

Date : 2026-09-08

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 26E22-PTH06

Customer Identification : Frankincense Serrata - India - F40120

Type : Essential Oil

Source : *Boswellia serrata*

Customer : Plant Therapy

Checked and approved by:

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

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This report is an update of the version first issued on 2026-05-25 to make a modification in the sample identification section.

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 : 2026-05-25

PHYSICOCHEMICAL DATA

Refractive index : 1.4593 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2026-05-22

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
(E)-2-Methyl-1,3-pentadiene	0.01	Alkene
Toluene	0.01	Simple phenolic
Unknown	0.02	Unknown
Hashishene	0.13	Monoterpene
Tricyclene	0.01	Monoterpene
α -Thujene	68.30	Monoterpene
α -Pinene	7.75	Monoterpene
Unknown	0.42	Monoterpene
α -Fenchene	0.01	Monoterpene
Camphene	0.09	Monoterpene
Thuja-2,4(10)-diene	0.03	Monoterpene
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.05	Monoterpene
β -Pinene	0.41	Monoterpene
Sabinene	4.60	Monoterpene
Pseudolimonene isomer	0.02	Monoterpene
Myrcene	1.43	Monoterpene
2-Carene	0.02	Monoterpene
α -Phellandrene	1.69	Monoterpene
Δ^3 -Carene	2.76	Monoterpene
α -Terpinene	0.37	Monoterpene
Carvomenthene	0.01	Aliphatic alcohol
<i>meta</i> -Cymene	0.07	Monoterpene
<i>para</i> -Cymene	1.79	Monoterpene
Unknown	0.18	Unknown
1,8-Cineole	0.02	Monoterpenic ether
Limonene	1.98	Monoterpene
β -Phellandrene	0.41	Monoterpene
(Z)- β -Ocimene	0.37	Monoterpene
Unknown	0.08	Unknown
(E)- β -Ocimene	0.18	Monoterpene
Unknown	0.06	Unknown
γ -Terpinene	0.75	Monoterpene
<i>cis</i> -Sabinene hydrate	0.08	Monoterpenic alcohol
<i>para</i> -Cymenene	0.03	Monoterpene
Terpinolene	0.23	Monoterpene
<i>trans</i> -Sabinene hydrate	0.08	Monoterpenic alcohol
α -Thujone	0.02	Monoterpenic ketone
Linalool	0.08	Monoterpenic alcohol
Unknown	0.06	Oxygenated monoterpene
β -Thujone	tr	Monoterpenic ketone

Unknown	0.20	Oxygenated monoterpene
<i>cis-para</i> -Menth-2-en-1-ol	0.10	Monoterpenic alcohol
α -Campholenal	0.02	Monoterpenic aldehyde
allo-Ocimene	0.03	Monoterpene
<i>trans</i> -Pinocarveol	0.02	Monoterpenic alcohol
<i>trans</i> -Sabinol	0.08	Monoterpenic alcohol
<i>trans</i> -Verbenol	0.03	Monoterpenic alcohol
<i>para</i> -Menth-3-en-8-ol	0.02	Monoterpenic alcohol
Unknown	0.02	Oxygenated monoterpene
Unknown	0.03	Oxygenated monoterpene
Borneol	0.04	Monoterpenic alcohol
<i>cis</i> -Sabinol	0.09	Monoterpenic alcohol
Umbellulone	0.03	Monoterpenic ketone
Terpinen-4-ol	0.68	Monoterpenic alcohol
<i>meta</i> -Cymen-8-ol	0.01	Monoterpenic alcohol
Cryptone	0.03	Normonoterpenic ketone
<i>para</i> -Cymen-8-ol	0.03	Monoterpenic alcohol
Myrtenal	0.02	Monoterpenic aldehyde
α -Terpineol	0.03	Monoterpenic alcohol
Myrtenol	0.02	Monoterpenic alcohol
Methylchavicol	1.41	Phenylpropanoid
Verbenone	0.03	Monoterpenic ketone
<i>trans</i> -Piperitol	0.02	Monoterpenic alcohol
Cuminal	0.02	Monoterpenic aldehyde
Piperitone	0.06	Monoterpenic ketone
Linalyl acetate	0.04	Monoterpenic ester
Bornyl acetate	0.04	Monoterpenic ester
Carvacrol	0.04	Monoterpenic alcohol
<i>para</i> -Menth-5-en-1,2-diol isomer III	0.04	Monoterpenic alcohol
α -Terpinyl acetate	0.04	Monoterpenic ester
α -Ylangene	0.03	Sesquiterpene
α -Copaene	0.11	Sesquiterpene
1,5-diepi- β -Bourbonene	0.02	Sesquiterpene
β -Bourbonene	0.34	Sesquiterpene
β -Cubebene	0.02	Sesquiterpene
β -Elemene	0.03	Sesquiterpene
Unknown	0.03	Unknown
Sibirene	0.05	Sesquiterpene
α -Gurjunene	0.02	Sesquiterpene
Methyleugenol	0.11	Phenylpropanoid
β -Ylangene	0.07	Sesquiterpene
β -Copaene	0.05	Sesquiterpene
<i>trans</i> - α -Bergamotene	0.06	Sesquiterpene
Isogermacrene D	0.04	Sesquiterpene
<i>cis</i> -Muurolo-4(15),5-diene	0.02	Sesquiterpene

Unknown	0.04	Sesquiterpene
γ-Murolene	0.04	Sesquiterpene
Germacrene D	0.15	Sesquiterpene
Unknown	0.11	Sesquiterpene
Bicyclogermacrene	0.02	Sesquiterpene
γ-Cadinene	0.02	Sesquiterpene
<i>trans</i> -Calamenene	0.02	Sesquiterpene
δ-Cadinene	0.12	Sesquiterpene
Elemicin	0.03	Phenylpropanoid
α-Phellandrene dimer II	0.04	Diterpene
α-Phellandrene dimer III	0.03	Diterpene
(3 <i>E</i>)-Cembrene A	0.02	Diterpene
<i>meta</i> -Camphorene	0.03	Diterpene
<i>para</i> -Camphorene	0.03	Diterpene
Verticilla-4(20),7,11-triene	0.03	Diterpene
Cembrenol	0.02	Diterpenic alcohol
Serratol	0.10	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

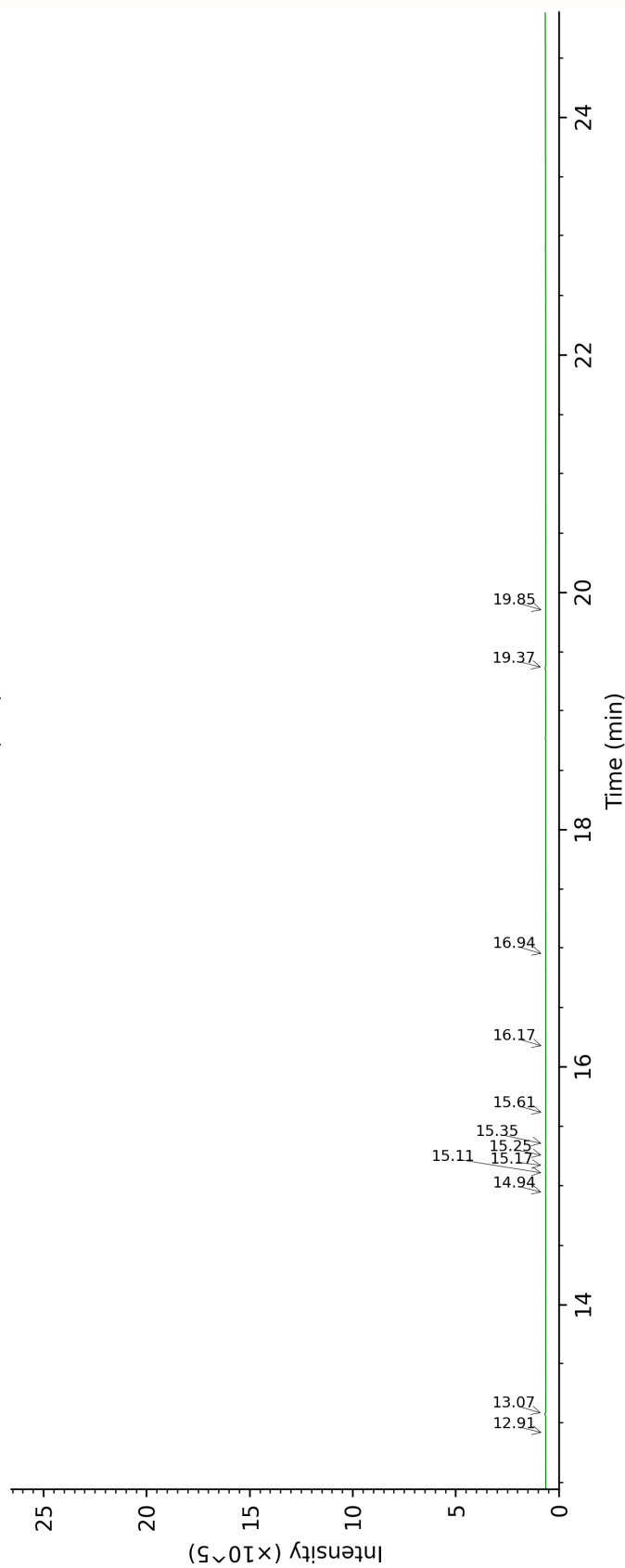
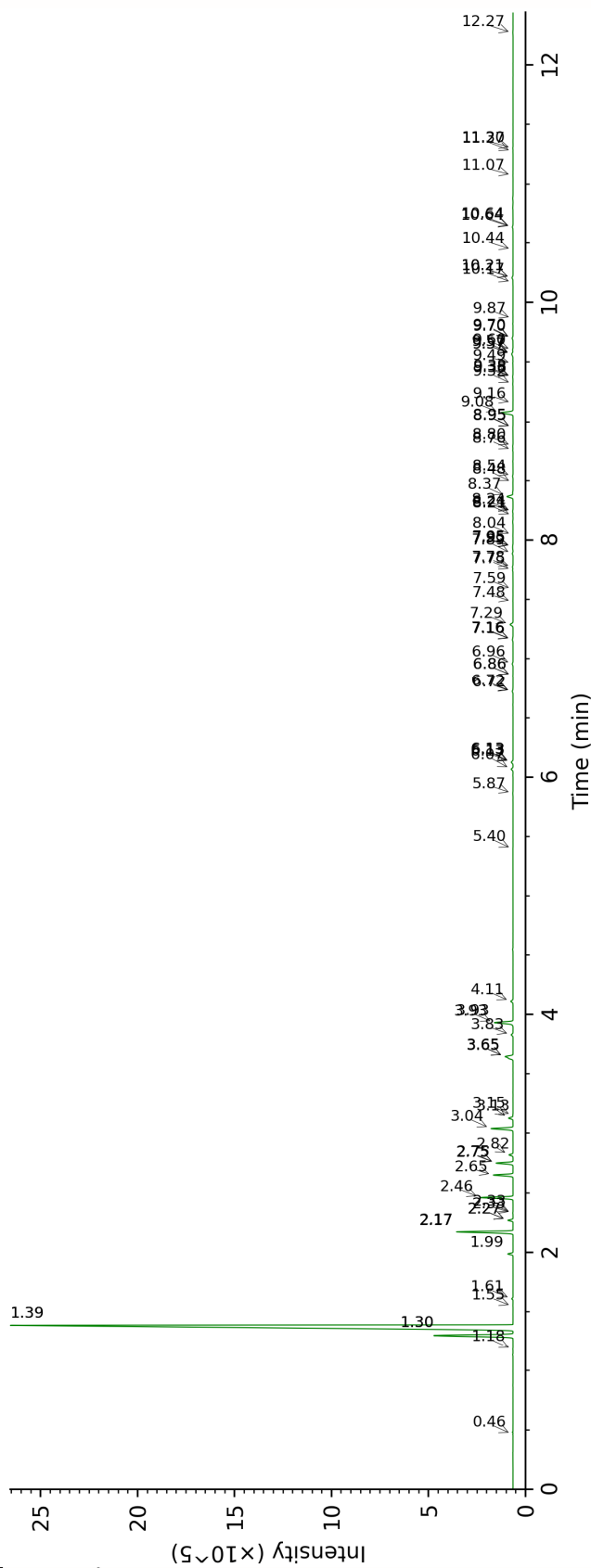
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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.

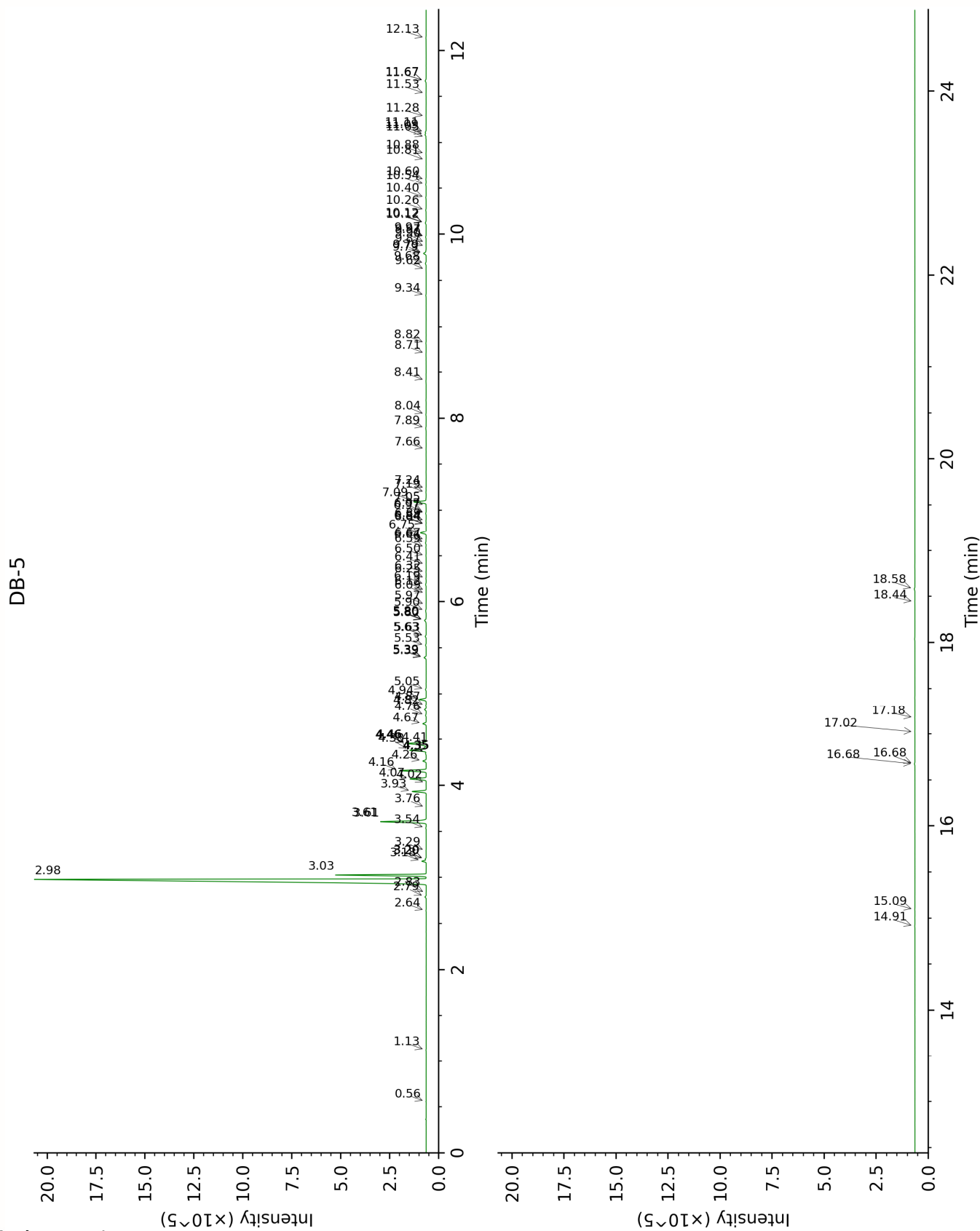
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

This page was intentionally left blank. The following pages present the complete data of the analysis.

DB-WAX





FULL ANALYSIS DATA

(E)-2-Methyl-1,3-pentadiene	Column DB-WAX			Column DB-5		
	0.46	765.9	0.01	0.56	631.5	0.01
Toluene	1.39*	1004.2	[68.42]	1.13	759.3	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)]				2.64	906.4	0.02
Hashishene	1.30*	990.4	[7.91]	2.79	916.4	0.13
Tricyclene	1.18	971.0	0.02	2.83	919.0	0.01
α -Thujene	1.39*	1004.2	[68.42]	2.98	929.2	68.30
α -Pinene	1.30*	990.4	[7.91]	3.03	932.4	7.75
Unknown SAOF I [m/z 91, 92 (47), 65 (11)... 134 (1)]	2.27*	1092.1	[0.41]	3.18	942.5	0.42
α -Fenchene	1.55	1021.0	0.01	3.20*	944.0	[0.09]
Camphene	1.61	1027.2	0.09	3.20*	944.0	[0.09]
Thuja-2,4(10)-diene	2.17*	1082.6	[4.59]	3.29	950.1	0.03
3,7,7-Trimethylcyclohepta-1,3,5-triene	2.75*	1132.7	[1.44]	3.54	966.6	0.05
β -Pinene	1.99	1064.2	0.41	3.61*	971.3	[5.02]
Sabinene	2.17*	1082.6	[4.59]	3.61*	971.3	[5.02]
Pseudolimonene isomer	2.33*	1098.2	[0.02]	3.76	981.6	0.02
Myrcene	2.75*	1132.7	[1.44]	3.93	993.4	1.43
2-Carene	2.27*	1092.1	[0.41]	4.02	999.2	0.02
α -Phellandrene	2.65	1124.8	1.67	4.07	1002.5	1.69
Δ^3 -Carene	2.46	1110.1	2.74	4.16	1008.4	2.76
α -Terpinene	2.82	1138.1	0.34	4.26	1015.0	0.37
Carvomenthene	2.33*	1098.2	[0.02]	4.35*	1020.2	[0.08]
meta-Cymene	3.93*	1224.4	[1.86]	4.35*	1020.2	[0.08]
para-Cymene	3.93*	1224.4	[1.86]	4.38	1022.5	1.79
Unknown BODA IV [m/z 109, 43 (58), 95 (26)... 137 (15)...]	6.13*	1381.5	[0.20]	4.41	1024.3	0.18
1,8-Cineole	3.15	1164.1	0.02	4.46*	1027.1	[2.39]
Limonene	3.04	1155.4	1.98	4.46*	1027.1	[2.39]
β -Phellandrene	3.13	1162.3	0.41	4.46*	1027.1	[2.39]
(Z)- β -Ocimene	3.65*	1203.1	[1.11]	4.67	1040.8	0.37
Unknown BOFR III [m/z 109, 43 (57), 91 (28), 67 (25), 93 (24),	7.16*	1458.9	[0.10]	4.76	1046.5	0.08

95 (22), 77 (21), 137 (21), 41 (17), 79 (14)...						
(E)- β -Ocimene	3.83	1216.9	0.18	4.82	1050.6	0.18
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)...	6.72*	1425.6	[0.10]	4.87	1053.6	0.06
γ -Terpinene	3.65*	1203.1	[1.11]	4.94	1057.9	0.75
cis-Sabinene hydrate	6.72*	1425.6	[0.10]	5.05	1064.8	0.08
para-Cymenene	6.13*	1381.5	[0.20]	5.40*	1087.0	[0.25]
Terpinolene	4.11	1237.6	0.23	5.40*	1087.0	[0.25]
trans-Sabinene hydrate	7.78	1505.0	0.07	5.53	1095.5	0.08
α -Thujone	5.87	1362.4	0.02	5.63*	1101.7	[0.12]
Linalool	7.89	1513.6	0.08	5.63*	1101.7	[0.12]
Unknown BOSE II [m/z 109, 91 (57), 93 (47), 81 (44), 77 (40)... 154 (1)]				5.80*	1112.9	[0.25]
β -Thujone	6.13*	1381.5	[0.20]	5.80*	1112.9	[0.25]
Unknown BOSE I [m/z 109, 81 (54), 91 (32), 79 (22)...	6.07	1377.2	0.20	5.80*	1112.9	[0.25]
cis-para-Menth-2-en-1-ol	7.95*	1518.6	[0.09]	5.90	1119.7	0.10
α -Campholenal	6.86*	1436.0	[0.02]	5.97	1123.9	0.02
allo-Ocimene	5.40	1328.2	0.02	6.09	1131.8	0.03
trans-Pinocarveol	8.95*	1597.5	[0.02]	6.12	1133.7	0.02
trans-Sabinol	9.60	1650.5	0.06	6.19	1138.1	0.08
trans-Verbenol	9.32	1626.9	0.05	6.25	1142.4	0.03
para-Menth-3-en-8-ol	8.54	1564.9	0.06	6.32	1146.9	0.02
Unknown BOSE IV [m/z 109, 81 (39), 41 (38), 95 (24)... 152 (1)]				6.41	1152.4	0.02
Unknown RHGR XIX [m/z 109, 43 (75), 137 (46), 67 (31), 93 (25)... 152 (4)]				6.50	1158.6	0.03
Borneol	9.57*	1647.6	[0.21]	6.59	1164.4	0.04
cis-Sabinol	10.64*	1736.8	[0.09]	6.64	1167.7	0.09
Umbellulone	8.76	1582.5	0.03	6.67	1169.8	0.03

Terpinen-4-ol	8.37	1551.5	0.68	6.75	1174.9	0.68
meta-Cymen-8-ol	11.27	1791.2	0.01	6.84*	1181.1	[0.03]
Cryptone	8.95*	1597.5	[0.02]	6.84*	1181.1	[0.03]
para-Cymen-8-ol	11.30	1793.6	0.02	6.89	1183.8	0.03
Myrtenal	8.48	1560.6	0.02	6.97*	1189.1	[0.05]
α-Terpineol	9.57*	1647.6	[0.21]	6.97*	1189.1	[0.05]
Myrtenol	10.64*	1736.8	[0.09]	7.05	1194.6	0.02
Methylchavicol	9.08	1607.2	1.44	7.09	1197.2	1.41
Verbenone	9.38*	1631.9	[0.06]	7.19	1203.9	0.03
trans-Piperitol	10.21*	1700.1	[0.14]	7.24	1206.8	0.02
Cuminal	10.44	1719.9	0.02	7.66	1235.9	0.02
Piperitone	9.70*	1658.5	[0.12]	7.90	1251.7	0.06
Linalyl acetate	7.95*	1518.6	[0.09]	8.04	1261.7	0.04
Bornyl acetate	8.04	1525.9	0.03	8.41	1287.0	0.04
Carvacrol	15.17	2156.5	0.05	8.71	1307.7	0.04
para-Menth-5-en-1,2-diol isomer III	14.94	2133.3	0.04	8.82	1312.2	0.04
α-Terpinyl acetate	9.49	1641.3	0.03	9.34	1348.9	0.04
α-Ylangene	6.86*	1436.0	[0.02]	9.62	1368.5	0.03
α-Copaene	6.96	1443.5	0.09	9.68	1373.5	0.11
1,5-diepi-β-Bourbonene	7.16*	1458.9	[0.10]	9.79*	1381.2	[0.37]
β-Bourbonene	7.29	1468.5	0.34	9.79*	1381.2	[0.37]
β-Cubebene	7.59	1490.9	0.02	9.87	1386.4	0.02
β-Elemene	8.24*†	1541.6	[0.06]	9.90	1389.2	0.03
Unknown CALU VIII [m/z 71, 100 (92), 111 (79), 69 (46), 109 (45)...]	16.94	2341.4	0.03	9.97*	1393.8	[0.07]
Sibirene	7.75	1503.0	0.05	9.97*	1393.8	[0.07]
α-Gurjunene	7.48	1483.0	0.02	10.12*	1404.6	[0.12]
Methyleugenol	13.08	1953.5	0.11	10.12*	1404.6	[0.12]
β-Ylangene	7.95*	1518.6	[0.09]	10.26	1414.9	0.07
β-Copaene	8.20*†	1538.7	[0.02]	10.40	1425.1	0.05
trans-α-Bergamotene	8.24*†	1541.6	[0.06]	10.54	1435.8	0.06
Isogermacrene D	8.80	1585.4	0.04	10.60	1440.3	0.04
cis-Muurolo-4(15),5-diene	9.16	1613.8	0.02	10.81	1456.2	0.02
Unknown MISC XLIX [m/z 161, 105 (56), 91 (50), 93 (36), 119 (33), 79 (31)...204 (5)]				10.88	1461.4	0.04
γ-Muuroloene	9.38*	1631.9	[0.06]	11.06	1474.6	0.04
Germacrene D	9.57*	1647.6	[0.21]	11.09	1476.9	0.15

Unknown BOSE VII [m/z 91, 93 (92), 105 (71), 77 (69), 79 (68), 133 (63)... 204 (32)]	9.70*	1658.5	[0.12]	11.11	1478.9	0.11
Bicyclogermacrene	9.86	1672.0	0.02	11.28	1491.7	0.02
γ-Cadinene	10.17	1696.7	0.04	11.53	1510.5	0.02
<i>trans</i> -Calamenene	11.07	1774.1	0.02	11.67*	1521.6	[0.14]
δ-Cadinene	10.21*	1700.1	[0.14]	11.67*	1521.6	[0.14]
Elemicin	15.25	2164.9	0.03	12.13	1558.1	0.03
α-Phellandrene dimer II	12.27	1879.7	0.04	14.91	1790.4	0.04
α-Phellandrene dimer III	12.91	1938.1	0.02	15.09	1806.2	0.03
(3 <i>E</i>)-Cembrene A	15.35	2174.8	0.02	16.68*	1952.5	[0.07]
<i>meta</i> -Camphorene	15.11	2150.0	0.03	16.68*	1952.5	[0.07]
<i>para</i> -Camphorene	15.61	2200.9	0.02	17.02	1985.8	0.03
Verticilla-4(20),7,11- triene	16.17	2259.1	0.02	17.18	2000.4	0.03
Cembrenol	19.85	2673.1	0.02	18.44	2127.2	0.02
Serratol	19.37	2615.4	0.09	18.58	2141.5	0.10
Total reported		99.09%			99.69%	

*: 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