Date : 2024-01-22

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24A15-PTH01
Customer Identification : Carrot Seed - India - C40110R
Type : Essential Oil
Source : *Daucus carota*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 : 2024-01-18

Physicochemical data

Refractive index : 1.4923 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2024-01-16

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	%
Isovaleral	tr
2-Methylbutyral	tr
Unknown	tr
Heptanal	0.02
Tiglic acid	0.04
α-Thujene	0.02
α-Pinene	0.56
Camphene	0.04
Thuja-2,4(10)-diene	0.04
Benzaldehyde	0.01
Sabinene	0.06
β-Pinene	0.34
6-Methyl-5-hepten-2-one	0.01
Myrcene	0.48
Octanal	0.02
Δ3-Carene	0.01
α-Terpinene	0.01
para-Cymene	0.05
1,8-Cineole	0.01
Limonene	0.37
β-Phellandrene	0.02
(*Z*)-β-Ocimene	0.01
(*E*)-β-Ocimene	0.02
γ-Terpinene	0.02
Unknown	0.01
cis-Linalool oxide (fur.)	0.01
para-Cymenene	0.03
Terpinolene	0.02
Linalool	0.05
Nonanal	0.01
Unknown	0.02
α-Campholenal	0.01
trans-Pinocarveol	0.04
cis-Verbenol	0.01
trans-Verbenol	0.02
meta-Mentha-4,6-dien-8-ol	0.01
Pinocarvone	0.01
(2*E*)-Nonenal	0.02
Terpinen-4-ol	0.02
Cryptone	0.01

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

para-Cymen-8-ol	0.01
α-Terpineol	0.05
Myrtenol	0.04
Verbenone	0.03
trans-Carveol	0.03
Nerol	0.01
Neral	0.02
Geranial	0.02
Vitispirane	0.01
Bornyl acetate	0.06
Cuminol	0.01
Unknown	0.03
4-Vinylguaiacol	0.01
δ-Elemene	0.01
α-Cubebene	0.02
α-Terpinyl acetate	0.04
Neryl acetate	0.01
α-Copaene	0.02
Unknown	0.02
Daucene	3.21
β-Bourbonene	0.04
Unknown	0.46
β-Cubebene	0.02
β-Elemene	0.03
Unknown	0.04
Longifolene	0.04
Isocaryophyllene	0.02
Sesquithujene	0.04
β-Caryophyllene	0.54
cis-α-Bergamotene	0.03
Caryophylla-4(12),8(13)-diene	0.09
β-Copaene	0.09
Isosativene	0.01
Unknown	0.02
trans-α-Bergamotene	0.68
Sesquisabinene A	0.03
α-Himachalene	0.13
α-Humulene	0.07
Unknown	0.09
Acora-3,10(14)-diene	0.26
allo-Aromadendrene	0.02
(*E*)-β-Farnesene	1.66
Unknown	1.01
10-epi-β-Acoradiene	0.01
γ-Muurolene	0.04

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

Germacrene D	0.04
trans-β-Bergamotene	0.14
β-Selinene	0.06
ar-Curcumene	0.03
α-Selinene	0.02
Isodaucene	0.83
α-Muurolene	0.10
Unknown	0.05
Methyl (*E*)-isoeugenol	0.59
γ-Cadinene	0.05
β-Bisabolene	2.13
(3*E*,6*E*)-α-Farnesene	0.02
trans-Calamenene	0.01
β-Sesquiphellandrene	0.18
δ-Cadinene	0.05
Dauca-4(11),8-diene	0.12
Unknown	0.07
(*E*)-α-Bisabolene	0.08
Isocaryophyllene epoxide B	0.08
Unknown	1.33
Germacrene D-4-ol	0.01
Spathulenol	0.01
Caryophyllene oxide isomer	0.05
Caryophyllene oxide	0.41
Carotol	71.06
trans-Dauc-8-en-4β-ol	3.06
Humulene epoxide II	0.08
Unknown	0.04
Unknown	0.25
Unknown	0.19
Muurola-4,10(14)-dien-1β-ol?	0.38
Caryophylladienol I	0.06
Unknown	0.08
Hinesol	0.05
Caryophylladienol II	0.03
Daucol	2.11
α-Muurolol	0.03
Unknown	0.33
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	0.07
Unknown	0.24
Shyobunol	0.10
α-Bisabolol	0.05
Juniper camphor	0.04
(2*Z*,6*E*)-Farnesol	0.04
(2*E*,6*E*)-Farnesol	0.03

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

Unknown	0.08
Unknown	0.08
Phytone	0.06
Phytadiene isomer I	0.01
meta-Camphorene	0.02
para-Camphorene	0.05
Phytol	0.03
Consolidated total	**96.69**

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.

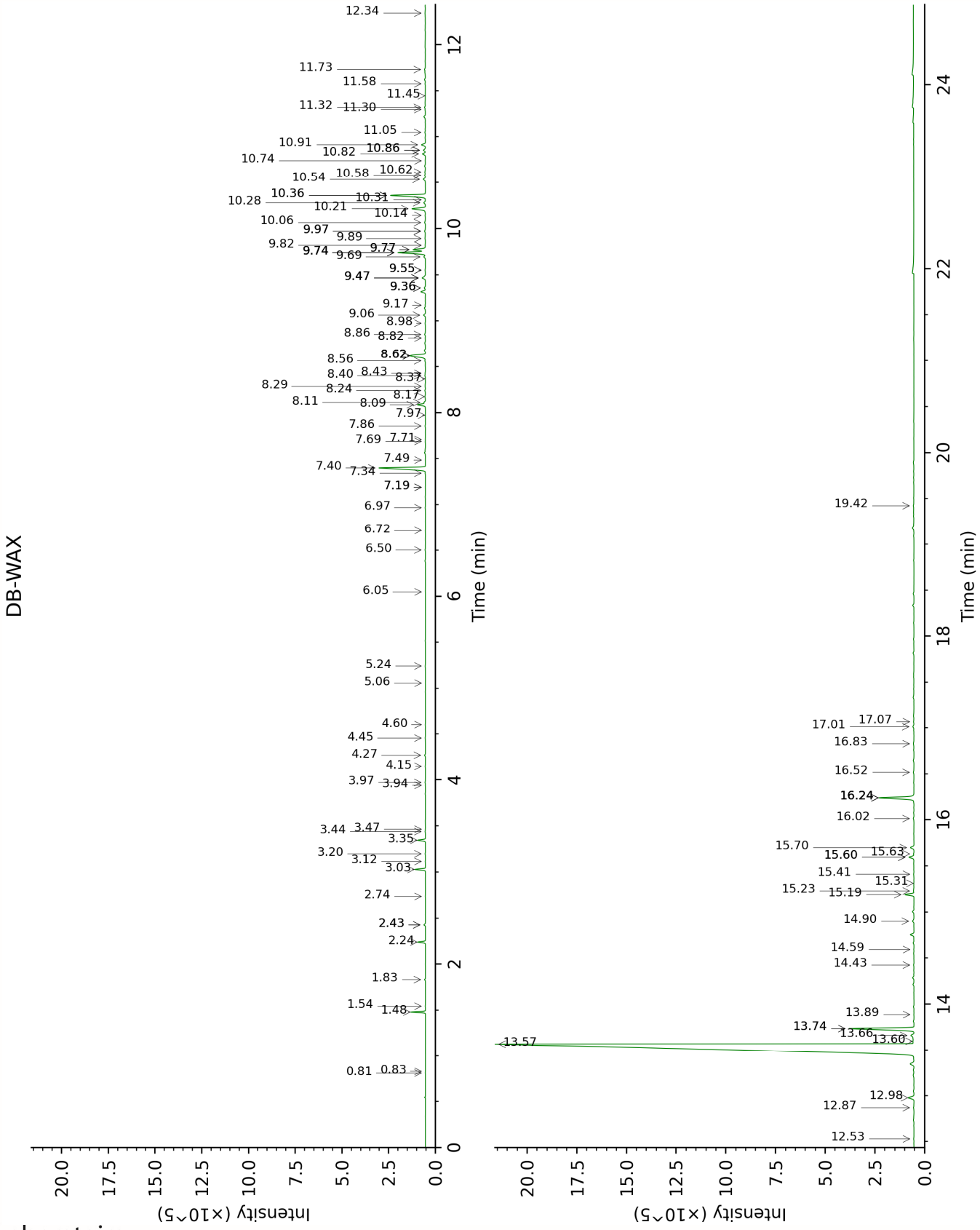
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

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.

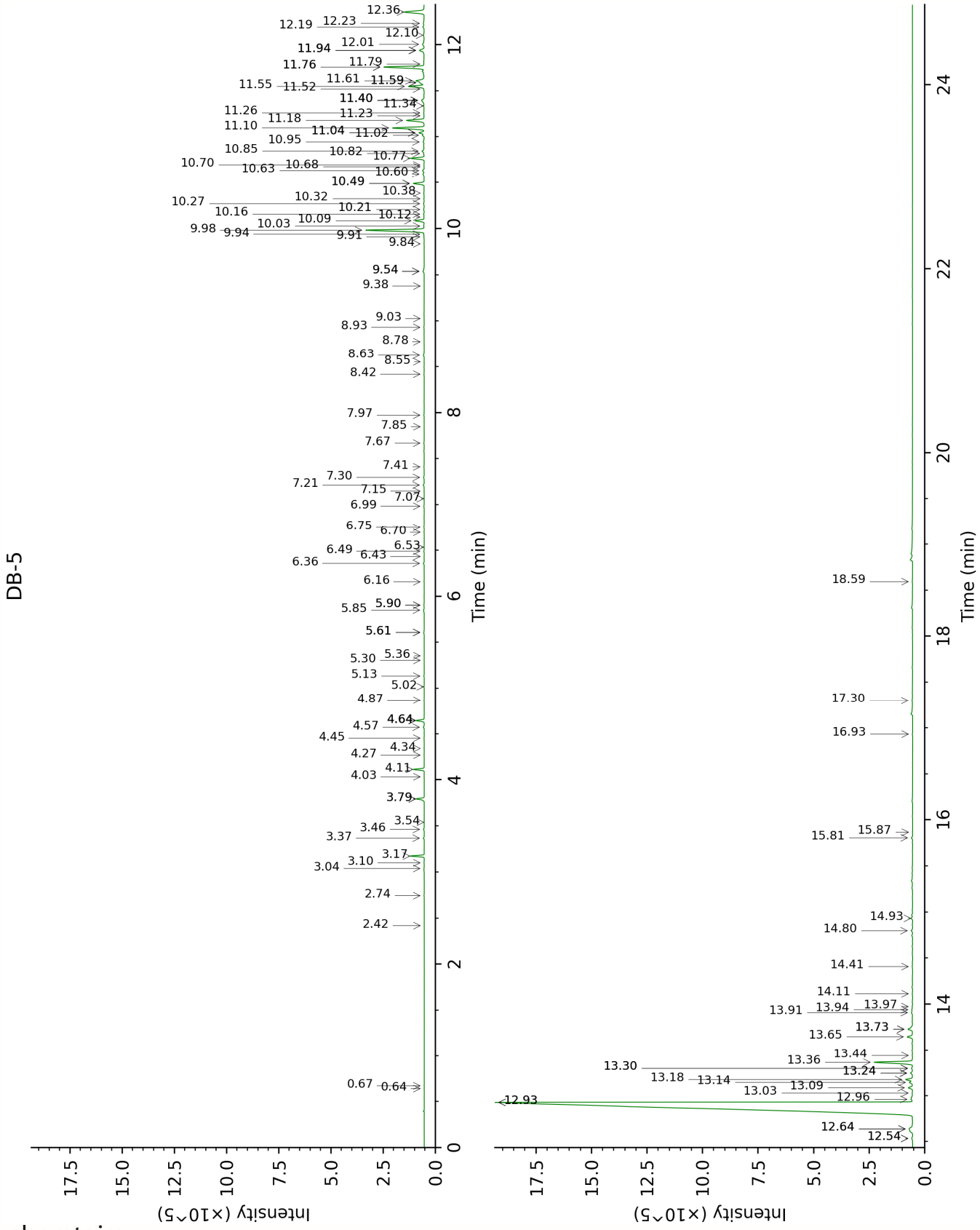
628 Boulevard du Saguenay, Saguenay (Qc) G7J 1H4 | www.phytochemia.com



Laboratoire PhytoChemia

Plus que des analyses... des conseils

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


DB-5
Intensity (×10^5)
Time (min)
12.36
12.19
12.23
12.10
11.94
12.01
11.76
11.79
11.55
11.52
11.61
11.59
11.40
11.34
11.26
11.23
11.18
11.10
11.04
11.02
10.95
10.85
10.82
10.77
10.70
10.63
10.68
10.60
10.49
10.38
10.32
10.27
10.21
10.16
10.12
10.09
10.03
9.98
9.94
9.91
9.84
9.54
9.38
9.03
8.93
8.78
8.63
8.55
8.42
7.97
7.85
7.67
7.41
7.30
7.21
7.15
7.07
6.99
6.75
6.70
6.53
6.49
6.43
6.36
6.16
5.90
5.85
5.61
5.36
5.30
5.13
5.02
4.87
4.64
4.57
4.45
4.34
4.27
4.11
4.03
3.79
3.54
3.46
3.37
3.17
3.10
3.04
2.74
2.42
0.67
0.64
18.59
17.30
16.93
15.87
15.81
14.93
14.80
14.41
14.11
13.97
13.94
13.91
13.73
13.65
13.44
13.36
13.30
13.24
13.18
13.14
13.09
13.03
12.96
12.93
12.64
12.54

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Isovaleral	0.83	884.9	tr	0.64	641.0	tr
2-Methylbutyral	0.81	878.8	tr	0.67	651.4	tr
Unknown BOCA II [m/z 79, 78 (45), 91 (28), 77 (28), 41 (13), 80 (12), 107 (11)... 122 (1)]				2.42	875.5	tr
Heptanal	3.20	1145.3	0.02	2.74	902.2	0.02
Tiglic acid				3.04	922.1	0.04
α-Thujene	1.54	1000.6	0.01	3.10	926.2	0.02
α-Pinene	1.48	991.6	0.55	3.17	931.0	0.56
Camphene	1.83	1027.8	0.04	3.37	943.8	0.04
Thuja-2,4(10)-diene	2.43*	1083.9	[0.08]	3.46	950.0	0.04
Benzaldehyde	7.49	1457.8	0.01	3.54	955.1	0.01
Sabinene	2.43*	1083.9	[0.08]	3.79*	971.8	[0.40]
β-Pinene	2.24	1066.3	0.34	3.79*	971.8	[0.40]
6-Methyl-5-hepten-2-one	5.24	1294.2	0.02	4.03	987.6	0.01
Myrcene	3.03	1132.5	0.47	4.11	992.9	0.48
Octanal	4.60	1248.3	0.01	4.27	1003.1	0.02
Δ3-Carene	2.74	1110.3	0.01	4.34	1007.7	0.01
α-Terpinene	3.12	1139.1	0.01	4.45	1014.7	0.01
para-Cymene	4.27	1224.7	0.05	4.57	1022.1	0.05
1,8-Cineole	3.47	1165.6	0.01	4.64*	1026.6	[0.39]
Limonene	3.35	1156.5	0.37	4.64*	1026.6	[0.39]
β-Phellandrene	3.44	1163.7	0.02	4.64*	1026.6	[0.39]
(*Z*)-β-Ocimene	3.94	1201.6	0.01	4.87	1040.7	0.01
(*E*)-β-Ocimene	4.15	1216.2	0.02	5.02	1050.0	0.02
γ-Terpinene	3.97	1203.7	0.02	5.13	1057.2	0.02
Unknown PIMA I [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.06	1281.0	tr	5.30	1067.9	0.01
cis-Linalool oxide (fur.)	6.72	1401.0	0.01	5.36	1071.0	0.01
para-Cymenene	6.50	1385.6	0.03	5.61*	1086.9	[0.04]
Terpinolene	4.45	1238.0	0.02	5.61*	1086.9	[0.04]
Linalool	8.24	1514.2	0.04	5.85	1102.0	0.05
Nonanal	6.05	1353.1	0.01	5.90*	1105.4	[0.03]
Unknown ORMA I [m/z 119, 109 (94), 43 (61), 95 (56), 91	8.62*	1543.4	[1.27]	5.90*	1105.4	[0.03]

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

(48), 77 (32), 152 (32), 137 (31), 134 (24)]						
α-Campholenal	7.19*	1436.0	[0.01]	6.16	1121.5	0.01
trans-Pinocarveol	9.36*	1600.5	[0.07]	6.36	1134.3	0.04
cis-Verbenol	9.47*	1609.2	[0.25]	6.43	1139.0	0.01
trans-Verbenol	9.74*†	1631.4	[1.66]	6.49	1142.7	0.02
meta-Mentha-4,6-dien-8-ol	9.55*	1616.0	[0.03]	6.53	1145.5	0.01
Pinocarvone	8.11	1504.2	0.07	6.70	1155.9	0.01
(2*E*)-Nonenal	7.86	1485.1	0.02	6.75	1159.4	0.02
Terpinen-4-ol	8.82	1558.7	0.02	6.98	1174.3	0.02
Cryptone	9.36*	1600.5	[0.07]	7.07	1179.5	0.01
para-Cymen-8-ol	11.73	1796.4	0.06	7.15	1184.7	0.01
α-Terpineol	9.97*	1650.1	[0.07]	7.22	1188.9	0.05
Myrtenol	11.05	1738.8	0.03	7.30	1194.2	0.04
Verbenone	9.82	1637.8	0.02	7.41	1201.5	0.03
trans-Carveol	11.58	1783.4	0.02	7.67	1218.6	0.03
Nerol	11.30	1759.8	0.02	7.85	1230.5	0.01
Neral	9.69	1627.6	0.10	7.97	1238.8	0.02
Geranial	10.31	1677.5	0.01	8.42	1268.6	0.02
Vitispirane	7.69	1472.8	0.01	8.55	1277.7	0.01
Bornyl acetate	8.40	1526.7	0.04	8.63	1282.4	0.06
Cuminol	14.43	2041.9	0.03	8.78	1292.5	0.01
Unknown DACA VII [m/z 109, 43 (84), 134 (43), 41 (28), 151 (26), 91 (24)...]	9.55*	1616.0	[0.03]	8.93	1303.0	0.03
4-Vinylguaiacol	15.31	2128.2	0.01	9.03	1309.6	0.01
δ-Elemene	7.19*	1436.0	[0.01]	9.38	1334.3	0.01
α-Cubebene	6.97	1419.6	0.02	9.54*	1345.5	[0.08]
α-Terpinyl acetate	9.89	1643.6	0.04	9.54*	1345.5	[0.08]
Neryl acetate	10.36*	1681.3	[2.18]	9.84	1366.5	0.01
α-Copaene	7.34	1447.3	0.02	9.91	1371.8	0.02
Unknown DACA XXI [m/z 159, 177 (67), 93 (64), 107 (55), 91 (39), 81 (38)...220(5)]				9.94	1373.8	0.02
Daucene	7.40	1451.5	3.09	9.98	1376.9	3.21
β-Bourbonene	7.71	1474.3	0.01	10.03	1380.0	0.04
Unknown DACA I [m/z 161, 91 (40), 105 (38), 79 (31), 93 (29), 119 (29)... 204	8.09	1502.3	0.48	10.08	1384.0	0.46

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

(1)]						
β-Cubebene	7.97	1493.9	0.01	10.12	1386.9	0.02
β-Elemene	8.62*	1543.4	[1.27]	10.16	1389.1	0.03
Unknown RHUM V [m/z 163, 43 (22), 121 (18), 164 (15), 145 (14)... 193 (2)]	12.53	1866.8	0.03	10.21	1392.6	0.04
Longifolene	8.17	1509.1	0.05	10.27	1397.1	0.04
Isocaryophyllene	8.37	1524.0	0.02	10.32	1400.8	0.02
Sesquithujene	8.29	1517.7	0.04	10.38	1405.1	0.04
β-Caryophyllene	8.62*	1543.4	[1.27]	10.49*	1412.9	[0.56]
cis-α-Bergamotene	8.43	1528.6	0.03	10.49*	1412.9	[0.56]
Caryophylla-4(12),8(13)-diene	8.86	1561.6	0.05	10.60	1420.9	0.09
β-Copaene	8.56	1539.2	0.04	10.63	1423.7	0.09
Isosativene	8.98	1571.0	0.03	10.68	1426.9	0.01
Unknown DACA XXV [m/z 193, 139 (95), 69 (86), 179 (84), 207 (80), 97 (76)... 222 (31)]				10.70	1428.3	0.02
trans-α-Bergamotene	8.62*	1543.4	[1.27]	10.77	1433.7	0.68
Sesquisabinene A	9.36*	1600.5	[0.07]	10.82	1437.6	0.03
α-Himachalene	9.06	1577.8	0.11	10.85	1439.5	0.13
α-Humulene	9.47*	1609.2	[0.25]	10.95	1446.9	0.07
Unknown DACA VIII [m/z 109, 124 (27), 79 (10), 91 (10), 145 (10)... 204? (1)]	10.86*	1722.5	[0.12]	11.02	1452.3	0.09
Acora-3,10(14)-diene	9.47*	1609.2	[0.25]	11.04*	1454.3	[0.28]
allo-Aromadendrene	9.17	1586.0	0.02	11.04*	1454.3	[0.28]
(*E*)-β-Farnesene	9.74*†	1631.4	[1.66]	11.10	1458.2	1.66
Unknown DACA II [m/z 161, 91 (57), 120 (46), 105 (42), 133 (25), 119 (22), 41 (21), 204 (21)]	9.74*†	1631.4	[1.66]	11.18	1464.3	1.01
10-epi-β-Acoradiene	9.77*†	1633.9	[0.76]	11.23	1468.0	0.01
γ-Muurolene	9.77*†	1633.9	[0.76]	11.26	1470.4	0.04
Germacrene D	9.97*	1650.1	[0.07]	11.34	1476.0	0.04
trans-β-	9.74*†	1631.4	[1.66]	11.40*	1480.4	[0.23]

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

Bergamotene						
β-Selinene	10.06	1657.5	0.06	11.40*	1480.4	[0.23]
ar-Curcumene	10.86*	1722.5	[0.12]	11.40*	1480.4	[0.23]
α-Selinene	10.14	1663.9	0.02	11.52	1489.6	0.02
Isodaucene	10.22	1669.7	0.86	11.55	1491.7	0.83
α-Muurolene	10.28	1674.9	0.10	11.59*	1494.7	[0.17]
Unknown DACA III [m/z 124, 134 (62), 43 (55), 119 (52), 71 (49), 41 (45), 109 (38), 121 (37)... 220 (14)]	11.32	1761.7	0.05	11.59*	1494.7	[0.17]
Methyl (*E*)-isoeugenol	15.19	2116.0	0.50	11.61	1496.2	0.59
γ-Cadinene	10.58	1699.3	0.05	11.76*	1507.5	[2.18]
β-Bisabolene	10.36*	1681.3	[2.18]	11.76*	1507.5	[2.18]
(3*E*,6*E*)-α-Farnesene	10.74	1712.8	0.02	11.79	1510.0	0.02
trans-Calamenene	11.45	1772.3	0.01	11.94*	1521.6	[0.34]
β-Sesquiphellandrene	10.82	1719.2	0.18	11.94*	1521.6	[0.34]
δ-Cadinene	10.62	1702.4	0.05	11.94*	1521.6	[0.34]
Dauca-4(11),8-diene	10.54	1695.5	0.15	12.00	1526.8	0.12
Unknown DACA XVI [m/z 93, 119 (35), 109 (34), 121 (26), 91 (26), 80 (25)...]				12.10	1534.6	0.07
(*E*)-α-Bisabolene	10.92	1727.5	0.24	12.19	1541.5	0.08
Isocaryophyllene epoxide B	12.34	1850.3	0.04	12.23	1544.6	0.08
Unknown DACA V [m/z 135, 107 (92), 159 (89), 121 (84), 177 (80), 91 (79)... 220 (16)]	13.74*	1976.5	[3.98]	12.36	1554.2	1.33
Germacrene D-4-ol	13.89	1990.6	0.01	12.54*	1568.3	[0.08]
Spathulenol	14.59	2058.0	0.01	12.54*	1568.3	[0.08]
Caryophyllene oxide isomer	12.87	1896.8	0.05	12.64*	1576.4	[0.50]
Caryophyllene oxide	12.98	1906.7	0.41	12.64*	1576.4	[0.50]
Carotol	13.57	1960.9	71.06	12.93*	1599.1	[74.12]
trans-Dauc-8-en-4β-ol	13.74*	1976.5	[3.98]	12.93*	1599.1	[74.12]

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

Humulene epoxide II	13.60	1963.8	0.09	12.96	1601.7	0.08
Unknown DACA XI [m/z 177, 159 (59), 137 (45), 109 (41), 93 (41)...222(2)]				13.03	1607.1	0.04
Unknown DACA XIII [m/z 107, 105 (93), 119 (87), 132 (85), 43 (66), 91 (61)...218(35)]				13.09	1611.9	0.25
Unknown DACA XII [m/z 159, 177 (50), 93 (44), 91 (39), 105 (31), 135 (29)...222(9)]				13.14	1616.7	0.19
Muurola-4,10(14)-dien-1β-ol?	13.66	1969.7	0.30	13.18	1619.2	0.38
Caryophylladienol I	16.24*	2221.9	[2.23]	13.24*	1625.0	[0.13]
Unknown DACA XXII [m/z 159, 93 (49), 177 (42), 91 (40), 107 (38), 105 (30), 121 (28)... 220 (7)]				13.24*	1625.0	[0.13]
Hinesol	15.23	2119.9	0.05	13.30*	1629.3	[0.07]
Caryophylladienol II	16.24*	2221.9	[2.23]	13.30*	1629.3	[0.07]
Daucol	16.24*	2221.9	[2.23]	13.36	1634.8	2.11
α-Muurolol	15.41	2138.1	0.02	13.44	1640.9	0.03
Unknown DACA XIV [m/z 59, 95 (61), 149 (33), 81 (31), 107 (29), 108 (26)...222(1)]	15.60*	2156.5	[0.31]	13.65	1658.2	0.33
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	17.01	2302.3	0.07	13.73*	1665.0	[0.36]
Unknown FEGA IV [m/z 122, 41 (59), 79 (58), 123 (54), 107 (53), 121 (47)... 206 (13)]	15.70	2166.9	0.24	13.73*	1665.0	[0.36]
Shyobunol	16.52	2250.6	0.06	13.91	1679.9	0.10
α-Bisabolol	15.63	2160.1	0.02	13.94	1682.5	0.05
Juniper camphor	16.24*	2221.9	[2.23]	13.98	1685.2	0.04
(2*Z*,6*E*)-Farnesol	16.83	2282.8	0.06	14.11	1696.7	0.04

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

(2*E*,6*E*)-Farnesol	17.07	2308.2	0.04	14.41	1721.9	0.03
Unknown DACA XXIII [m/z 110, 123 (50), 95 (31), 111 (31), 109 (24)... 236 (t)]				14.80	1755.6	0.08
Unknown DACA XXIV [m/z 139, 159 (31), 43 (20), 82 (15), 97 (13)... 236 (4)]				14.93	1767.2	0.08
Phytone	14.90	2087.5	0.10	15.81	1844.8	0.06
Phytadiene isomer I				15.87	1850.3	0.01
meta-Camphorene	15.60*	2156.5	[0.31]	16.93	1949.0	0.02
para-Camphorene	16.02	2198.6	0.05	17.30	1984.0	0.05
Phytol	19.42	2571.2	0.05	18.59	2111.7	0.03
Total reported		94.67%			96.96%	

*: 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