Date : 2024-12-20

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 24L09-PTH04
Customer Identification : Allspice - Jamaica - A10109R
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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 : Sylvain Mercier, M. Sc., Chimiste 2014-005
Date : 2024-12-17

Physicochemical data

Refractive index : 1.5327 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2024-12-10

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
Toluene	tr	Simple phenolic
α-Thujene	0.01	Monoterpene
α-Pinene	0.22	Monoterpene
β-Pinene	0.14	Monoterpene
Sabinene	0.11	Monoterpene
Octen-3-ol	0.06	Aliphatic alcohol
Octan-3-one	0.07	Aliphatic ketone
Myrcene	1.45	Monoterpene
Pseudolimonene	0.01	Monoterpene
α-Phellandrene	0.84	Monoterpene
Δ3-Carene	0.15	Monoterpene
α-Terpinene	0.02	Monoterpene
para-Cymene	0.31	Monoterpene
β-Phellandrene	[1.50]	Monoterpene
1,8-Cineole	[1.50]	Monoterpenic ether
Limonene	0.77	Monoterpene
(*Z*)-β-Ocimene	0.01	Monoterpene
(*E*)-β-Ocimene	0.03	Monoterpene
γ-Terpinene	0.04	Monoterpene
para-Cymenene	0.01	Monoterpene
Terpinolene	0.24	Monoterpene
trans-Linalool oxide (fur.)	tr	Monoterpenic alcohol
Linalool	0.38	Monoterpenic alcohol
Terpinen-4-ol	0.31	Monoterpenic alcohol
Menthol	0.01	Monoterpenic alcohol
para-Cymen-8-ol	0.02	Monoterpenic alcohol
α-Terpineol	0.03	Monoterpenic alcohol
Methylchavicol	0.02	Phenylpropanoid
Geraniol	0.01	Monoterpenic alcohol
Chavicol	0.76	Phenylpropanoid
δ-Elemene	0.03	Sesquiterpene
α-Terpinyl acetate	0.01	Monoterpenic ester
α-Cubebene	0.03	Sesquiterpene
Eugenol	75.26	Phenylpropanoid
Dihydroeugenol	0.07	Phenylpropanoid
α-Copaene	0.32	Sesquiterpene
β-Elemene	0.37	Sesquiterpene
α-Gurjunene	0.02	Sesquiterpene
Methyleugenol	6.82	Phenylpropanoid
β-Caryophyllene	6.35	Sesquiterpene

β-Copaene	0.03	Sesquiterpene
Aromadendrene	0.01	Sesquiterpene
α-Humulene	1.08	Sesquiterpene
allo-Aromadendrene	0.02	Sesquiterpene
Selina-4,11-diene	0.03	Sesquiterpene
γ-Muurolene	0.03	Sesquiterpene
α-Amorphene	0.02	Sesquiterpene
β-Selinene	0.01	Sesquiterpene
α-Selinene	0.01	Sesquiterpene
Viridiflorene	0.02	Sesquiterpene
α-Muurolene	0.04	Sesquiterpene
(3*E*,6*E*)-α-Farnesene	0.03	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
δ-Cadinene	0.73	Sesquiterpene
trans-Calamenene	0.02	Sesquiterpene
trans-Cadina-1,4-diene	0.01	Sesquiterpene
α-Calacorene	0.01	Sesquiterpene
Unknown	0.01	Unknown
Unknown	0.05	Oxygenated sesquiterpene
Caryophyllene oxide	0.07	Sesquiterpenic ether
Caryophyllene oxide isomer	0.01	Sesquiterpenic ether
Methoxyeugenol	0.01	Phenylpropanoid
τ-Cadinol	0.01	Sesquiterpenic alcohol
(*E*)-Coniferyl alcohol	0.03	Phenylpropanoid
(*E*)-Coniferaldehyde	0.04	Phenylpropanoid
Unknown	0.02	Unknown
meta-Camphorene	0.13	Diterpene
para-Camphorene	0.05	Diterpene
Unknown	0.01	Unknown
Unknown	0.12	Lignan
Unknown	0.03	Lignan
Consolidated total	**99.56**	

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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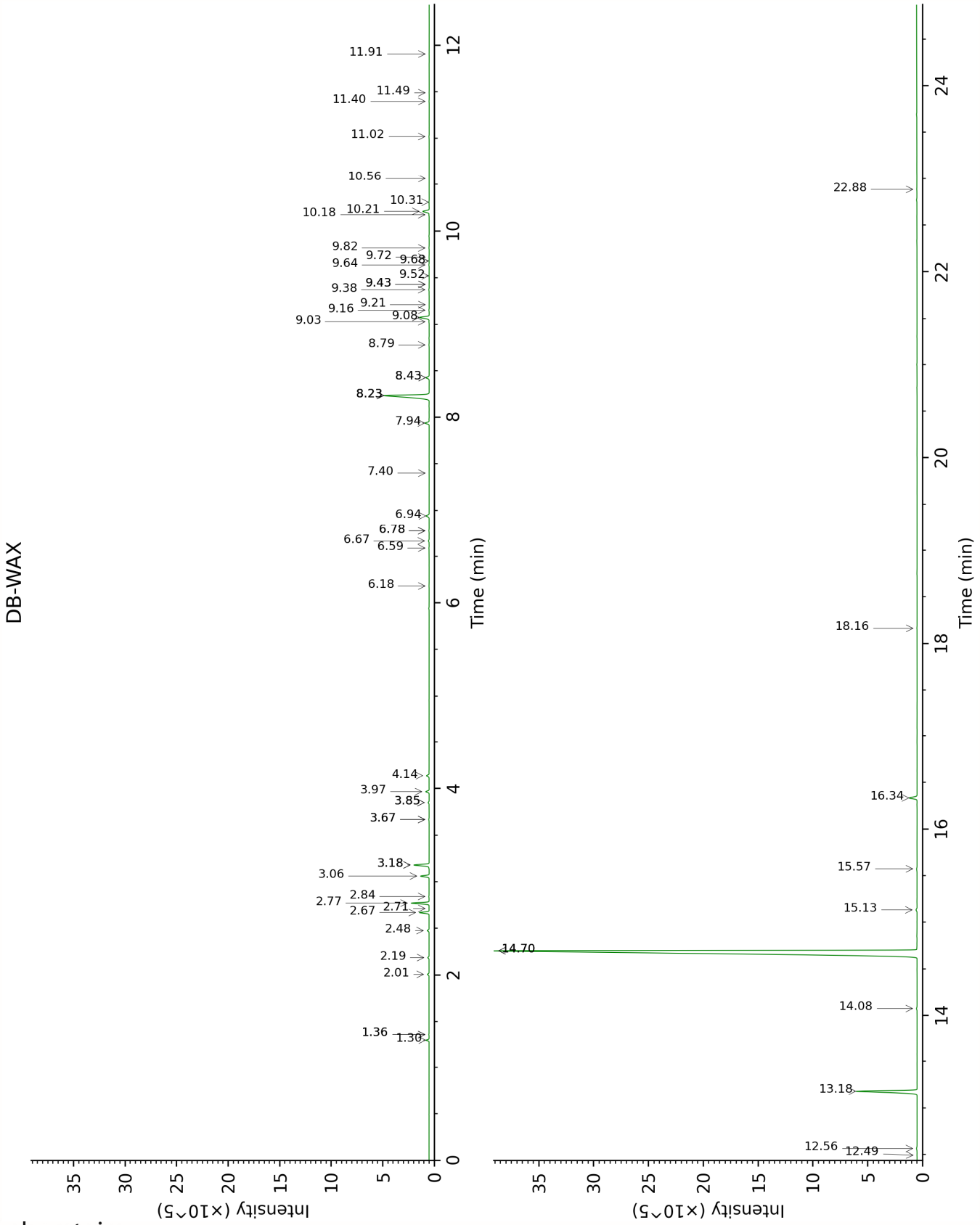
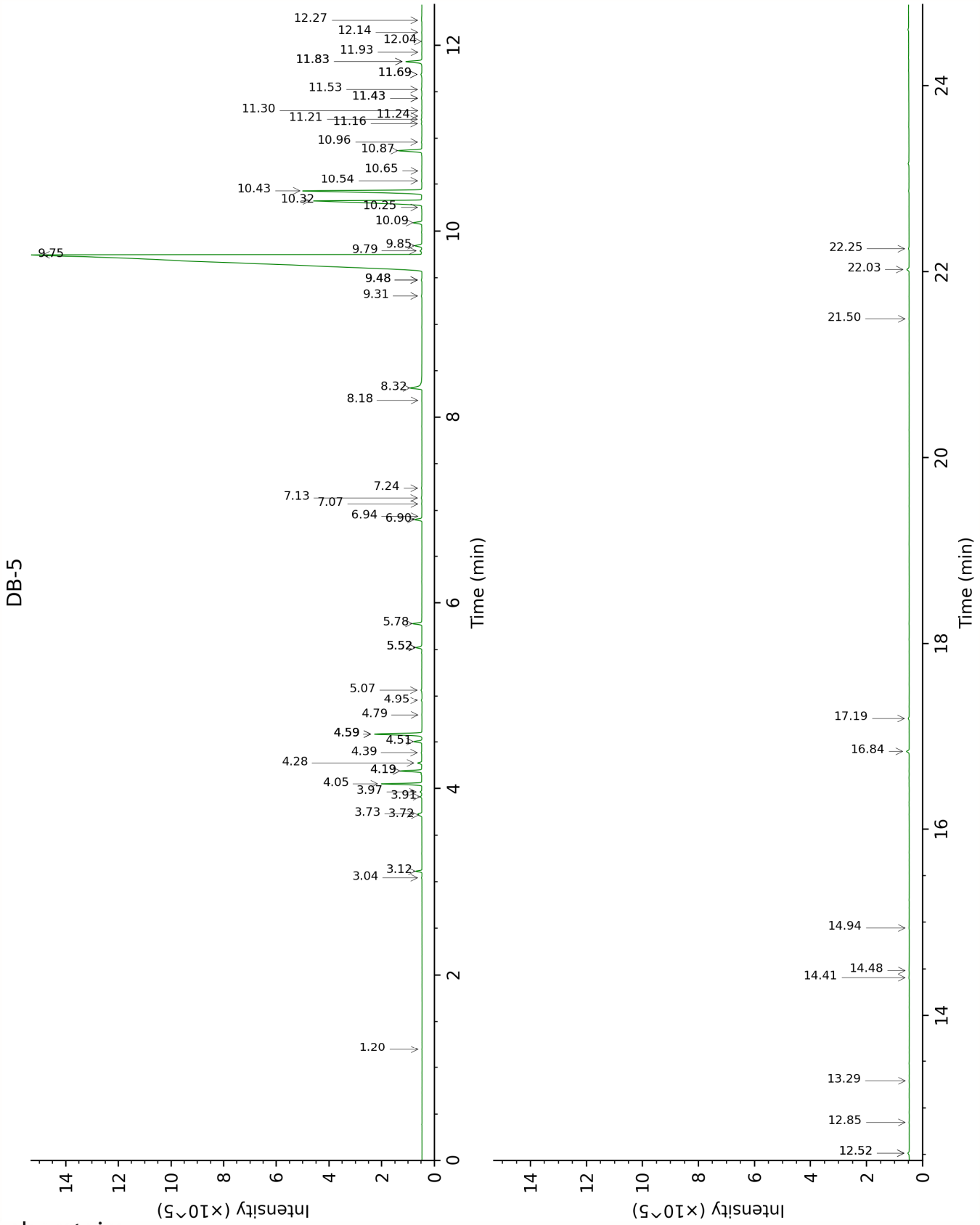

DB-WAX
Time (min)
Intensity (×10^5)
11.91
11.49
11.40
11.02
10.56
10.31
10.18
10.21
9.82
9.72
9.68
9.64
9.52
9.38
9.43
9.21
9.16
9.08
9.03
8.79
8.43
8.23
7.94
7.40
6.94
6.78
6.67
6.59
6.18
4.14
3.97
3.85
3.67
3.18
3.06
2.84
2.77
2.71
2.67
2.48
2.19
2.01
1.36
1.30
22.88
18.16
16.34
15.57
15.13
14.70
14.08
13.18
12.56
12.49


DB-5
12.27
12.14
12.04
11.93
11.83
11.69
11.53
11.43
11.30
11.24
11.21
11.16
10.96
10.87
10.65
10.54
10.43
10.32
10.25
10.09
9.85
9.79
9.75
9.48
9.31
8.32
8.18
7.24
7.13
7.07
6.94
6.90
5.78
5.52
5.07
4.95
4.79
4.59
4.51
4.39
4.28
4.19
4.05
3.97
3.91
3.73
3.72
3.12
3.04
1.20
Time (min)
Intensity (×10^5)
22.25
22.03
21.50
17.19
16.84
14.94
14.48
14.41
13.29
12.85
12.52
Time (min)
Intensity (×10^5)

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Toluene	1.36*	998.8	[0.01]	1.20	759.5	tr
α-Thujene	1.36*	998.8	[0.01]	3.04	926.1	0.01
α-Pinene	1.30	990.3	0.22	3.12	930.9	0.22
β-Pinene	2.01	1065.2	0.14	3.72*†	970.8	[0.09]
Sabinene	2.19	1083.7	0.11	3.73*†	971.7	[0.15]
Octen-3-ol	6.67	1423.6	0.07	3.91	983.9	0.06
Octan-3-one	3.85*	1218.3	[0.09]	3.97	987.4	0.07
Myrcene	2.77	1133.6	1.53	4.05	993.2	1.45
Pseudolimonene	2.71	1128.9	0.01	4.19*	1002.3	[0.80]
α-Phellandrene	2.67	1125.4	0.84	4.19*	1002.3	[0.80]
Δ3-Carene	2.48	1110.0	0.17	4.28	1007.7	0.15
α-Terpinene	2.84	1139.2	0.03	4.39	1014.7	0.02
para-Cymene	3.97	1227.0	0.32	4.51	1022.2	0.31
β-Phellandrene	3.18*	1166.3	[1.50]	4.59*	1027.2	[2.17]
1,8-Cineole	3.18*	1166.3	[1.50]	4.59*	1027.2	[2.17]
Limonene	3.06	1156.8	0.77	4.59*	1027.2	[2.17]
(*Z*)-β-Ocimene	3.67*	1204.9	[0.04]	4.79	1040.1	0.01
(*E*)-β-Ocimene	3.85*	1218.3	[0.09]	4.95	1050.1	0.03
γ-Terpinene	3.67*	1204.9	[0.04]	5.06	1057.3	0.04
para-Cymenene	6.18	1387.8	0.01	5.52*	1086.1	[0.25]
Terpinolene	4.14	1239.6	0.24	5.52*	1086.1	[0.25]
trans-Linalool oxide (fur.)	6.78*	1431.7	[0.03]	5.52*	1086.1	[0.25]
Linalool	7.94	1519.3	0.40	5.78	1102.2	0.38
Terpinen-4-ol	8.43*	1557.2	[0.34]	6.90	1174.1	0.31
Menthol	9.03	1604.6	0.03	6.94	1176.3	0.01
para-Cymen-8-ol	11.40	1801.6	0.02	7.07	1184.7	0.02
α-Terpineol	9.64	1653.9	0.03	7.14	1188.8	0.03
Methylchavicol	9.16	1614.6	0.03	7.24	1195.6	0.02
Geraniol	11.49	1809.8	0.01	8.18	1258.3	0.01
Chavicol	16.34	2274.1	0.83	8.32	1267.3	0.76
δ-Elemene	6.78*	1431.7	[0.03]	9.31	1335.4	0.03
α-Terpinyl acetate	9.52	1644.5	0.01	9.48*	1347.4	[0.03]
α-Cubebene	6.59	1417.8	0.03	9.48*	1347.4	[0.03]
Eugenol	14.70*	2107.3	[74.97]	9.75	1366.4	75.26
Dihydroeugenol	14.08	2047.1	0.07	9.79	1369.5	0.07
α-Copaene	6.94	1444.1	0.32	9.85	1373.4	0.32
β-Elemene	8.23*	1542.2	[6.80]	10.09	1390.7	0.37
α-Gurjunene	7.40	1478.4	0.01	10.25	1402.2	0.02
Methyleugenol	13.18	1962.3	6.84	10.32	1407.3	6.82
β-Caryophyllene	8.23*	1542.2	[6.80]	10.43	1415.4	6.35
β-Copaene	8.23*	1542.2	[6.80]	10.54	1423.3	0.03

Aromadendrene	8.43*	1557.2	[0.34]	10.65	1431.8	0.01
α-Humulene	9.08	1608.4	1.09	10.87	1448.0	1.08
allo-Aromadendrene	8.78	1585.1	0.03	10.96	1454.9	0.02
Selina-4,11-diene	9.22	1619.5	0.01	11.16	1469.7	0.03
γ-Muurolene	9.38	1632.5	0.04	11.21	1473.1	0.03
α-Amorphene	9.43*	1637.1	[0.01]	11.24	1475.7	0.02
β-Selinene	9.68	1657.4	0.01	11.30	1480.0	0.01
α-Selinene	9.72	1660.7	0.01	11.43*	1489.9	[0.03]
Viridiflorene	9.43*	1637.1	[0.01]	11.43*	1489.9	[0.03]
α-Muurolene	9.82	1668.7	0.03	11.53	1496.9	0.04
(3*E*,6*E*)-α-Farnesene	10.31	1708.9	0.03	11.69*	1509.3	[0.06]
γ-Cadinene	10.18	1697.6	0.03	11.69*	1509.3	[0.06]
δ-Cadinene	10.21	1700.7	0.73	11.83*	1520.1	[0.75]
trans-Calamenene	11.02	1769.3	0.02	11.83*	1520.1	[0.75]
trans-Cadina-1,4-diene	10.56	1730.6	0.01	11.93	1528.0	0.01
α-Calacorene	11.91	1846.7	0.01	12.04	1537.1	0.01
Unknown MISC LXXVII [m/z 180, 93 (77), 55 (67), 125 (66), 208 (62), 65 (43)...]				12.14	1544.8	0.01
Unknown CULO XVI [m/z 138, 96 (100), 95 (85), 109 (74), 110 (60), 105 (57)... 220 (10)]				12.27	1554.9	0.05
Caryophyllene oxide	12.56	1905.5	0.07	12.52*	1574.3	[0.08]
Caryophyllene oxide isomer	12.49	1898.7	0.01	12.52*	1574.3	[0.08]
Methoxyeugenol	18.16	2473.1	0.02	12.85	1600.3	0.01
τ-Cadinol	14.70*	2107.3	[74.97]	13.29	1637.0	0.01
(*E*)-Coniferyl alcohol	22.88	3056.5	0.02	14.41	1730.4	0.03
(*E*)-Coniferaldehyde				14.48	1737.1	0.04
Unknown PSGR IV [m/z 151, 194 (67), 138 (47), 91				14.94	1776.7	0.02

(35), 77 (27), 55 (21)...]						
meta-Camphorene	15.13	2151.0	0.12	16.84	1950.0	0.13
para-Camphorene	15.58	2195.2	0.06	17.19	1983.5	0.05
Unknown CIZE IV [m/z 151, 93 (44), 153 (29), 92 (21), 179 (18)... 314? (10)]				21.50	2440.0	0.01
Unknown OCSA V [m/z 326, 148 (67), 147 (41), 117 (30), 91 (22)...]				22.03	2501.6	0.12
Unknown CIZE V [m/z 326, 150 (54), 161 (42), 202 (41), 201 (28)]				22.25	2528.4	0.03
Total reported		99.25%			99.38%	

*: 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