Date : 2024-01-22

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 24A15-PTH09
Customer Identification : Organic Basil Linalool - Egypt - B20105R
Type : Essential Oil
Source : *Ocimum basilicum ct. Linalool*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

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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 : Benoit Roger, Ph. D.
Date : 2024-01-22

Physicochemical data

Refractive index : 1.4776 ± 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

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
Isovaleral	tr	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
2-Ethylfuran	tr	Furan
Isoamyl alcohol	0.01	Aliphatic alcohol
2-Methylbutanol	tr	Aliphatic alcohol
(3*Z*)-Hexenol	0.01	Aliphatic alcohol
Hashishene	0.01	Monoterpene
α-Thujene	0.04	Monoterpene
α-Pinene	0.58	Monoterpene
Camphene	0.12	Monoterpene
Thuja-2,4(10)-diene	tr	Monoterpene
Sabinene	0.57	Monoterpene
β-Pinene	1.12	Monoterpene
Octen-3-ol	0.04	Aliphatic alcohol
Octan-3-one	0.05	Aliphatic ketone
Myrcene	1.06	Monoterpene
α-Phellandrene	0.01	Monoterpene
Pseudolimonene	0.01	Monoterpene
Δ3-Carene	0.01	Monoterpene
(3*Z*)-Hexenyl acetate	0.04	Aliphatic ester
α-Terpinene	0.08	Monoterpene
meta-Cymene	0.01	Monoterpene
para-Cymene	0.21	Monoterpene
Limonene	0.45	Monoterpene
1,8-Cineole	10.41	Monoterpenic ether
(*Z*)-β-Ocimene	0.05	Monoterpene
(*E*)-β-Ocimene	0.55	Monoterpene
γ-Terpinene	0.05	Monoterpene
cis-Sabinene hydrate	0.14	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.05	Monoterpenic alcohol
Octanol	0.01	Aliphatic alcohol
Terpinolene	0.11	Monoterpene
trans-Linalool oxide (fur.)	0.06	Monoterpenic alcohol
6,7-Epoxymyrcene	0.03	Monoterpenic ether
trans-Sabinene hydrate	0.01	Monoterpenic alcohol
Linalool	46.77	Monoterpenic alcohol
Phenylethyl alcohol	0.01	Simple phenolic
Octen-3-yl acetate	0.07	Aliphatic ester
cis-para-Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Limona ketone	0.01	Normonoterpenic ketone

(*Z*)-Myroxide	0.01	Monoterpenic ether
Camphor	0.52	Monoterpenic ketone
(*E*)-Myroxide	0.14	Monoterpenic ether
Isomenthone	0.03	Monoterpenic ketone
Borneol	0.13	Monoterpenic alcohol
δ-Terpineol	0.19	Monoterpenic alcohol
Terpinen-4-ol	0.57	Monoterpenic alcohol
para-Cymen-8-ol	0.03	Monoterpenic alcohol
α-Terpineol	1.01	Monoterpenic alcohol
Methylchavicol	0.87	Phenylpropanoid
(3*E*,5*E*)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.06	Monoterpenic alcohol
Octyl acetate	0.27	Aliphatic ester
Nerol	0.02	Monoterpenic alcohol
Citronellol	0.14	Monoterpenic alcohol
Carvone	0.01	Monoterpenic ketone
Geraniol	0.17	Monoterpenic alcohol
Geranial	0.04	Monoterpenic aldehyde
Citronellyl formate	0.03	Monoterpenic ester
Bornyl acetate	1.05	Monoterpenic ester
Lavandulyl acetate	0.02	Monoterpenic ester
trans-Pinocarvyl acetate	0.03	Monoterpenic ester
Geranyl formate	0.02	Monoterpenic ester
δ-Elemene isomer	0.03	Sesquiterpene
exo-2-Hydroxycineole acetate	0.10	Monoterpenic ester
α-Cubebene	0.09	Sesquiterpene
Eugenol	6.94	Phenylpropanoid
Neryl acetate	0.04	Monoterpenic ester
α-Copaene	0.16	Sesquiterpene
β-Bourbonene	0.25	Sesquiterpene
cis-β-Elemene	0.10	Sesquiterpene
Geranyl acetate	0.03	Monoterpenic ester
β-Cubebene	0.10	Sesquiterpene
β-Elemene	1.88	Sesquiterpene
Unknown	0.09	Unknown
Methyleugenol	0.13	Phenylpropanoid
α-Gurjunene	0.02	Sesquiterpene
α-Cedrene	0.02	Sesquiterpene
cis-α-Bergamotene	0.12	Sesquiterpene
β-Caryophyllene	0.25	Sesquiterpene
β-Copaene	0.05	Sesquiterpene
β-Gurjunene	0.10	Sesquiterpene
trans-α-Bergamotene	[5.42]	Sesquiterpene
α-Guaiene	[5.42]	Sesquiterpene
cis-β-Bergamotene?	0.12	Sesquiterpene
cis-Muurola-3,5-diene	0.03	Sesquiterpene

Cadina-4,11-diene	0.01	Sesquiterpene
α-Humulene	0.72	Sesquiterpene
allo-Aromadendrene	0.07	Sesquiterpene
(*E*)-β-Farnesene	0.14	Sesquiterpene
cis-Muurola-4(15),5-diene	0.44	Sesquiterpene
Germacrene D	2.56	Sesquiterpene
allo-Aromadendr-9-ene	0.02	Sesquiterpene
trans-β-Bergamotene	0.37	Sesquiterpene
β-Selinene	0.10	Sesquiterpene
Bicyclogermacrene	0.94	Sesquiterpene
Viridiflorene	0.02	Sesquiterpene
α-Muurolene	0.17	Sesquiterpene
Germacrene A	0.71	Sesquiterpene
(*Z*)-α-Bisabolene	0.04	Sesquiterpene
δ-Guaiene	1.02	Sesquiterpene
γ-Cadinene	2.43	Sesquiterpene
β-Bisabolene	0.09	Sesquiterpene
trans-Calamenene	0.24	Sesquiterpene
δ-Cadinene	0.13	Sesquiterpene
β-Sesquiphellandrene	0.17	Sesquiterpene
trans-Cadina-1,4-diene	0.01	Sesquiterpene
α-Cadinene	0.06	Sesquiterpene
Maaliol	0.12	Sesquiterpenic alcohol
(*E*)-Nerolidol	0.13	Sesquiterpenic alcohol
Spathulenol	0.23	Sesquiterpenic alcohol
Caryophyllene oxide	0.01	Sesquiterpenic ether
Globulol	0.03	Sesquiterpenic alcohol
Viridiflorol	0.02	Sesquiterpenic alcohol
Humulene epoxide II	0.03	Sesquiterpenic ether
1,10-diepi-Cubenol	0.43	Sesquiterpenic alcohol
10-epi-γ-Eudesmol	0.03	Sesquiterpenic alcohol
τ-Cadinol	2.32	Sesquiterpenic alcohol
β-Eudesmol	0.09	Sesquiterpenic alcohol
α-Eudesmol	0.05	Sesquiterpenic alcohol
α-Cadinol	0.09	Sesquiterpenic alcohol
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	0.03	Sesquiterpenic alcohol
Eudesma-4(15),7-dien-1β-ol	0.04	Sesquiterpenic alcohol
α-Bisabolol	0.04	Sesquiterpenic alcohol
Unknown	0.01	Lignan
Phytone	0.03	Terpenic ketone
Unknown	0.04	Lignan
Dehydrodieugenol	0.04	Lignan
Consolidated total	**98.51**	

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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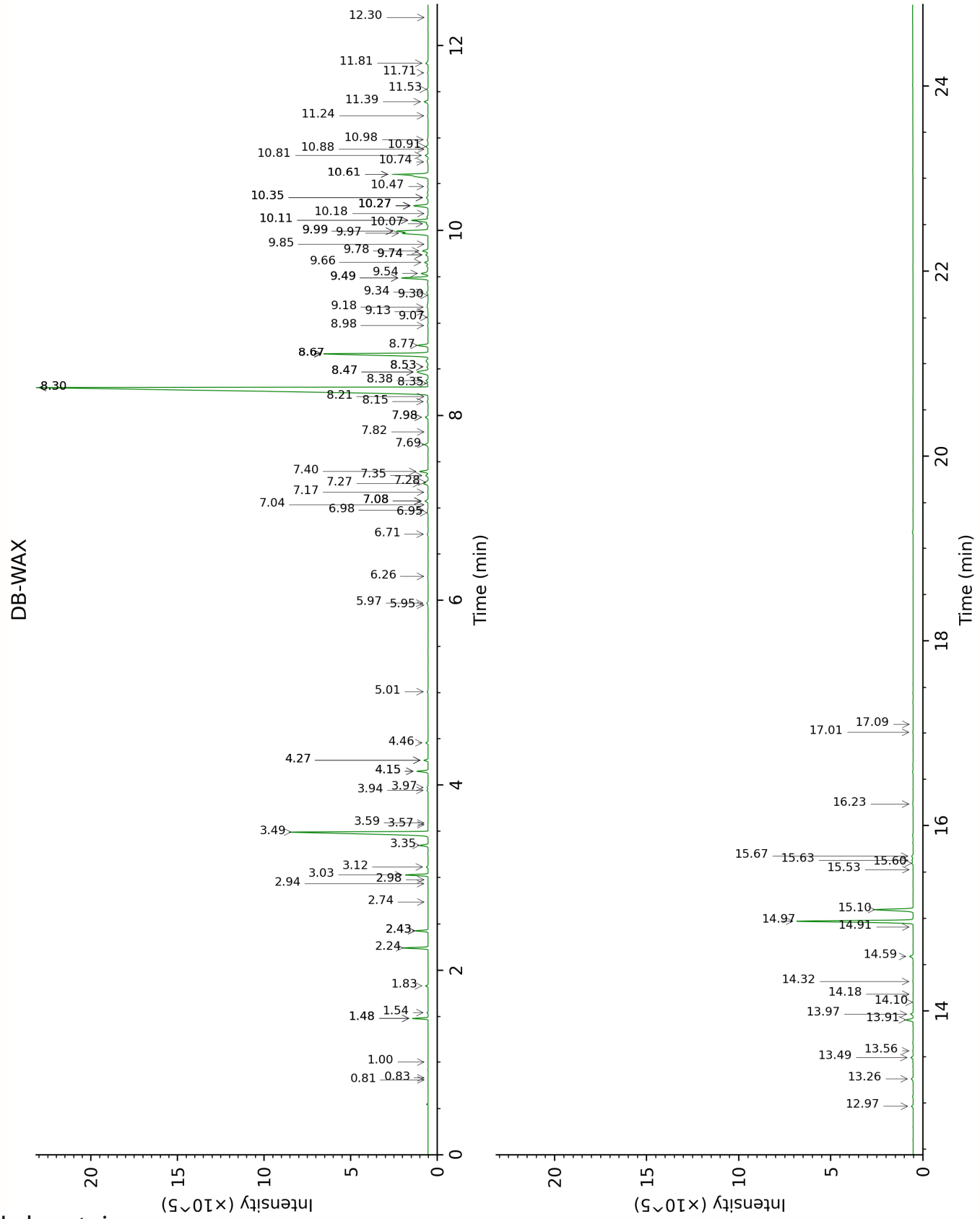
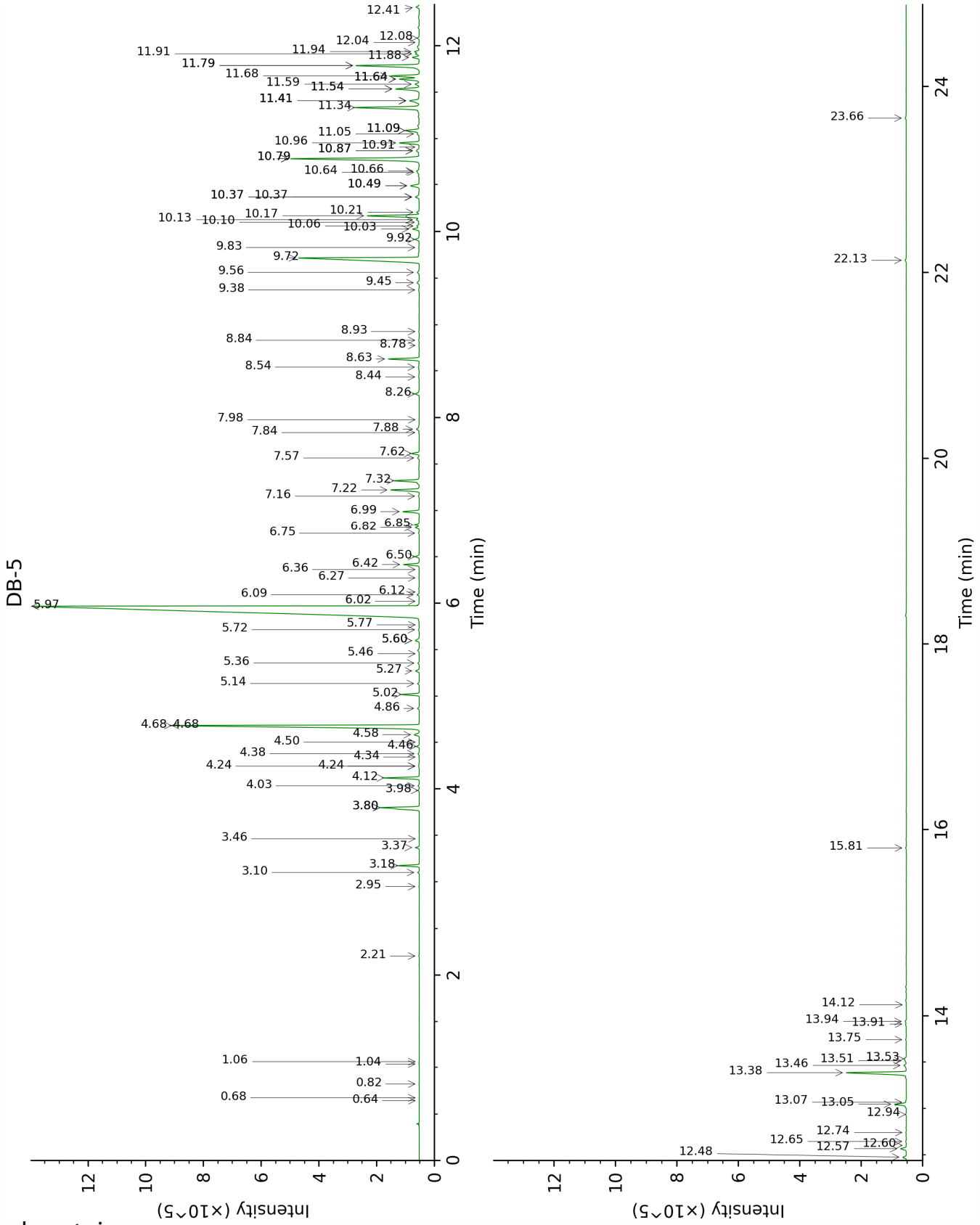

DB-WAX
Time (min)
Intensity (×10^5)
12.30
11.81
11.71
11.53
11.39
11.24
10.98
10.91
10.88
10.81
10.74
10.61
10.47
10.35
10.27
10.18
10.11
10.07
9.99
9.97
9.85
9.78
9.74
9.66
9.54
9.49
9.34
9.30
9.18
9.13
9.07
8.98
8.77
8.67
8.53
8.47
8.38
8.35
8.30
8.21
8.15
7.98
7.82
7.69
7.40
7.35
7.27
7.28
7.17
7.08
7.04
6.98
6.95
6.71
6.26
5.97
5.95
5.01
4.46
4.27
4.15
3.94
3.97
3.59
3.57
3.49
3.35
3.12
3.03
2.98
2.94
2.74
2.43
2.24
1.83
1.54
1.48
1.00
0.83
0.81
17.09
17.01
16.23
15.67
15.63
15.60
15.53
15.10
14.97
14.91
14.59
14.32
14.18
14.10
13.97
13.91
13.56
13.49
13.26
12.97


DB-5
Time (min)
Intensity (×10^5)
12.41
12.08
12.04
11.94
11.91
11.88
11.79
11.68
11.64
11.59
11.54
11.41
11.34
11.09
11.05
10.96
10.91
10.87
10.79
10.66
10.64
10.49
10.37
10.37
10.21
10.17
10.13
10.10
10.06
10.03
9.92
9.83
9.72
9.56
9.45
9.38
8.93
8.84
8.78
8.63
8.54
8.44
8.26
7.98
7.88
7.84
7.62
7.57
7.32
7.22
7.16
6.99
6.85
6.82
6.75
6.50
6.42
6.36
6.27
6.12
6.09
6.02
5.97
5.77
5.72
5.60
5.46
5.36
5.27
5.14
5.02
4.86
4.68
4.68
4.58
4.50
4.46
4.38
4.34
4.24
4.24
4.12
4.03
3.98
3.80
3.46
3.37
3.18
3.10
2.95
2.21
1.06
1.04
0.82
0.68
0.64
23.66
22.13
15.81
14.12
13.94
13.91
13.75
13.53
13.51
13.46
13.38
13.07
13.05
12.94
12.74
12.65
12.60
12.57
12.48

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Isovaleral	0.83	885.4	tr	0.64	641.6	tr
2-Methylbutyral	0.81	878.2	tr	0.68	651.9	tr
2-Ethylfuran	1.00	919.5	tr	0.82	701.8	tr
Isoamyl alcohol	3.59	1175.1	0.01	1.04	733.3	0.01
2-Methylbutanol	3.57	1173.7	0.01	1.06	736.8	tr
(3*Z*)-Hexenol	5.95	1345.9	0.02	2.21	858.0	0.01
Hashishene	1.48*	991.7	[0.59]	2.95	916.3	0.01
α-Thujene	1.54	1000.6	0.04	3.10	926.3	0.04
α-Pinene	1.48*	991.7	[0.59]	3.18	931.2	0.58
Camphene	1.83	1027.8	0.10	3.37	943.9	0.12
Thuja-2,4(10)-diene	2.43*	1083.9	[0.56]	3.46	950.1	tr
Sabinene	2.43*	1083.9	[0.56]	3.80*	972.1	[1.69]
β-Pinene	2.24	1066.5	1.12	3.80*	972.1	[1.69]
Octen-3-ol	6.95	1418.4	0.04	3.98	984.3	0.04
Octan-3-one	4.15*	1216.2	[0.57]	4.03	987.6	0.05
Myrcene	3.03	1132.6	1.05	4.12	993.1	1.06
α-Phellandrene	2.94	1125.4	0.01	4.24*†	1001.4	[0.02]
Pseudolimonene	2.98	1128.7	0.01	4.24*†	1001.4	[0.02]
Δ3-Carene	2.74	1110.4	0.01	4.34	1007.7	0.01
(3*Z*)-Hexenyl acetate	5.01	1277.8	0.05	4.38	1009.9	0.04
α-Terpinene	3.12	1139.1	0.08	4.46	1014.8	0.08
meta-Cymene	4.27*	1224.6	[0.21]	4.50	1017.7	0.01
para-Cymene	4.27*	1224.6	[0.21]	4.58	1022.7	0.21
Limonene	3.35	1156.8	0.45	4.68*	1028.8	[10.93]
1,8-Cineole	3.49	1167.7	10.41	4.68*	1028.8	[10.93]
(*Z*)-β-Ocimene	3.97	1203.8	0.05	4.86	1040.3	0.05
(*E*)-β-Ocimene	4.15*	1216.2	[0.57]	5.02	1050.2	0.55
γ-Terpinene	3.94	1201.6	0.05	5.14	1057.5	0.05
cis-Sabinene hydrate	7.08*	1427.7	[0.21]	5.27	1066.0	0.14
cis-Linalool oxide (fur.)	6.71	1400.7	0.05	5.36	1071.2	0.05
Octanol	8.35	1522.5	0.06	5.46	1077.5	0.01
Terpinolene	4.46	1238.0	0.11	5.60*	1086.3	[0.17]
trans-Linalool oxide (fur.)	7.08*	1427.7	[0.21]	5.60*	1086.3	[0.17]
6,7-Epoxymyrcene	6.26	1368.1	0.03	5.72	1093.6	0.03
trans-Sabinene hydrate	8.15	1507.3	0.06	5.77	1096.9	0.01
Linalool	8.30*	1519.0	[46.52]	5.97	1109.4	46.77
Phenylethyl alcohol	12.30	1846.7	0.01	6.02	1112.8	0.01
Octen-3-yl acetate	5.97	1347.5	0.07	6.09	1117.4	0.07

cis-para-Menth-2-en-1-ol	8.30*	1519.0	[46.52]	6.12	1119.2	0.01
Limona ketone	7.98*	1494.5	[0.17]	6.27	1128.8	0.01
(*Z*)-Myroxide	7.04	1424.7	0.02	6.36	1134.6	0.01
Camphor	7.40	1451.3	0.51	6.42	1138.0	0.52
(*E*)-Myroxide	7.28	1442.9	0.10	6.50	1143.4	0.14
Isomenthone	7.17	1434.7	0.03	6.75	1159.4	0.03
Borneol	9.97*†	1649.9	[1.58]	6.82	1163.4	0.13
δ-Terpineol	9.66	1624.6	0.20	6.85	1165.5	0.19
Terpinen-4-ol	8.77	1554.7	0.61	6.99	1174.7	0.57
para-Cymen-8-ol	11.71	1794.2	0.03	7.16	1185.3	0.03
α-Terpineol	9.99*†	1651.7	[2.16]	7.22	1189.5	1.01
Methylchavicol	9.49*	1611.1	[1.57]	7.32	1195.8	0.87
(3*E*,5*E*)-2,6-Dimethylocta-3,5,7-trien-2-ol	11.53	1779.2	0.08	7.57	1211.7	0.06
Octyl acetate	7.27	1441.6	0.31	7.62	1215.0	0.27
Nerol	11.24	1755.1	0.04	7.84	1229.9	0.02
Citronellol	10.91	1727.1	0.13	7.88	1232.3	0.14
Carvone	10.18	1667.0	0.02	7.98	1239.2	0.01
Geraniol	11.81	1803.2	0.15	8.26	1257.7	0.17
Geranial	10.27*	1673.8	[0.95]	8.44	1269.9	0.04
Citronellyl formate	9.07	1577.9	0.03	8.54	1276.9	0.03
Bornyl acetate	8.47*	1532.0	[1.12]	8.63	1282.7	1.05
Lavandulyl acetate	8.98	1571.1	0.04	8.78	1292.9	0.02
trans-Pinocarvyl acetate	9.30	1596.1	0.02	8.84	1296.6	0.03
Geranyl formate	10.11*	1661.1	[1.07]	8.93	1302.9	0.02
δ-Elemene isomer	7.08*	1427.7	[0.21]	9.38	1334.1	0.03
ex*o*-2-Hydroxycineole acetate	10.27*	1673.8	[0.95]	9.45	1339.5	0.10
α-Cubebene	6.98	1420.5	0.05	9.56	1347.3	0.09
Eugenol	14.97	2094.1	6.96	9.72	1358.2	6.94
Neryl acetate	10.35*	1680.8	[0.12]	9.83	1366.1	0.04
α-Copaene	7.35	1448.0	0.15	9.92	1372.2	0.16
β-Bourbonene	7.69	1472.7	0.24	10.03	1380.0	0.25
cis-β-Elemene	8.47*	1532.0	[1.12]	10.06	1382.2	0.10
Geranyl acetate	10.74	1713.1	0.03	10.10	1385.0	0.03
β-Cubebene	7.98*	1494.5	[0.17]	10.13	1387.0	0.10
β-Elemene	8.67*	1547.1	[7.42]	10.17	1390.0	1.88
Unknown OCSA I [m/z 161, 105 (83), 119 (69), 81 (34), 91 (29), 93 (28)...204]				10.21	1392.6	0.09

Methyleugenol	13.49	1954.1	0.13	10.37*	1404.1	[0.17]
α-Gurjunene	7.82	1482.8	0.02	10.37*	1404.1	[0.17]
α-Cedrene	8.20	1511.5	0.02	10.37*	1404.1	[0.17]
cis-α-Bergamotene	8.38	1524.8	0.12	10.49*	1413.0	[0.37]
β-Caryophyllene	8.67*	1547.1	[7.42]	10.49*	1413.0	[0.37]
β-Copaene	8.53*	1536.3	[0.07]	10.64	1424.3	0.05
β-Gurjunene	8.53*	1536.3	[0.07]	10.66	1425.3	0.10
trans-α-Bergamotene	8.67*	1547.1	[7.42]	10.79*	1435.2	[5.42]
α-Guaiene	8.67*	1547.1	[7.42]	10.79*	1435.2	[5.42]
cis-β-Bergamotene?				10.87*	1441.5	[0.15]
cis-Muurola-3,5-diene	9.13	1582.4	0.03	10.87*	1441.5	[0.15]
Cadina-4,11-diene	9.34	1598.7	0.10	10.91	1444.4	0.01
α-Humulene	9.49*	1611.1	[1.57]	10.96	1447.8	0.72
allo-Aromadendrene	9.18	1586.3	0.07	11.05	1455.0	0.07
(*E*)-β-Farnesene	9.74*	1631.1	[0.16]	11.09*	1457.6	[0.59]
cis-Muurola-4(15),5-diene	9.54	1615.0	0.44	11.09*	1457.6	[0.59]
Germacrene D	9.99*†	1651.7	[2.16]	11.34	1476.0	2.56
allo-Aromadendr-9-ene	9.74*	1631.1	[0.16]	11.41*	1481.4	[0.46]
trans-β-Bergamotene	9.78	1634.6	0.37	11.41*	1481.4	[0.46]
β-Selinene	10.07	1658.2	0.10	11.41*	1481.4	[0.46]
Bicyclogermacrene	10.27*	1673.8	[0.95]	11.54*	1490.8	[0.96]
Viridiflorene	9.85	1640.3	0.02	11.54*	1490.8	[0.96]
α-Muurolene	10.27*	1673.8	[0.95]	11.59	1494.6	0.17
Germacrene A	10.61*	1701.5	[3.24]	11.64*	1498.7	[0.75]
(*Z*)-α-Bisabolene	10.47	1690.4	0.04	11.64*	1498.7	[0.75]
δ-Guaiene	10.11*	1661.1	[1.07]	11.68	1501.3	1.02
γ-Cadinene	10.61*	1701.5	[3.24]	11.79*	1509.8	[2.51]
β-Bisabolene	10.35*	1680.8	[0.12]	11.79*	1509.8	[2.51]
trans-Calamenene	11.39	1767.9	0.25	11.88	1516.6	0.24
δ-Cadinene	10.61*	1701.5	[3.24]	11.91	1519.7	0.13
β-Sesquiphellandrene	10.82	1719.1	0.17	11.94	1521.5	0.17
trans-Cadina-1,4-diene	10.88	1724.6	0.01	12.04	1529.2	0.01
α-Cadinene	10.98	1733.4	0.06	12.08	1532.9	0.06
Maaliol	13.26	1932.9	0.13	12.42	1558.9	0.12
(*E*)-Nerolidol	13.97	1998.1	0.15	12.48	1563.8	0.13
Spathulenol	14.59	2057.7	0.22	12.57	1571.0	0.23
Caryophyllene	12.97	1905.7	0.09	12.60	1573.8	0.01

oxide						
Globulol	14.10	2010.3	0.02	12.65	1577.0	0.03
Viridiflorol	14.18	2018.6	0.02	12.74	1584.6	0.02
Humulene epoxide II	13.56	1960.7	0.03	12.94	1599.8	0.03
1,10-diepi-Cubenol	13.91	1992.2	0.43	13.05	1608.7	0.43
10-epi-γ-Eudesmol	14.32	2031.7	0.04	13.07	1610.4	0.03
τ-Cadinol	15.10	2106.6	2.31	13.38	1636.6	2.32
β-Eudesmol	15.63	2159.7	0.07	13.46	1643.0	0.09
α-Eudesmol	15.53	2149.6	0.02	13.51	1647.2	0.05
α-Cadinol	15.67	2164.2	0.11	13.53	1648.9	0.09
(3*Z*)-Caryophylla-3,8(13)-dien-5β-ol	17.01	2302.0	0.03	13.75	1666.5	0.03
Eudesma-4(15),7-dien-1β-ol	16.23	2221.3	0.05	13.92	1680.3	0.04
α-Bisabolol	15.60	2156.5	0.08	13.94	1682.6	0.04
Unknown OCSA IV [m/z 133, 93 (97), 131 (85), 145 (83), 107 (69)...220]	17.09	2311.2	0.01	14.12	1697.4	0.01
Phytone	14.91	2088.0	0.01	15.81	1844.8	0.03
Unknown OCSA V [m/z 326, 148 (67), 147 (41), 117 (30), 91 (22)...]				22.13	2500.3	0.04
Dehydrodieugenol				23.66	2687.9	0.04
Total reported		97.78%			98.59%	

*: 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