Date : 2025-12-04

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 25K07-PTH06
Customer Identification : Org Frankincense Serrata - India - F50117R
Type : Essential Oil
Source : *Boswellia serrata*
Customer : Plant Therapy

Checked an approved by:

Sylvain Mercier, M. Sc., Chimiste 2014-005

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

This report is an update of the version first issued on November 11, 2025 to make a correction in the sample identification section.

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 : Jean-Christophe Fortin, M. Sc.
Date : 2025-11-10

Physicochemical Data

Refractive index : 1.4589 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2025-11-07

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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	0.01	Simple phenolic
Unknown	0.02	Unknown
Hashishene	0.22	Monoterpene
Tricyclene	0.01	Monoterpene
α-Thujene	67.38	Monoterpene
α-Pinene	6.46	Monoterpene
Unknown	0.42	Monoterpene
Camphene	0.09	Monoterpene
Thuja-2,4(10)-diene	0.02	Monoterpene
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.06	Monoterpene
β-Pinene	0.93	Monoterpene
Sabinene	6.06	Monoterpene
Pseudolimonene isomer	0.02	Monoterpene
Myrcene	1.38	Monoterpene
2-Carene	0.02	Monoterpene
α-Phellandrene	1.47	Monoterpene
Δ3-Carene	5.15	Monoterpene
α-Terpinene	0.64	Monoterpene
meta-Cymene	0.12	Monoterpene
Carvomenthene	0.01	Aliphatic alcohol
para-Cymene	2.81	Monoterpene
Unknown	0.15	Unknown
1,8-Cineole	0.14	Monoterpenic ether
β-Phellandrene	0.24	Monoterpene
Limonene	2.17	Monoterpene
(*Z*)-β-Ocimene	0.14	Monoterpene
Unknown	0.05	Unknown
(*E*)-β-Ocimene	0.12	Monoterpene
Unknown	0.03	Unknown
γ-Terpinene	0.63	Monoterpene
cis-Sabinene hydrate	0.08	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Isoterpinolene	0.05	Monoterpene
Terpinolene	0.12	Monoterpene
para-Cymenene	0.07	Monoterpene
cis-4-Methoxythujane	0.09	Monoterpenic ether
trans-Sabinene hydrate	0.04	Monoterpenic alcohol
Linalool	0.09	Monoterpenic alcohol
β-Thujone	0.12	Monoterpenic ketone
Unknown	0.01	Oxygenated monoterpene

Unknown	0.01	Oxygenated monoterpene
trans-4-Methoxythujane	0.06	Monoterpenic ether
cis-para-Menth-2-en-1-ol	0.04	Monoterpenic alcohol
Unknown	0.01	Unknown
allo-Ocimene	0.07	Monoterpene
trans-Pinocarveol	0.01	Monoterpenic alcohol
trans-Sabinol	0.03	Monoterpenic alcohol
trans-Verbenol	0.02	Monoterpenic alcohol
para-Menth-3-en-8-ol	0.02	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Unknown	0.01	Oxygenated monoterpene
Borneol	0.02	Monoterpenic alcohol
α-Phellandren-8-ol	0.01	Monoterpenic alcohol
cis-Sabinol	0.04	Monoterpenic alcohol
Umbellulone	0.01	Monoterpenic ketone
Terpinen-4-ol	0.45	Monoterpenic alcohol
meta-Cymen-8-ol	0.01	Monoterpenic alcohol
para-Cymen-8-ol	0.01	Monoterpenic alcohol
α-Terpineol	0.02	Monoterpenic alcohol
Methylchavicol	0.81	Phenylpropanoid
cis-α-Phellandrene epoxide (iPr vs Me)	0.01	Monoterpenic ether
Unknown	0.01	Oxygenated monoterpene
Verbenone	0.01	Monoterpenic ketone
trans-Piperitol	0.01	Monoterpenic alcohol
trans-Carveol	0.02	Monoterpenic alcohol
Unknown	0.01	Unknown
Piperitone	0.01	Monoterpenic ketone
Unknown	0.01	Oxygenated monoterpene
Bornyl acetate	0.01	Monoterpenic ester
Carvacrol	0.02	Monoterpenic alcohol
para-Menth-5-en-1,2-diol isomer III	0.01	Monoterpenic alcohol
α-Terpinyl acetate	0.01	Monoterpenic ester
α-Copaene	0.01	Sesquiterpene
β-Bourbonene	0.05	Sesquiterpene
1,5-diepi-β-Bourbonene	0.01	Sesquiterpene
β-Elemene	0.01	Sesquiterpene
Methyleugenol	0.01	Phenylpropanoid
β-Ylangene	0.02	Sesquiterpene
β-Copaene	0.01	Sesquiterpene
trans-α-Bergamotene	tr	Sesquiterpene
Isogermacrene D	0.01	Sesquiterpene
Germacrene D	0.01	Sesquiterpene
Unknown	0.01	Sesquiterpene
δ-Cadinene	0.01	Sesquiterpene
(3*E*)-Cembrene A	tr	Diterpene

meta-Camphorene	0.02	Diterpene
para-Camphorene	0.01	Diterpene
Serratol	0.01	Diterpenic alcohol
Consolidated total	**99.69**	

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.

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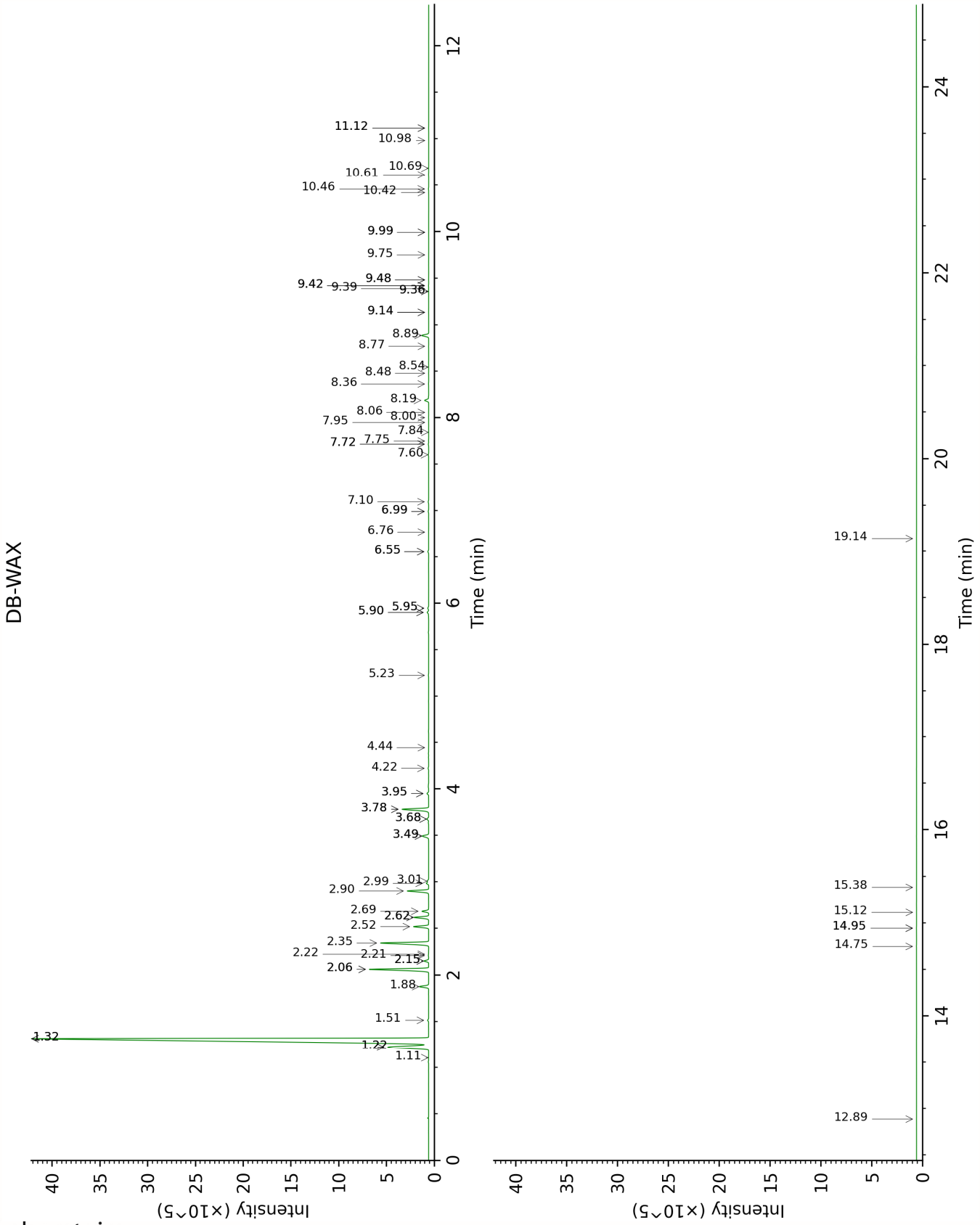
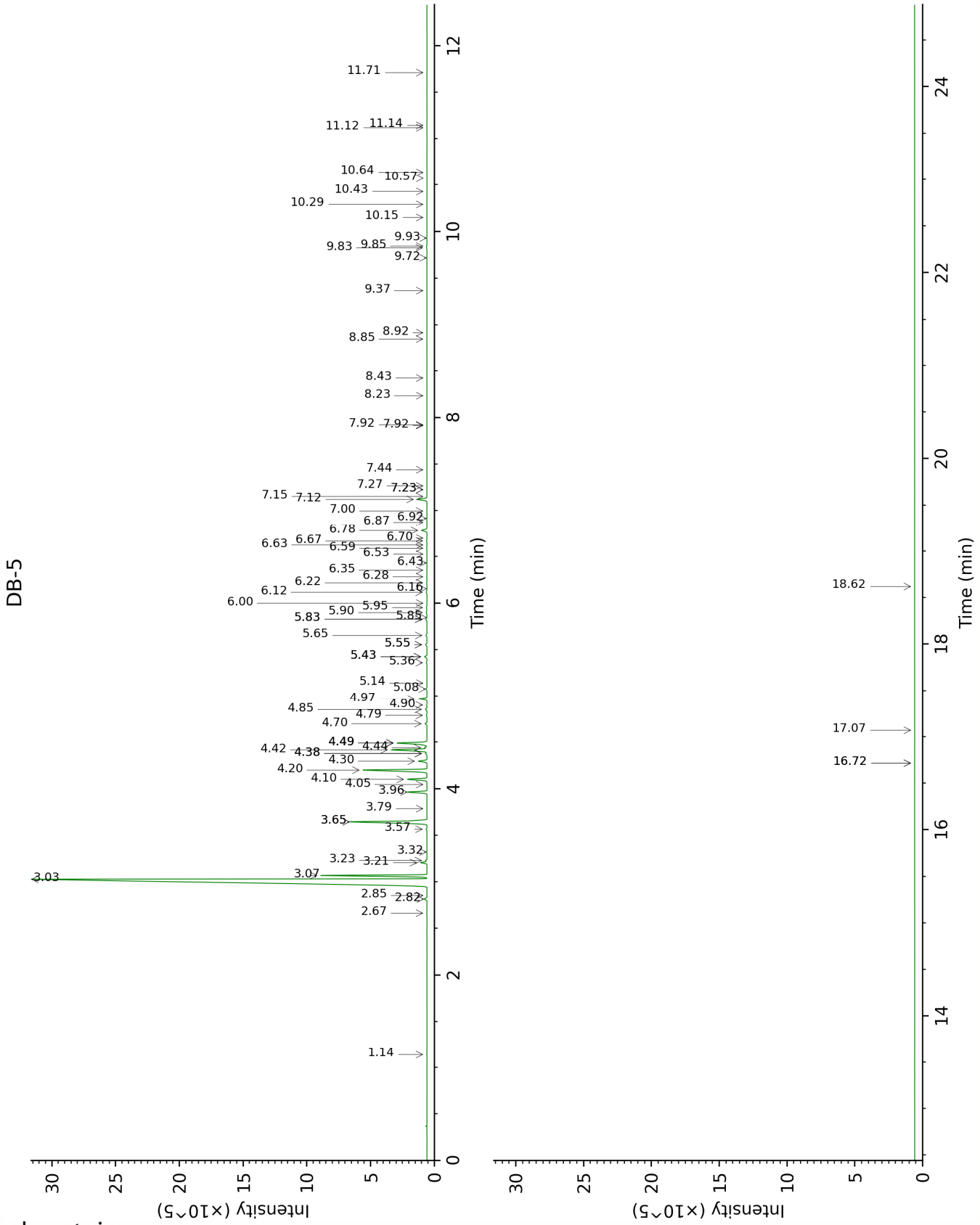

DB-WAX
Time (min)
Intensity (×10^5)
11.12
10.98
10.69
10.61
10.46
10.42
9.99
9.75
9.48
9.42
9.39
9.36
9.14
8.89
8.77
8.54
8.48
8.36
8.19
8.06
8.00
7.95
7.84
7.75
7.72
7.60
7.10
6.99
6.76
6.55
5.95
5.90
5.23
4.44
4.22
3.95
3.78
3.68
3.49
3.01
2.99
2.90
2.69
2.62
2.52
2.35
2.22
2.21
2.15
2.06
1.88
1.51
1.32
1.22
1.11
19.14
15.38
15.12
14.95
14.75
12.89


DB-5
11.71
11.12
11.14
10.64
10.57
10.43
10.29
10.15
9.83
9.85
9.93
9.72
9.37
8.85
8.92
8.43
8.23
7.92
7.92
7.44
7.27
7.23
7.15
7.12
7.00
6.87
6.92
6.78
6.63
6.67
6.70
6.59
6.53
6.43
6.35
6.28
6.22
6.16
6.12
6.00
5.83
5.90
5.95
5.85
5.65
5.55
5.43
5.36
5.14
5.08
4.97
4.90
4.85
4.79
4.70
4.49
4.44
4.42
4.38
4.30
4.20
4.10
4.05
3.96
3.79
3.65
3.57
3.32
3.23
3.21
3.07
3.03
2.85
2.82
2.67
1.14
Time (min)
Intensity (×10^5)
18.62
17.07
16.72
Time (min)
Intensity (×10^5)

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Toluene	1.32*	1008.6	[67.47]	1.14	758.9	0.01
Unknown BOFR II [m/z 93, 91 (72), 121 (58), 77 (49), 79 (41), 43 (22), 105 (20),107 (20), 41 (18), 136 (17), 92 (17)]				2.67	906.3	0.02
Hashishene	1.22*	993.8	[6.64]	2.82	916.4	0.22
Tricyclene	1.11	973.2	0.01	2.86	918.9	0.01
α-Thujene	1.32*	1008.6	[67.47]	3.03	930.6	67.38
α-Pinene	1.22*	993.8	[6.64]	3.07	933.3	6.46
Unknown SAOF I [m/z 91, 92 (47), 65 (11)... 134 (1)]	2.15*	1094.6	[0.43]	3.21	942.5	0.42
Camphene	1.52	1029.0	0.10	3.23	944.1	0.09
Thuja-2,4(10)-diene	2.06*	1085.3	[6.07]	3.32	950.2	0.02
3,7,7-Trimethylcyclohepta-1,3,5-triene	2.62*	1134.5	[1.43]	3.57	966.6	0.06
β-Pinene	1.88	1066.2	0.93	3.65*	971.9	[6.99]
Sabinene	2.06*	1085.3	[6.07]	3.65*	971.9	[6.99]
Pseudolimonene isomer	2.21	1100.6	0.03	3.79	981.4	0.02
Myrcene	2.62*	1134.5	[1.43]	3.96	993.3	1.38
2-Carene	2.15*	1094.6	[0.43]	4.05	998.8	0.02
α-Phellandrene	2.52	1126.6	1.46	4.10	1002.5	1.47
Δ3-Carene	2.34	1112.6	5.14	4.20	1008.9	5.15
α-Terpinene	2.69	1139.8	0.63	4.30	1015.0	0.64
meta-Cymene	3.78*	1225.9	[2.93]	4.38*	1020.2	[0.13]
Carvomenthene	2.22	1102.0	0.01	4.38*	1020.2	[0.13]
para-Cymene	3.78*	1225.9	[2.93]	4.42	1022.7	2.81
Unknown BODA IV [m/z 109, 43 (58), 95 (26)... 137 (15)...]	5.90*	1380.6	[0.16]	4.44	1024.2	0.15
1,8-Cineole	3.01	1165.7	0.14	4.49*	1027.3	[2.53]
β-Phellandrene	2.99	1163.8	0.24	4.49*	1027.3	[2.53]
Limonene	2.90	1157.2	2.17	4.49*	1027.3	[2.53]
(*Z*)-β-Ocimene	3.49*	1204.6	[0.77]	4.70	1040.5	0.14
Unknown BOFR III [m/z 109, 43 (57), 91 (28), 67 (25), 93 (24), 95 (22), 77 (21), 137 (21), 41 (17), 79	6.99*	1462.6	[0.05]	4.79	1046.1	0.05

(14)...]						
(*E*)-β-Ocimene	3.68*	1218.1	[0.19]	4.85	1050.3	0.12
Unknown BOFR IV [m/z 109 , 45 (67), 41 (40), 67 (39), 81 (33), 79 (27), 95 (24), 91 (23), 82 (21), 55 (21), 93 (20)...]	6.55*	1429.3	[0.09]	4.90	1053.3	0.03
γ-Terpinene	3.49*	1204.6	[0.77]	4.97	1057.7	0.63
cis-Sabinene hydrate	6.55*	1429.3	[0.09]	5.08	1064.6	0.08
Unknown PIMA I [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	4.44	1274.8	0.01	5.14	1068.6	0.01
Isoterpinolene	3.95*	1238.3	[0.17]	5.36	1082.6	0.05
Terpinolene	3.95*	1238.3	[0.17]	5.43*	1086.7	[0.19]
para-Cymenene	5.95*	1383.9	[0.10]	5.43*	1086.7	[0.19]
cis-4-Methoxythujane	3.68*	1218.1	[0.19]	5.56*	1094.9	[0.12]
trans-Sabinene hydrate	7.60	1508.8	0.04	5.56*	1094.9	[0.12]
Linalool	7.72*	1517.8	[0.04]	5.65	1101.2	0.09
β-Thujone	5.95*	1383.9	[0.10]	5.83*	1112.4	[0.12]
Unknown BOSE I [m/z 109, 81 (54), 91 (32), 79 (22)...]	5.90*	1380.6	[0.16]	5.83*	1112.4	[0.12]
Unknown BOSE II [m/z 109, 91 (57), 93 (47), 81 (44), 77 (40)... 154 (1)]				5.85	1113.7	0.01
trans-4-Methoxythujane	4.22	1258.3	0.06	5.90	1117.0	0.06
cis-para-Menth-2-en-1-ol	7.72*	1517.8	[0.04]	5.95	1120.5	0.04
Unknown BOSE III [m/z 111, 43 (22), 55 (14), 41 (12), 110 (11)...]				6.00	1123.6	0.01
allo-Ocimene	5.23	1330.8	0.03	6.12	1131.1	0.07
trans-Pinocarveol	8.77	1601.5	0.01	6.16	1133.6	0.01
trans-Sabinol	9.42*	1654.7	[0.02]	6.22	1137.7	0.03
trans-Verbenol	9.14*	1631.1	[0.01]	6.28	1142.0	0.02
para-Menth-3-en-8-ol	8.36	1568.9	0.02	6.35	1146.5	0.02

Unknown BOSE IV [m/z 109, 81 (39), 41 (38), 95 (24)... 152 (1)]				6.43	1151.7	0.01
Unknown RHGR XIX [m/z 109, 43 (75), 137 (46), 67 (31), 93 (25)... 152 (4)]				6.53	1157.8	0.01
Borneol	9.39	1652.1	0.01	6.59	1161.9	0.02
α-Phellandren-8-ol	9.75	1681.9	0.01	6.63	1164.2	0.01
cis-Sabinol	10.46	1741.5	0.04	6.67	1167.0	0.04
Umbellulone	8.48	1578.0	0.01	6.70	1169.0	0.01
Terpinen-4-ol	8.19	1555.0	0.45	6.78	1174.4	0.45
meta-Cymen-8-ol	11.12*	1798.5	[0.01]	6.87	1180.3	0.01
para-Cymen-8-ol	11.12*	1798.5	[0.01]	6.92	1183.1	0.01
α-Terpineol	9.42*	1654.7	[0.02]	7.00	1188.3	0.02
Methylchavicol	8.89	1610.7	0.78	7.12	1196.5	0.81
cis-α-Phellandrene epoxide (iPr vs Me)	10.61	1754.9	0.02	7.15	1198.5	0.01
Unknown PINI IV [m/z 109, 91 (100), 81 (88), 94 (75), 119 (74), 96 (73), 41 (63)... 150 (2)]	10.42	1738.2	0.01	7.23*	1203.3	[0.02]
Verbenone	9.14*	1631.1	[0.01]	7.23*	1203.3	[0.02]
trans-Piperitol	9.99*	1701.8	[0.01]	7.27	1205.9	0.01
trans-Carveol	10.98	1787.0	tr	7.44	1217.7	0.02
Unknown CALU IV [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	10.68	1761.2	0.02	7.92	1250.1	0.01
Piperitone	9.48*	1659.8	[0.01]	7.92	1250.5	0.01
Unknown BOSE VI [m/z 109, 41 (22), 81 (14), 43 (11)... 152 (4)]				8.24	1271.9	0.01
Bornyl acetate	7.84	1527.9	0.01	8.43	1284.9	0.01
Carvacrol	14.94*	2160.4	[0.02]	8.85	1311.1	0.02
para-Menth-5-en-1,2-diol isomer III	14.75	2140.5	0.02	8.92	1316.0	0.01
α-Terpinyl acetate	9.36*	1649.6	[0.01]	9.37	1347.9	0.01
α-Copaene	6.76	1445.1	0.02	9.72	1372.9	0.01
β-Bourbonene	7.10	1470.5	0.05	9.83	1380.5	0.05
1,5-diepi-β-Bourbonene	6.99*	1462.6	[0.05]	9.84	1381.8	0.01
β-Elemene	8.06	1544.8	0.01	9.93	1387.9	0.01
Methyleugenol	12.89	1959.5	0.01	10.15	1403.6	0.01

β-Ylangene	7.75	1520.4	0.02	10.29	1413.9	0.02
β-Copaene	7.95	1536.3	0.01	10.43	1424.3	0.01
trans-α-Bergamotene	8.00	1540.3	0.02	10.57	1435.0	tr
Isogermacrene D	8.54	1583.2	0.01	10.64	1440.0	0.01
Germacrene D	9.36*	1649.6	[0.01]	11.12	1476.0	0.01
Unknown BOSE VII [m/z 91, 93 (92), 105 (71), 77 (69), 79 (68), 133 (63)... 204 (32)]	9.48*	1659.8	[0.01]	11.14	1477.9	0.01
δ-Cadinene	9.99*	1701.8	[0.01]	11.71	1521.1	0.01
(3*E*)-Cembrene A	15.12	2177.6	tr	16.72*	1951.6	[0.02]
meta-Camphorene	14.94*	2160.4	[0.02]	16.72*	1951.6	[0.02]
para-Camphorene	15.38	2204.8	0.01	17.07	1985.3	0.01
Serratol	19.14	2620.6	0.01	18.62	2139.9	0.01
Total reported		99.20%			99.68%	

*: 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

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