

Date : 2024-07-15

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24F28-PTH03

Customer Identification : Organic Cypress - Spain - CB9108R

Type : Essential Oil

Source : *Cupressus sempervirens*

Customer : Plant Therapy

Checked and approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

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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 : Alexis St-Gelais, Ph. D., Chimiste 2013-174

Date : 2024-07-09

PHYSICOCHEMICAL DATA

Refractive index : 1.4713 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2024-06-28

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
Toluene	0.02	Simple phenolic
Cyclofenchene	0.02	Monoterpene
Bornylene	0.05	Monoterpene
Tricyclene	0.19	Monoterpene
α -Thujene	0.60	Monoterpene
α -Pinene	55.99	Monoterpene
Camphene	0.26	Monoterpene
α -Fenchene	0.57	Monoterpene
Thuja-2,4(10)-diene	0.04	Monoterpene
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.09	Monoterpene
Sabinene	0.85	Monoterpene
β -Pinene	0.90	Monoterpene
Myrcene	1.94	Monoterpene
2-Carene	0.03	Monoterpene
α -Phellandrene	0.13	Monoterpene
Δ^3 -Carene	20.63	Monoterpene
1,4-Cineole	0.03	Monoterpenic ether
α -Terpinene	0.38	Monoterpene
<i>meta</i> -Cymene	0.04	Monoterpene
<i>para</i> -Cymene	0.38	Monoterpene
Sylvestrene	0.13	Monoterpene
Limonene	2.00	Monoterpene
β -Phellandrene	0.45	Monoterpene
(<i>Z</i>)- β -Ocimene	0.01	Monoterpene
(<i>E</i>)- β -Ocimene	0.03	Monoterpene
Unknown	0.03	Monoterpene
γ -Terpinene	0.65	Monoterpene
<i>cis</i> -Sabinene hydrate	0.01	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.01	Monoterpenic alcohol
<i>meta</i> -Cymenene	0.01	Monoterpene
Isoterpinolene	0.08	Monoterpene
<i>para</i> -Cymenene	0.09	Monoterpene
Terpinolene	2.02	Monoterpene
α -Pinene oxide	0.02	Monoterpenic ether
Unknown	tr	Unknown
Unknown	0.02	Oxygenated monoterpene
Linalool	0.28	Monoterpenic alcohol
endo-Fenchol	0.03	Monoterpenic alcohol
<i>cis-para</i> -Menth-2-en-1-ol	0.02	Monoterpenic alcohol

4-Hydroxy-4-methylcyclohex-2-enone	0.02	Aliphatic alcohol
<i>trans</i> -Pinocarveol	0.04	Monoterpenic alcohol
Camphor	0.07	Monoterpenic ketone
<i>trans-para</i> -Menth-2-en-1-ol	0.02	Monoterpenic alcohol
Camphene hydrate	0.01	Monoterpenic alcohol
Epoxyterpinolene	0.04	Monoterpenic ether
Karahanaenone	0.23	Monoterpenic ketone
Borneol	0.04	Monoterpenic alcohol
α -Phellandren-8-ol	0.02	Monoterpenic alcohol
Umbellulone	0.18	Monoterpenic ketone
Terpinen-4-ol	0.85	Monoterpenic alcohol
<i>meta</i> -Cymen-8-ol	0.02	Monoterpenic alcohol
<i>para</i> -Cymen-8-ol	0.06	Monoterpenic alcohol
Unknown	0.03	Oxygenated monoterpene
Myrtenal	0.03	Monoterpenic aldehyde
α -Terpineol	0.25	Monoterpenic alcohol
Myrtenol	0.01	Monoterpenic alcohol
Unknown	0.04	Oxygenated monoterpene
Verbenone	0.03	Monoterpenic ketone
<i>trans</i> -Carveol	0.01	Monoterpenic alcohol
<i>cis</i> -Carveol	0.01	Monoterpenic alcohol
Unknown	0.05	Oxygenated monoterpene
Carvacrol methyl ether	0.04	Monoterpenic ether
Car-3-en-2-one	0.03	Monoterpenic ketone
(<i>cis</i> ?)-Linalool oxide acetate (fur.)?	0.02	Monoterpenic ester
Linalyl acetate	0.03	Monoterpenic ester
(<i>trans</i> ?)-Linalool oxide acetate (fur.)?	0.04	Monoterpenic ester
Unknown	0.02	Oxygenated monoterpene
Bornyl acetate	0.10	Monoterpenic ester
Unknown	0.28	Monoterpenic ester
Terpinen-4-yl acetate	0.02	Monoterpenic ester
Thymol	0.03	Monoterpenic alcohol
Unknown	0.02	Unknown
Unknown	0.25	Monoterpenic ester
α -Cubebene	0.12	Sesquiterpene
α -Terpinyl acetate	1.85	Monoterpenic ester
α -Ylangene	0.02	Sesquiterpene
α -Copaene	0.05	Sesquiterpene
β -Cubebene	0.03	Sesquiterpene
β -Elemene	0.04	Sesquiterpene
α -Cedrene	0.40	Sesquiterpene
β -Caryophyllene	0.25	Sesquiterpene
β -Cedrene	0.11	Sesquiterpene
β -Copaene	0.04	Sesquiterpene
<i>cis</i> -Muurola-3,5-diene	0.04	Sesquiterpene

<i>trans</i> -Muuroala-3,5-diene	0.01	Sesquiterpene
α -Humulene	0.17	Sesquiterpene
<i>cis</i> -Muuroala-4(15),5-diene	0.20	Sesquiterpene
Unknown	0.02	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.03	Sesquiterpene
γ -Muurolene	0.15	Sesquiterpene
Germacrene D	0.44	Sesquiterpene
<i>trans</i> -Muuroala-4(15),5-diene	0.03	Sesquiterpene
β -Alaskene	0.09	Sesquiterpene
Epizonarene	0.10	Sesquiterpene
α -Muurolene	0.10	Sesquiterpene
δ -Amorphene	0.03	Sesquiterpene
γ -Cadinene	0.09	Sesquiterpene
α -Alaskene	0.09	Sesquiterpene
<i>trans</i> -Calamenene	0.06	Sesquiterpene
δ -Cadinene	0.33	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.05	Sesquiterpene
α -Cadinene	0.02	Sesquiterpene
α -Calacorene	0.03	Sesquiterpene
Salviadienol?	0.06	Sesquiterpenic alcohol
Caryophyllene oxide	0.04	Sesquiterpenic ether
allo-Cedrol	0.01	Sesquiterpenic alcohol
α -Cedrol	1.48	Sesquiterpenic alcohol
Widdrol	0.01	Sesquiterpenic alcohol
epi-Cedrol	0.02	Sesquiterpenic alcohol
Torilenol?	0.04	Oxygenated sesquiterpene
1-epi-Cubenol	0.05	Sesquiterpenic alcohol
τ -Cadinol	0.02	Sesquiterpenic alcohol
τ -Muurolol	0.02	Sesquiterpenic alcohol
α -Muurolol	0.04	Sesquiterpenic alcohol
α -Cadinol	0.03	Sesquiterpenic alcohol
Unknown	0.08	Unknown
Eudesma-4(15),7-dien-1 β -ol	0.03	Sesquiterpenic alcohol
β -Turmerone	0.01	Sesquiterpenic ketone
Phenylethyl octanoate	0.02	Phenolic ester
Manoyl oxide	0.01	Diterpenic ether
Isopimaradiene	0.07	Diterpene
7,13-Abietadiene	0.02	Diterpene
Unknown	0.03	Unknown
Consolidated total	99.03	

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

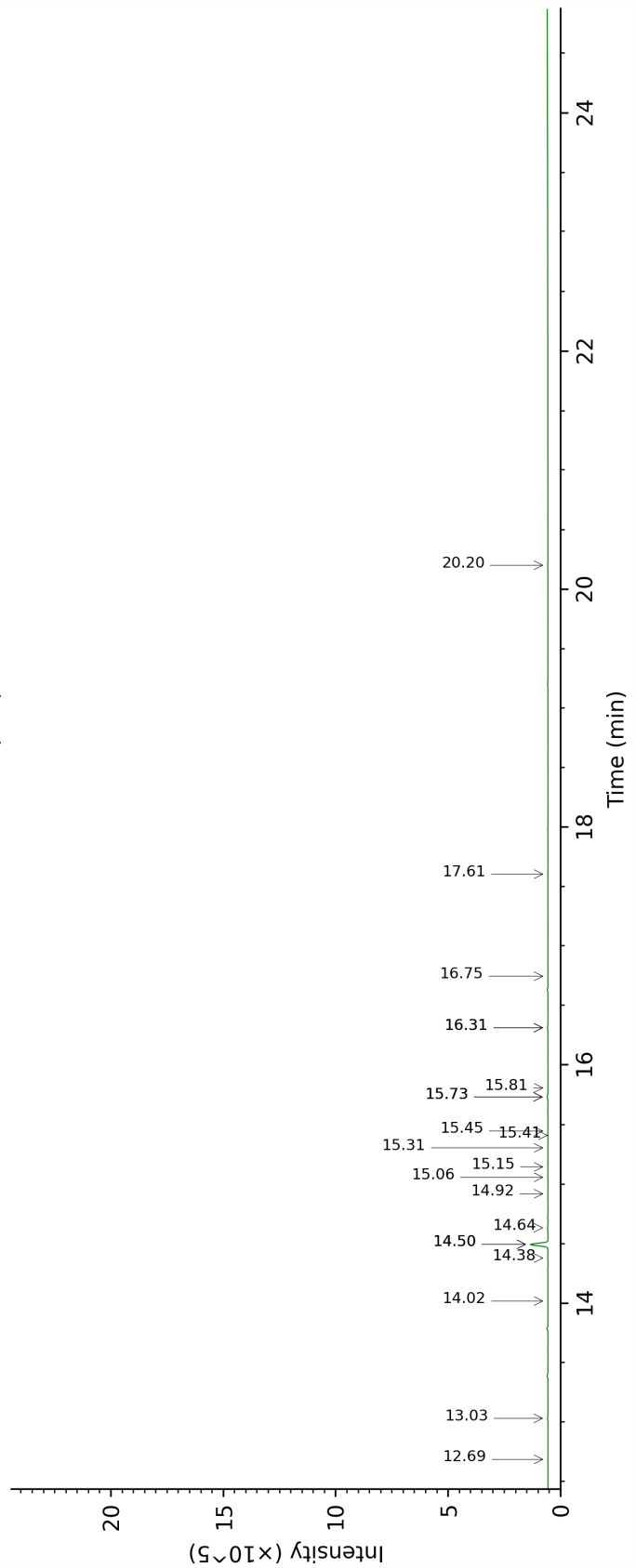
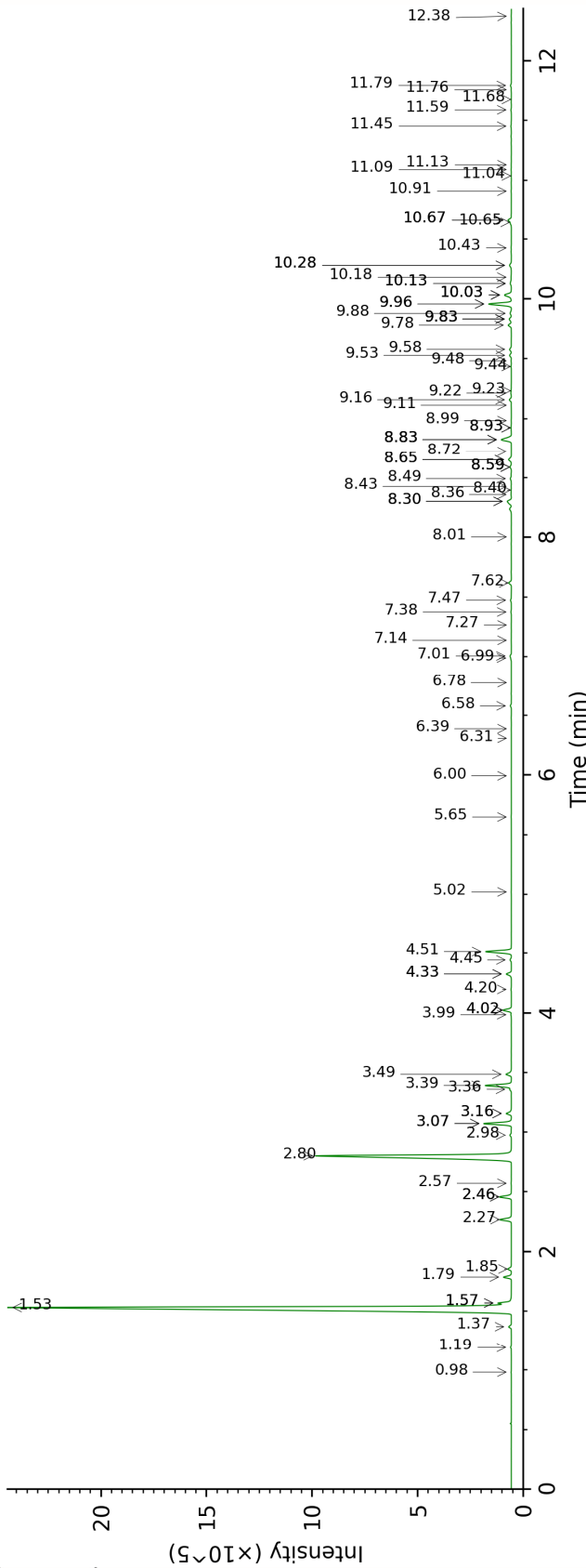
chromatograms in this report to access the full untreated data and perform their own calculations if needed.

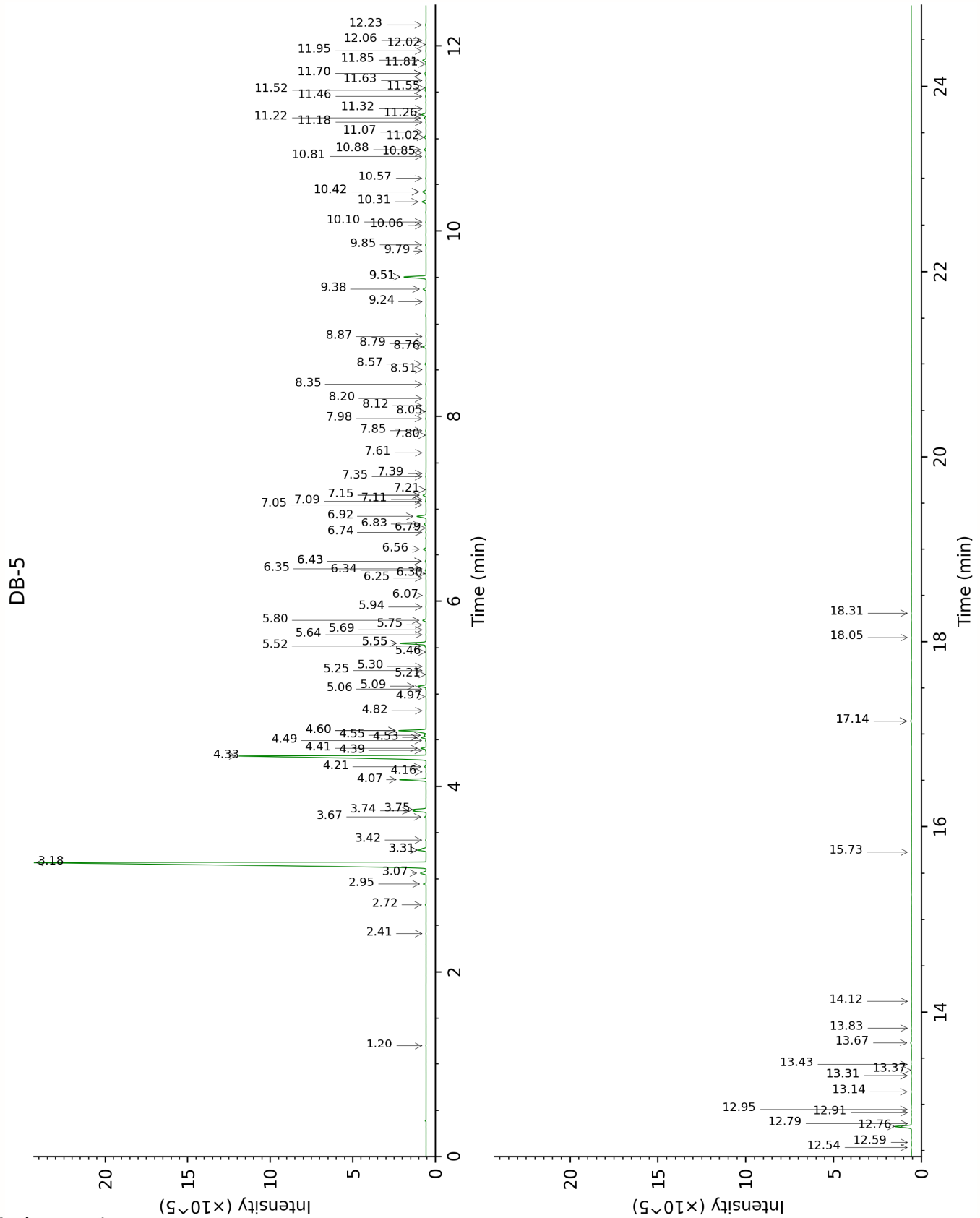
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

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

Toluene	Column DB-WAX			Column DB-5		
	1.57*†	999.8	[0.91]	1.20	758.9	0.02
Cyclofenchene	0.98	911.8	0.01	2.41	878.4	0.02
Bornylene	1.19	944.3	0.04	2.72	904.2	0.05
Tricyclene	1.37	972.0	0.19	2.95	919.1	0.19
α-Thujene	1.57*†	999.8	[0.91]	3.07	926.9	0.60
α-Pinene	1.53*†	996.2	[55.57]	3.18	934.4	55.99
Camphene	1.86	1027.1	0.26	3.31*	943.3	[0.82]
α-Fenchene	1.79	1020.7	0.57	3.31*	943.3	[0.82]
Thuja-2,4(10)-diene	2.46*	1084.9	[0.91]	3.42	950.4	0.04
3,7,7-Trimethylcyclohepta-1,3,5-triene	3.07*	1133.6	[2.05]	3.67	966.9	0.09
Sabinene	2.46*	1084.9	[0.91]	3.74*†	971.3	[0.92]
β-Pinene	2.27	1066.7	0.90	3.75*†	972.2	[0.83]
Myrcene	3.07*	1133.6	[2.05]	4.07	993.5	1.94
2-Carene	2.57	1095.6	0.02	4.16	999.1	0.03
α-Phellandrene	2.98	1126.2	0.11	4.21	1002.7	0.13
Δ3-Carene	2.80	1113.1	20.60	4.33	1010.1	20.63
1,4-Cineole	3.16*	1140.0	[0.41]	4.39	1013.9	0.03
α-Terpinene	3.16*	1140.0	[0.41]	4.41	1015.3	0.38
meta-Cymene	4.33*	1226.0	[0.43]	4.49	1020.5	0.04
para-Cymene	4.33*	1226.0	[0.43]	4.53	1022.6	0.38
Sylvestrene	3.36	1155.3	0.11	4.55	1024.1	0.13
Limonene	3.39	1157.8	2.00	4.60*	1027.3	[2.41]
β-Phellandrene	3.49	1164.9	0.45	4.60*	1027.3	[2.41]
(Z)-β-Ocimene	4.02*	1204.7	[0.65]	4.82	1040.7	0.01
(E)-β-Ocimene	4.20	1216.9	0.03	4.97	1050.4	0.03
Unknown CUSE I [m/z 93, 91 (54), 92 (31), 77 (29), 79 (17), 43 (13), 41 (10), 136 (9)]	3.99	1202.0	0.04	5.06	1055.8	0.03
γ-Terpinene	4.02*	1204.7	[0.65]	5.09	1057.8	0.65
cis-Sabinene hydrate	7.14	1430.5	0.02	5.21	1065.6	0.01
Unknown PIMA I [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.02	1274.6	0.01	5.26	1068.3	0.01
cis-Linalool oxide (fur.)	6.78	1404.2	0.01	5.30	1071.1	0.01
meta-Cymenene	6.39	1376.6	0.01	5.46	1080.8	0.01
Isoterpinolene	4.44	1234.2	0.11	5.52	1084.8	0.08

<i>para</i> -Cymenene	6.58	1390.1	0.09	5.55*	1086.8	[2.09]
Terpinolene	4.52	1239.1	2.02	5.55*	1086.8	[2.09]
α -Pinene oxide	5.65	1324.5	0.02	5.64	1092.5	0.02
Unknown PINI III [m/z 109, 43 (65), 95 (54), 119 (50), 91 (47)... 149 (8)...]	6.31	1371.0	0.01	5.69	1095.8	tr
Unknown CEDE I [m/z 95, 150 (45), 110 (35), 107 (23), 109 (21)]	6.00	1348.8	0.01	5.75	1099.2	0.02
Linalool	8.30*†	1516.4	[0.49]	5.80	1102.3	0.28
endo-Fenchol	8.59*	1538.4	[0.13]	5.94	1111.4	0.03
<i>cis-para</i> -Menth-2-en- 1-ol	8.36	1520.8	0.04	6.06	1119.4	0.02
4-Hydroxy-4- methylcyclohex-2- enone	14.38	2032.2	0.02	6.25	1131.4	0.02
<i>trans</i> -Pinocarveol	9.44	1603.6	0.04	6.30	1134.4	0.04
Camphor	7.47	1455.0	0.08	6.34	1136.7	0.07
<i>trans-para</i> -Menth-2- en-1-ol	9.24	1587.6	0.03	6.35	1137.7	0.02
Camphene hydrate	8.72	1548.7	0.01	6.43*	1142.9	[0.08]
Epoxyterpinolene	6.99	1419.7	0.04	6.43*	1142.9	[0.08]
Karahanaenone	7.62	1465.6	0.23	6.56	1151.2	0.23
Borneol	10.03*	1651.3	[0.72]	6.74	1162.7	0.04
α -Phellandren-8-ol	10.43	1682.6	0.03	6.79	1165.8	0.02
Umbellulone	9.16	1581.9	0.17	6.83	1168.5	0.18
Terpinen-4-ol	8.83*	1556.4	[1.04]	6.92	1174.4	0.85
<i>meta</i> -Cymen-8-ol	11.76	1794.2	0.02	7.05	1182.3	0.02
<i>para</i> -Cymen-8-ol	11.80	1797.2	0.07	7.09	1184.7	0.06
Unknown JUVI II [m/z 93, 59 (85), 81 (36), 92 (35), 43 (34), 121 (20), 136 (16)...]	9.96*	1645.3	[1.86]	7.11	1186.0	0.03
Myrtenal	8.93*	1564.0	[0.06]	7.15*	1188.9	[0.27]
α -Terpineol	10.03*	1651.3	[0.72]	7.15*	1188.9	[0.27]
Myrtenol	11.13	1741.2	0.02	7.21	1192.7	0.01
Unknown PINI IV [m/z 109, 91 (100), 81 (88), 94 (75), 119 (74), 96 (73), 41 (63)... 150 (2)]	11.09	1737.9	0.02	7.35	1201.7	0.04
Verbenone	9.83*	1635.2	[0.22]	7.39	1203.8	0.03
<i>trans</i> -Carveol	11.68	1787.1	0.01	7.61	1218.8	0.01

<i>cis</i> -Carveol				7.80	1231.5	0.01
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	11.59	1779.8	0.05	7.85	1234.8	0.05
Carvacrol methyl ether	8.83*	1556.4	[1.04]	7.98	1243.5	0.04
Car-3-en-2-one	10.67*	1702.4	[0.30]	8.05	1248.5	0.03
(<i>cis</i> ?)-Linalool oxide acetate (fur.)?	8.40	1523.7	0.02	8.12	1252.8	0.02
Linalyl acetate	8.43	1526.0	0.02	8.20	1258.0	0.03
(<i>trans</i> ?)-Linalool oxide acetate (fur.)?	8.93*	1564.0	[0.06]	8.35	1268.3	0.04
Unknown CIAU V [m/z 95, 67 (45), 41 (42), 110 (42), 43 (41), 59 (36)]	12.69	1875.5	0.02	8.50	1278.7	0.02
Bornyl acetate	8.49	1531.0	0.11	8.57	1282.9	0.10
Unknown CUSE III [m/z 121, 93 (97), 43 (81), 136 (48), 107 (47), 108 (44)...]	8.83*	1556.4	[1.04]	8.76	1295.7	0.28
Terpinen-4-yl acetate	8.99	1568.6	0.02	8.80	1298.2	0.02
Thymol	15.41	2132.4	0.02	8.87	1303.1	0.03
Unknown CUSE V [m/z 93, 92 (34), 43 (31), 91 (27)...]				9.24	1329.4	0.02
Unknown CUSE VI [m/z 93, 43 (50), 121 (50), 136 (35)...]	9.78	1631.1	0.28	9.38	1339.0	0.25
α -Cubebene	7.01	1420.9	0.12	9.51*	1348.2	[1.97]
α -Terpinyl acetate	9.96*	1645.3	[1.86]	9.51*	1348.2	[1.97]
α -Ylangene	7.27	1439.9	0.01	9.79	1367.8	0.02
α -Copaene	7.38	1447.9	0.05	9.85	1372.5	0.05
β -Cubebene	8.00	1493.8	0.02	10.06	1387.1	0.03
β -Elemene	8.65*	1543.2	[0.29]	10.10	1389.8	0.04
α -Cedrene	8.30*†	1516.4	[0.49]	10.32	1405.2	0.40
β -Caryophyllene	8.65*	1543.2	[0.29]	10.42*	1413.2	[0.36]
β -Cedrene	8.59*	1538.4	[0.13]	10.42*	1413.2	[0.36]
β -Copaene	8.59*	1538.4	[0.13]	10.57	1423.9	0.04
<i>cis</i> -Muurolo-3,5- diene	9.22	1586.2	0.06	10.81	1442.0	0.04
<i>trans</i> -Muurolo-3,5- diene	9.11	1578.4	0.02	10.85	1445.0	0.01
α -Humulene	9.53	1611.0	0.16	10.88	1447.5	0.17

<i>cis</i> -Muurolo-4(15),5-diene	9.58	1615.0	0.17	11.02	1457.5	0.20
Unknown DACA II [m/z 161, 91 (57), 120 (46), 105 (42), 133 (25), 119 (22), 41 (21), 204 (21)]	9.83*	1635.2	[0.22]	11.07	1461.7	0.02
<i>trans</i> -Cadina-1(6),4-diene	9.48	1607.4	0.03	11.18	1469.5	0.03
γ -Muurolole	9.83*	1635.2	[0.22]	11.22	1473.0	0.15
Germacrene D	10.03*	1651.3	[0.72]	11.26	1475.6	0.44
<i>trans</i> -Muurolo-4(15),5-diene	10.13*	1658.9	[0.14]	11.32	1480.4	0.03
β -Alaskene	9.88	1639.0	0.13	11.46	1490.2	0.09
Epizonarene	10.13*	1658.9	[0.14]	11.52	1495.2	0.10
α -Muurolole	10.28*	1671.0	[0.21]	11.55	1497.0	0.10
δ -Amorphene	10.18	1663.1	0.05	11.63	1503.0	0.03
γ -Cadinene	10.65	1700.8	0.09	11.70*	1508.9	[0.18]
α -Alaskene	10.28*	1671.0	[0.21]	11.70*	1508.9	[0.18]
<i>trans</i> -Calamenene	11.45	1768.3	0.05	11.81	1516.9	0.06
δ -Cadinene	10.67*	1702.4	[0.30]	11.85	1520.1	0.33
<i>trans</i> -Cadina-1,4-diene	10.91	1722.7	0.02	11.95	1528.0	0.05
α -Cadinene	11.04	1733.4	0.02	12.02	1533.4	0.02
α -Calacorene	12.38	1848.2	0.02	12.06	1536.9	0.03
Salviadienol?	14.64	2056.5	0.06	12.23	1550.0	0.06
Caryophyllene oxide	13.03	1906.5	0.05	12.54	1574.3	0.04
allo-Cedrol	14.50*	2043.2	[1.48]	12.59	1578.6	0.01
α -Cedrol	14.50*	2043.2	[1.48]	12.76	1592.2	1.48
Widdrol	14.92	2083.8	0.01	12.79	1594.5	0.01
epi-Cedrol	15.06	2097.5	0.03	12.91	1603.8	0.02
Torilenol?	15.73*	2164.5	[0.09]	12.95	1606.7	0.04
1-epi-Cubenol	14.02	1997.8	0.02	13.14	1622.5	0.05
τ -Cadinol	15.15	2106.2	0.02	13.31*	1636.7	[0.05]
τ -Muurolol	15.31	2122.0	0.02	13.31*	1636.7	[0.05]
α -Muurolol	15.45	2136.0	0.02	13.37	1641.8	0.04
α -Cadinol	15.73*	2164.5	[0.09]	13.43	1646.9	0.03
Unknown CUSE VIII [m/z 85, 57 (59), 79 (26), 67 (18), 41 (16), 80 (15), 81 (10), 77 (8), 238 (7)]				13.67	1666.7	0.08
Eudesma-4(15),7-dien-1 β -ol	16.31*	2223.8	[0.07]	13.83	1679.8	0.03
β -Turmerone	15.81	2172.0	0.02	14.12	1703.7	0.01

Phenylethyl octanoate				15.73	1845.1	0.02
Manoyl oxide	16.74	2268.6	0.01	17.14*	1976.6	[0.08]
Isopimaradiene	16.31*	2223.8	[0.07]	17.14*	1976.6	[0.08]
7,13-Abietadiene	17.61	2361.0	0.02	18.05	2065.5	0.02
Unknown PISY I [m/z 191, 81 (47), 95 (41), 69 (39), 109 (32), 93 (32)...]	20.20	2659.5	0.02	18.31	2091.6	0.03
Total reported	98.58%			99.00%		

*: 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