate	9.68	1622.5	0.01	9.68	1355.2	0.01
Neryl acetate	10.42	1682.4	0.03	9.83	1365.4	0.03
trans-Myrtanyl acetate	10.53*	1691.1	[0.02]	10.03	1379.6	0.01
β-Cubebene	7.98	1491.5	0.01	10.11*	1385.3	[2.39]
Geranyl acetate	10.80	1713.8	2.41	10.11*	1385.3	[2.39]
β-Caryophyllene	8.70	1546.8	0.06	10.49	1412.7	0.07
α-Humulene	9.61	1617.2	0.01	10.96	1447.1	tr
(2*E*)-Dodecenal	11.97	1812.7	0.01	11.20	1465.6	0.01
Caryophyllene oxide	13.04*	1907.1	[0.03]	12.61	1573.6	0.01
Unknown LAAN VII [m/z 69, 81 (44), 41 (28), 95 (26), 93 (26), 71 (24)...]				16.53	1910.3	0.01
Total reported		99.32%			99.77%	

*: 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

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