Date : 2023-10-03

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 23I26-PTH01
Customer Identification : Allspice - Jamaica - A10108R
Type : Essential Oil
Source : *Pimenta dioica*
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 : 2023-10-03

Physicochemical data

Refractive index : 1.5323 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2023-09-26

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
α-Thujene	0.02	Monoterpene
α-Pinene	0.21	Monoterpene
Sabinene	0.11	Monoterpene
β-Pinene	0.17	Monoterpene
Octen-3-ol	0.06	Aliphatic alcohol
Octan-3-one	0.07	Aliphatic ketone
Myrcene	1.74	Monoterpene
α-Phellandrene	0.86	Monoterpene
Δ3-Carene	0.18	Monoterpene
α-Terpinene	0.02	Monoterpene
para-Cymene	0.32	Monoterpene
Limonene	0.77	Monoterpene
1,8-Cineole	1.44	Monoterpenic ether
(*Z*)-β-Ocimene	0.01	Monoterpene
(*E*)-β-Ocimene	0.04	Monoterpene
γ-Terpinene	0.03	Monoterpene
Terpinolene	0.26	Monoterpene
para-Cymenene	0.01	Monoterpene
Linalool	0.38	Monoterpenic alcohol
Terpinen-4-ol	0.34	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	0.04	Monoterpenic alcohol
Methylchavicol	0.03	Phenylpropanoid
Chavicol	0.87	Phenylpropanoid
Chavicyl acetate	0.03	Phenylpropanoid ester
Eugenol	75.04	Phenylpropanoid
α-Copaene	0.38	Sesquiterpene
β-Elemene	0.39	Sesquiterpene
α-Gurjunene	0.02	Sesquiterpene
Methyleugenol	6.72	Phenylpropanoid
β-Caryophyllene	6.29	Sesquiterpene
β-Copaene	0.03	Sesquiterpene
α-Humulene	1.27	Sesquiterpene
allo-Aromadendrene	0.03	Sesquiterpene
Selina-4,11-diene	0.02	Sesquiterpene
γ-Muurolene	0.04	Sesquiterpene
α-Amorphene	0.02	Sesquiterpene
β-Selinene	0.01	Sesquiterpene
α-Selinene	0.02	Sesquiterpene
Viridiflorene	0.01	Sesquiterpene

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α-Muurolene	0.05	Sesquiterpene
γ-Cadinene	0.10	Sesquiterpene
trans-Calamenene	0.04	Sesquiterpene
δ-Cadinene	0.76	Sesquiterpene
trans-Cadina-1,4-diene	0.01	Sesquiterpene
α-Calacorene	0.02	Sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Caryophyllene oxide isomer	0.01	Sesquiterpenic ether
Caryophyllene oxide	0.08	Sesquiterpenic ether
Methoxyeugenol	0.02	Phenylpropanoid
meta-Camphorene	0.11	Diterpene
para-Camphorene	0.04	Diterpene
Consolidated total	**99.58**	

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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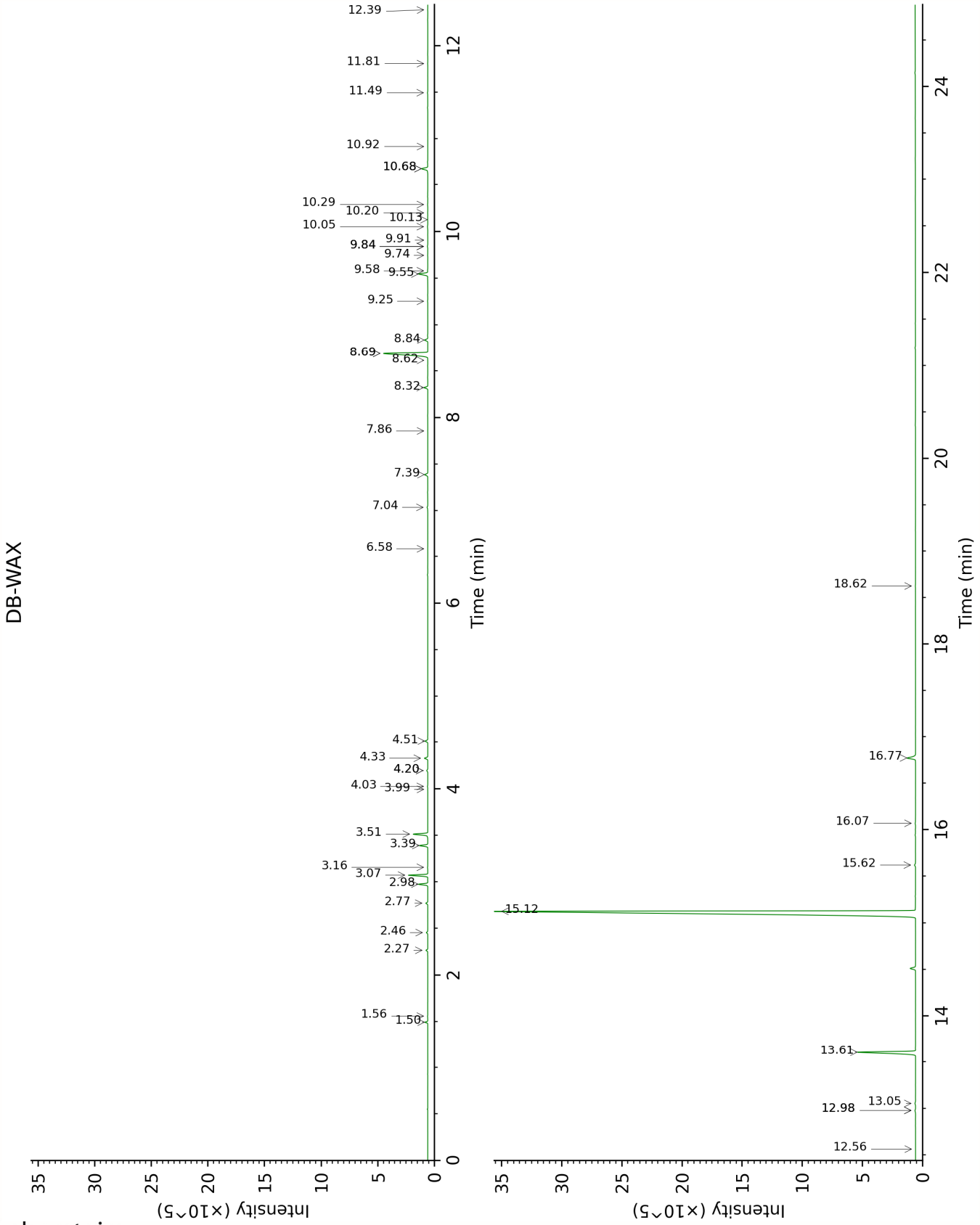
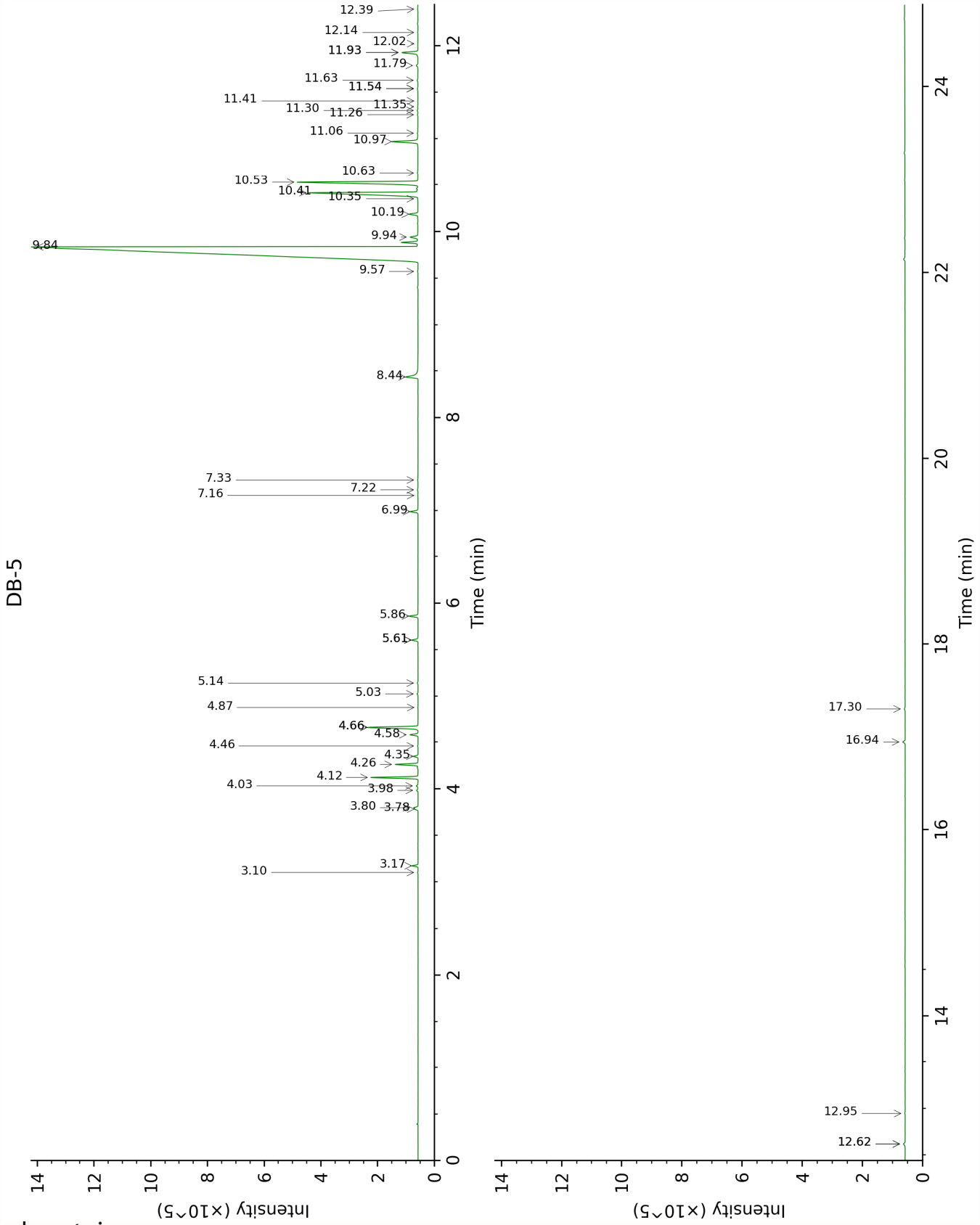

DB-WAX
12.39
11.81
11.49
10.92
10.68
10.29
10.20
10.13
10.05
9.91
9.84
9.74
9.58
9.55
9.25
8.84
8.69
8.62
8.32
7.86
7.39
7.04
6.58
4.51
4.33
4.20
4.03
3.99
3.51
3.39
3.16
3.07
2.98
2.77
2.46
2.27
1.56
1.50
Time (min)
Intensity (×10^5)
18.62
16.77
16.07
15.62
15.12
13.61
13.05
12.98
12.56
Time (min)
Intensity (×10^5)


DB-5
12.39
12.14
12.02
11.93
11.79
11.63
11.54
11.41
11.30
11.35
11.26
11.06
10.97
10.63
10.53
10.41
10.35
10.19
9.94
9.84
9.57
8.44
7.33
7.22
7.16
6.99
5.86
5.61
5.14
5.03
4.87
4.66
4.58
4.46
4.35
4.26
4.12
4.03
3.98
3.80
3.78
3.17
3.10
Time (min)
Intensity (×10^5)
17.30
16.94
12.95
12.62
Time (min)
Intensity (×10^5)

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
α-Thujene	1.56	996.9	0.02	3.10	926.3	0.02
α-Pinene	1.50	988.5	0.21	3.17	931.0	0.21
Sabinene	2.46	1081.5	0.12	3.78	970.9	0.11
β-Pinene	2.27	1063.4	0.16	3.80	971.9	0.17
Octen-3-ol	7.04	1418.9	0.09	3.98	984.2	0.06
Octan-3-one	4.20*	1216.3	[0.11]	4.03	987.3	0.07
Myrcene	3.07	1131.1	1.73	4.12	993.2	1.74
α-Phellandrene	2.98	1123.7	0.84	4.26	1002.4	0.86
Δ3-Carene	2.77	1108.0	0.17	4.35	1007.9	0.18
α-Terpinene	3.16	1137.5	0.02	4.46	1014.9	0.02
para-Cymene	4.33	1226.0	0.33	4.58	1022.4	0.32
Limonene	3.39	1155.6	0.77	4.66*	1027.3	[2.26]
1,8-Cineole	3.51	1165.0	1.44	4.66*	1027.3	[2.26]
(*Z*)-β-Ocimene	3.99	1201.7	0.01	4.87	1040.6	0.01
(*E*)-β-Ocimene	4.20*	1216.3	[0.11]	5.03	1050.2	0.04
γ-Terpinene	4.03	1204.0	0.03	5.14	1057.5	0.03
Terpinolene	4.51	1239.4	0.26	5.60*	1086.2	[0.28]
para-Cymenene	6.58	1385.8	0.01	5.60*	1086.2	[0.28]
Linalool	8.32	1514.6	0.38	5.86	1102.3	0.38
Terpinen-4-ol	8.84	1554.4	0.34	6.99	1174.1	0.34
para-Cymen-8-ol	11.81	1795.8	0.01	7.16	1185.0	0.01
α-Terpineol	10.05	1650.0	0.05	7.22	1188.9	0.04
Methylchavicol	9.58	1612.1	0.03	7.33	1195.7	0.03
Chavicol	16.77	2264.9	1.09	8.44	1269.0	0.87
Chavicyl acetate	12.98*	1898.7	[0.08]	9.57	1347.0	0.03
Eugenol	15.12†	2099.4	74.14	9.84†	1365.5	74.43
α-Copaene	7.39	1444.8	0.35	9.94	1372.9	0.38
β-Elemene	8.69*	1542.8	[6.60]	10.19	1390.1	0.39
α-Gurjunene	7.86	1479.4	0.01	10.35	1401.7	0.02
Methyleugenol	13.60	1955.9	6.66	10.42	1406.4	6.72
β-Caryophyllene	8.69*	1542.8	[6.60]	10.53	1414.8	6.29
β-Copaene	8.62	1537.1	0.01	10.63	1422.6	0.03
α-Humulene	9.55	1609.4	1.09	10.97	1447.7	1.27
allo-Aromadendrene	9.25	1586.2	0.03	11.06	1454.3	0.03
Selina-4,11-diene	9.74	1625.4	0.02	11.26	1469.1	0.02
γ-Muurolene	9.84*	1633.0	[0.04]	11.30	1472.5	0.04
α-Amorphene	9.84*	1633.0	[0.04]	11.34	1475.4	0.02
β-Selinene	10.13	1656.1	0.01	11.41	1480.0	0.01
α-Selinene	10.20	1661.9	0.02	11.54*	1489.9	[0.04]
Viridiflorene	9.91	1638.5	0.01	11.54*	1489.9	[0.04]
α-Muurolene	10.29	1669.0	0.03	11.63	1496.5	0.05

γ-Cadinene	10.68*	1701.0	[0.73]	11.79	1508.6	0.10
trans-Calamenene	11.50	1769.3	0.04	11.93*	1519.5	[0.80]
δ-Cadinene	10.68*	1701.0	[0.73]	11.93*	1519.5	[0.80]
trans-Cadina-1,4-diene	10.92	1720.9	0.01	12.02	1526.9	0.01
α-Calacorene	12.39	1846.5	0.01	12.14	1536.3	0.02
Unknown CULO XVI [m/z 138, 96 (100), 95 (85), 109 (74), 110 (60), 105 (57)... 220 (10)]	12.56	1861.9	0.01	12.40	1556.1	0.03
Caryophyllene oxide isomer	12.98*	1898.7	[0.08]	12.62*	1573.6	[0.09]
Caryophyllene oxide	13.05	1905.6	0.08	12.62*	1573.6	[0.09]
Methoxyeugenol	18.62	2464.1	0.03	12.95	1599.3	0.02
meta-Camphorene	15.62	2148.5	0.13	16.94	1948.6	0.11
para-Camphorene	16.07	2193.1	0.05	17.30	1982.3	0.04
Total reported		99.03%			99.64%	

*: 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