

Date : 2026-07-28

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 26E22-PTH05

Customer Identification : Tea Tree ORGANIC - South Africa - T30126

Type : Essential Oil

Source : *Melaleuca alternifolia* ct. Terpinen-4-ol (Tea Tree)

Customer : Plant Therapy

Checked and 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 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 : 1.4781 ± 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
Ethanol	0.01	Aliphatic alcohol
Isobutyral	tr	Aliphatic aldehyde
2-Methylbutyral	0.01	Aliphatic aldehyde
(2E)-Hexenal	0.01	Aliphatic aldehyde
(3Z)-Hexenol	0.03	Aliphatic alcohol
Hexanol	0.01	Aliphatic alcohol
α -Thujene	0.69	Monoterpene
α -Pinene	2.31	Monoterpene
Camphene	0.02	Monoterpene
α -Fenchene	0.01	Monoterpene
β -Pinene	0.61	Monoterpene
Sabinene	0.14	Monoterpene
Myrcene	0.81	Monoterpene
Pseudolimonene	0.01	Monoterpene
α -Phellandrene	0.34	Monoterpene
(3Z)-Hexenyl acetate	0.03	Aliphatic ester
α -Terpinene	9.40	Monoterpene
Carvomenthene	0.02	Aliphatic alcohol
<i>para</i> -Cymene	2.60	Monoterpene
1,8-Cineole	2.39	Monoterpenic ether
β -Phellandrene	0.63	Monoterpene
Limonene	0.91	Monoterpene
(E)- β -Ocimene	0.02	Monoterpene
γ -Terpinene	20.82	Monoterpene
<i>cis</i> -Sabinene hydrate	0.04	Monoterpenic alcohol
<i>para</i> -Cymenene	0.07	Monoterpene
Terpinolene	3.33	Monoterpene
<i>trans</i> -Sabinene hydrate	0.05	Monoterpenic alcohol
Linalool	0.06	Monoterpenic alcohol
endo-Fenchol	0.04	Monoterpenic alcohol
<i>cis-para</i> -Menth-2-en-1-ol	0.24	Monoterpenic alcohol
Cosmene isomer I	0.02	Monoterpene
<i>trans</i> -Pinocarveol	0.02	Monoterpenic alcohol
<i>trans-para</i> -Menth-2-en-1-ol	0.17	Monoterpenic alcohol
Unknown	0.01	Oxygenated monoterpene
Unknown	0.02	Unknown
Borneol	0.02	Monoterpenic alcohol
Terpinen-4-ol	42.90	Monoterpenic alcohol
<i>para</i> -Cymen-8-ol	0.07	Monoterpenic alcohol
α -Terpineol	2.99	Monoterpenic alcohol

<i>cis</i> -Piperitol	0.06	Monoterpenic alcohol
<i>trans</i> -Piperitol	0.10	Monoterpenic alcohol
<i>exo</i> -2-Hydroxycineole	0.01	Monoterpenic alcohol
<i>cis-para</i> -Mentha-1(7),8-dien-2-ol	0.01	Monoterpenic alcohol
Nerol	0.03	Monoterpenic alcohol
Unknown	0.02	Oxygenated monoterpene
Piperitone	0.02	Monoterpenic ketone
<i>cis</i> -Carvenone oxide?	0.02	Monoterpenic ketone
<i>trans</i> -Ascaridole glycol	0.05	Monoterpenic alcohol
<i>cis</i> -Ascaridole glycol	0.04	Monoterpenic alcohol
Thymol	0.02	Monoterpenic alcohol
Carvacrol	0.03	Monoterpenic alcohol
Unknown	0.05	Monoterpenic alcohol
α -Cubebene	0.04	Sesquiterpene
Unknown	0.02	Unknown
Isoledene	0.05	Sesquiterpene
α -Copaene	0.07	Sesquiterpene
7-Cubebene	0.04	Sesquiterpene
7-Cubebene epimer?	0.02	Aliphatic alcohol
β -Cubebene	0.02	Sesquiterpene
Unknown	0.02	Sesquiterpene
Methyleugenol	0.03	Phenylpropanoid
α -Gurjunene	0.22	Sesquiterpene
β -Maaliene	0.02	Sesquiterpene
β -Caryophyllene	0.25	Sesquiterpene
β -Gurjunene	0.06	Sesquiterpene
α -Maaliene	0.05	Sesquiterpene
Aromadendrene	0.68	Sesquiterpene
Selina-5,11-diene	0.11	Sesquiterpene
Cadina-3,5-diene isomer I?	0.11	Sesquiterpene
<i>trans</i> -Muurolo-3,5-diene	0.06	Sesquiterpene
α -Humulene	0.08	Sesquiterpene
Valerena-4,7(11)-diene	0.03	Sesquiterpene
allo-Aromadendrene	0.35	Sesquiterpene
γ -Gurjunene	0.04	Sesquiterpene
Selina-4,11-diene	0.03	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.19	Sesquiterpene
γ -Muurolo-3,5-diene	0.03	Sesquiterpene
β -Selinene	0.08	Sesquiterpene
allo-Aromadendr-9-ene	0.08	Sesquiterpene
δ -Selinene	0.04	Sesquiterpene
Epizonarene	0.02	Sesquiterpene
Viridiflorene	0.71	Sesquiterpene
Bicyclogermacrene	0.31	Sesquiterpene
α -Selinene	0.05	Sesquiterpene

α -Muurolene	0.13	Sesquiterpene
γ -Cadinene	0.04	Sesquiterpene
<i>trans</i> -Calamenene	0.09	Sesquiterpene
Zonarene	0.26	Sesquiterpene
δ -Cadinene	0.58	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.12	Sesquiterpene
α -Calacorene	0.02	Sesquiterpene
Unknown	0.02	Unknown
Epiglobulol	0.10	Sesquiterpene alcohol
Unknown	tr	Oxygenated sesquiterpene
Palustrol	0.06	Sesquiterpene alcohol
Unknown	0.02	Oxygenated sesquiterpene
Maaliol	0.06	Sesquiterpene alcohol
Spathulenol	0.10	Sesquiterpene alcohol
Globulol	0.40	Sesquiterpene alcohol
Gleenol	0.03	Sesquiterpene alcohol
Viridiflorol	0.21	Sesquiterpene alcohol
Cubeban-11-ol	0.18	Sesquiterpene alcohol
Eudesm-5-en-11-ol analog	0.06	Sesquiterpene alcohol
Ledol	0.11	Sesquiterpene alcohol
1,10-diepi-Cubenol	0.02	Sesquiterpene alcohol
Rosifoliol	0.18	Sesquiterpene alcohol
1-epi-Cubenol	0.18	Sesquiterpene alcohol
10-epi-Cubenol?	0.03	Sesquiterpene alcohol
Isospathulenol	0.05	Sesquiterpene alcohol
Cubenol	0.12	Sesquiterpene alcohol
α -Muurolol	0.05	Sesquiterpene alcohol
Methyl eudesmate	0.02	Phenolic ester
Consolidated total	99.44	

tr: The compound has been detected below 0.005% of the total signal

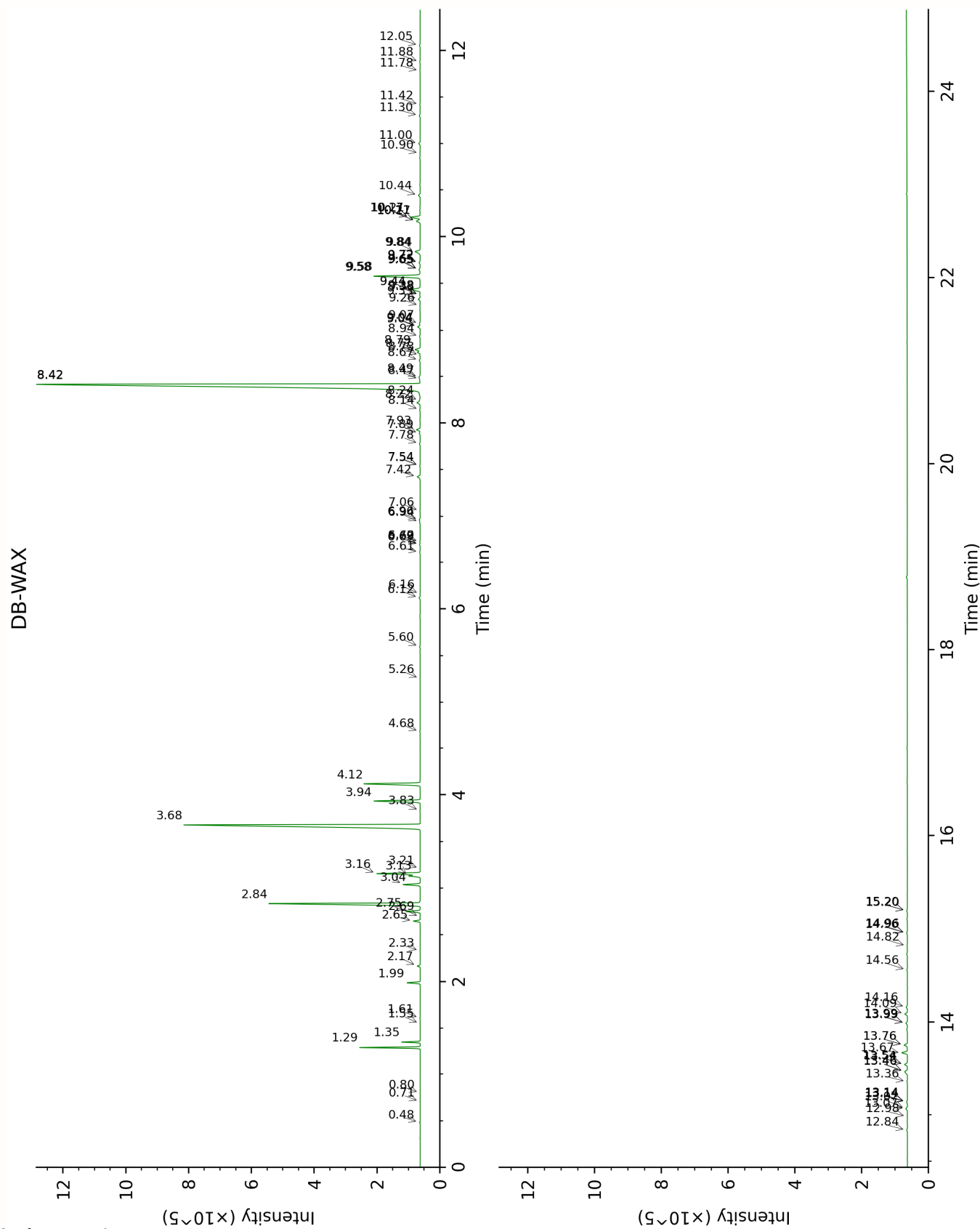
Note: no correction factor was applied

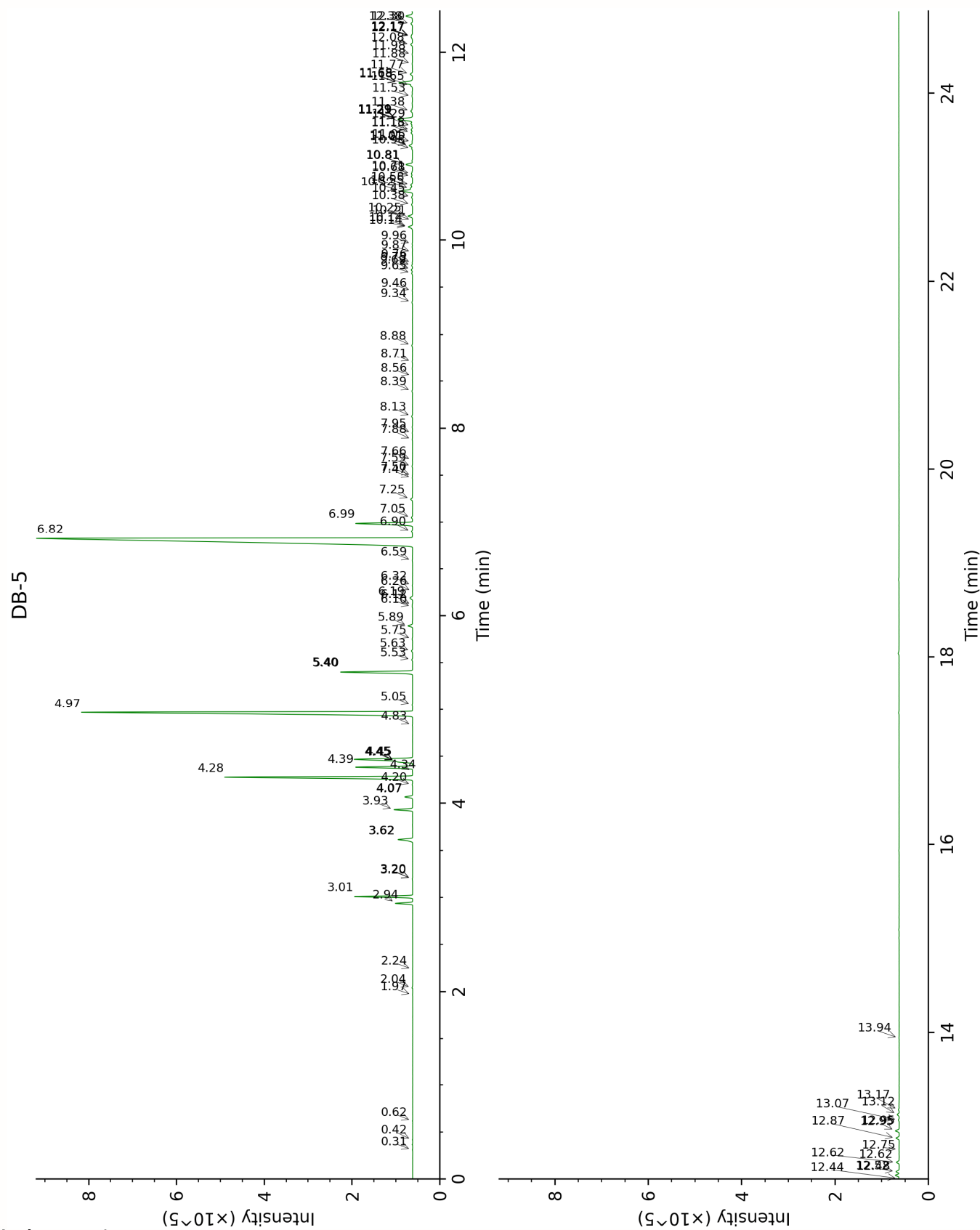
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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





FULL ANALYSIS DATA

Ethanol	Column DB-WAX			Column DB-5		
	0.80	910.3	tr	0.31	506.6	0.01
Isobutylal	0.48	780.1	0.01	0.42	540.9	tr
2-Methylbutylal	0.71	877.9	tr	0.62	653.7	0.01
(2E)-Hexenal	3.21	1169.0	0.02	1.97	849.7	0.01
(3Z)-Hexenol	5.60	1342.6	0.04	2.04	856.0	0.03
Hexanol	5.26	1317.7	0.02	2.24	872.8	0.01
α -Thujene	1.35	998.6	0.67	2.94	926.5	0.69
α -Pinene	1.29	989.2	2.29	3.01	931.3	2.31
Camphene	1.61	1027.1	0.02	3.20*	943.9	[0.03]
α -Fenchene	1.55	1021.1	0.01	3.20*	943.9	[0.03]
β -Pinene	1.99	1064.1	0.61	3.62*	972.0	[0.77]
Sabinene	2.17	1081.8	0.14	3.62*	972.0	[0.77]
Myrcene	2.75	1132.7	0.80	3.93	993.4	0.81
Pseudolimonene	2.69	1127.8	0.01	4.07*	1002.5	[0.37]
α -Phellandrene	2.65	1124.7	0.34	4.07*	1002.5	[0.37]
(3Z)-Hexenyl acetate	4.68	1279.7	0.02	4.20	1010.8	0.03
α -Terpinene	2.84	1139.4	9.35	4.28	1015.9	9.40
Carvomenthene	2.33	1098.0	0.02	4.34	1019.7	0.02
<i>para</i> -Cymene	3.94	1224.7	2.61	4.39	1022.7	2.60
1,8-Cineole	3.16	1164.6	2.39	4.45†	1026.7	0.64
β -Phellandrene	3.13	1162.5	0.63	4.45†	1026.7	0.64
Limonene	3.04	1155.3	0.91	4.45†	1026.7	0.64
(E)- β -Ocimene	3.83	1217.0	0.02	4.83	1051.0	0.02
γ -Terpinene	3.68	1205.7	20.76	4.97	1059.8	20.82
<i>cis</i> -Sabinene hydrate	6.72	1425.6	0.03	5.05	1065.3	0.04
<i>para</i> -Cymenene	6.12	1380.9	0.07	5.40*	1087.5	[3.41]
Terpinolene	4.12	1238.3	3.33	5.40*	1087.5	[3.41]
<i>trans</i> -Sabinene hydrate	7.78	1505.2	0.04	5.53	1095.8	0.05
Linalool	7.89	1513.8	0.06	5.63	1101.8	0.06
endo-Fenchol	8.24	1541.3	0.05	5.76	1110.1	0.04
<i>cis-para</i> -Menth-2-en-1-ol	7.93	1517.0	0.24	5.89	1119.1	0.24
Cosmene isomer I	6.16	1384.0	tr	6.10	1132.3	0.02
<i>trans</i> -Pinocarveol	9.04*	1604.2	[0.17]	6.12	1133.5	0.02
<i>trans-para</i> -Menth-2-en-1-ol	8.77	1582.8	0.18	6.19	1138.2	0.17
Unknown PLOR I [m/z 109, 43 (73), 71 (54), 124 (51), 69 (37), 41				6.26	1143.0	0.01

(35)...152 (5)]						
Unknown MEAL II [m/z 109, 124 (45), 119 (41), 43 (35), 91 (28), 95 (25)...]	6.69*	1423.1	[0.05]	6.32	1147.0	0.02
Borneol	9.58*	1648.4	[3.05]	6.59	1164.2	0.02
Terpinen-4-ol	8.42*	1555.3	[43.72]	6.82	1179.6	42.90
<i>para</i> -Cymen-8-ol	11.30	1793.8	0.07	6.90	1184.6	0.07
α -Terpineol	9.58*	1648.4	[3.05]	6.99	1190.5	2.99
<i>cis</i> -Piperitol	9.38*	1631.8	[0.03]	7.05	1194.4	0.06
<i>trans</i> -Piperitol	10.21*	1700.1	[0.67]	7.25	1207.3	0.10
<i>exo</i> -2-Hydroxycineole	11.42	1803.8	0.03	7.47	1222.8	0.01
<i>cis-para</i> -Mentha-1(7),8-dien-2-ol	11.78	1836.0	0.03	7.50	1224.4	0.01
Nerol	10.90	1758.9	0.02	7.59	1231.1	0.03
Unknown CIAU II [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]				7.66	1235.8	0.02
Piperitone	9.72*	1660.2	[0.08]	7.88	1250.6	0.02
<i>cis</i> -Carvenone oxide?				7.95	1255.4	0.02
<i>trans</i> -Ascaridole glycol	13.99*	2040.0	[0.11]	8.13	1267.6	0.05
<i>cis</i> -Ascaridole glycol	14.56	2095.7	0.04	8.39	1286.0	0.04
Thymol	14.96*	2135.0	[0.06]	8.56	1297.2	0.02
Carvacrol	15.20*	2159.1	[0.05]	8.71	1307.5	0.03
Unknown MEAL I [m/z 97, 112 (92), 83 (62), 43 (44), 41 (25)... 170? (4)]	14.82	2121.0	0.03	8.88	1316.6	0.05
α -Cubebene	6.61	1417.0	0.04	9.34	1349.2	0.04
Unknown EUGL I [m/z 43, 95 (62), 107 (45), 110 (41), 55 (28), 67 (25)...]	13.76*	2017.3	[0.22]	9.46	1357.8	0.02
Isoledene	6.69*	1423.1	[0.05]	9.65	1371.0	0.05
α -Copaene	6.96	1443.8	0.07	9.69	1373.6	0.07
7-Cubebene	6.94	1441.7	0.04	9.73	1376.8	0.04
7-Cubebene epimer?	7.06	1451.0	0.02	9.76	1378.9	0.02
β -Cubebene	7.54*	1487.4	[0.03]	9.87	1387.0	0.02
Unknown EUGL IV				9.96	1393.0	0.02

[m/z 93, 122 (98), 161 (98), 107 (86), 95 (46), 105 (72)... 204 (34)]						
Methyleugenol	13.14*	1959.5	[0.06]	10.14*	1405.9	[0.25]
α -Gurjunene	7.42	1478.6	0.22	10.14*	1405.9	[0.25]
β -Maaliene	7.54*	1487.4	[0.03]	10.21	1411.0	0.02
β -Caryophyllene	8.22	1539.7	0.24	10.25	1414.5	0.25
β -Gurjunene	8.14	1533.6	0.03	10.38	1423.5	0.06
α -Maaliene	8.47	1559.3	0.06	10.45	1429.5	0.05
Aromadendrene	8.42*	1555.3	[43.72]	10.52	1434.5	0.68
Selina-5,11-diene	8.49	1561.2	0.10	10.55	1436.3	0.11
Cadina-3,5-diene isomer I?				10.58	1439.2	0.11
<i>trans</i> -Muurolo-3,5- diene	8.67	1575.4	0.06	10.68	1446.4	0.06
α -Humulene	9.07	1606.8	0.06	10.71	1448.8	0.08
Valerena-4,7(11)- diene	8.73	1580.1	0.03	10.81*	1456.0	[0.36]
allo- Aromadendrene	8.80	1585.1	0.35	10.81*	1456.0	[0.36]
γ -Gurjunene	8.94	1596.1	0.05	10.98	1468.6	0.04
Selina-4,11-diene	9.26	1622.4	0.03	11.01*	1471.2	[0.22]
<i>trans</i> -Cadina- 1(6),4-diene	9.04*	1604.2	[0.17]	11.01*	1471.2	[0.22]
γ -Muurolole	9.38*	1631.8	[0.03]	11.05	1474.2	0.03
β -Selinene	9.65*	1654.0	[0.09]	11.15	1481.4	0.08
allo-Aromadendr- 9-ene	9.33	1628.2	0.13	11.18	1483.7	0.08
δ -Selinene	9.44*	1636.6	[0.75]	11.21	1486.4	0.04
Epizonarene	9.65*	1654.0	[0.09]	11.29*	1492.1	[0.97]
Viridiflorene	9.44*	1636.6	[0.75]	11.29*	1492.1	[0.97]
Bicyclogermacrene	9.84*	1670.0	[0.44]	11.29*	1492.1	[0.97]
α -Selinene	9.72*	1660.2	[0.08]	11.29*	1492.1	[0.97]
α -Muurolole	9.84*	1670.0	[0.44]	11.38	1498.7	0.13
γ -Cadinene	10.17*	1696.7	[0.30]	11.53	1510.6	0.04
<i>trans</i> -Calamenene	11.00	1768.0	0.10	11.65	1519.6	0.09
Zonarene	10.17*	1696.7	[0.30]	11.68*	1521.9	[0.86]
δ -Cadinene	10.21*	1700.1	[0.67]	11.68*	1521.9	[0.86]
<i>trans</i> -Cadina-1,4- diene	10.44	1719.6	0.12	11.77	1529.3	0.12
α -Calacorene	11.88	1844.6	0.04	11.88	1537.8	0.02
Unknown MISC CCCCI [m/z 235, 161 (467), 121 (40),				11.98	1545.9	0.02

93 (33), 81 (31), 43 (29)...						
Epiglobulol	13.07*	1952.6	[0.12]	12.08	1554.1	0.10
Unknown MEAL III [m/z 161, 109 (98), 82 (93), 43 (72), 105 (68), 93 (59), 69 (56), 119 (55)... 222 (7)]	13.07*	1952.6	[0.12]	12.17*	1560.9	[0.14]
Palustrol	12.05	1860.2	0.06	12.17*	1560.9	[0.14]
Unknown MEAL IV [m/z 107, 163 (88), 59 (60), 93 (49), 43 (47), 81 (46... 204 (5)...	12.98	1944.8	0.02	12.17*	1560.9	[0.14]
Maaliol	12.84	1931.2	0.06	12.17*	1560.9	[0.14]
Spathulenol	14.16	2056.7	0.09	12.30	1571.5	0.10
Globulol	13.67	2009.4	0.38	12.38	1578.0	0.40
Gleenol	13.36	1979.7	0.03	12.44	1582.6	0.03
Viridiflorol	13.76*	2017.3	[0.22]	12.48	1585.3	0.21
Cubeban-11-ol	13.46*	1989.8	[0.27]	12.52	1588.4	0.18
Eudesm-5-en-11-ol analog	13.99*	2040.0	[0.11]	12.62*	1596.2	[0.17]
Ledol	13.14*	1959.5	[0.06]	12.62*	1596.2	[0.17]
1,10-diepi- Cubenol	13.54*	1996.9	[0.20]	12.75	1606.9	0.02
Rosifoliol	14.09	2049.6	0.18	12.87	1617.0	0.18
1-epi-Cubenol	13.54*	1996.9	[0.20]	12.95*	1623.4	[0.21]
10-epi-Cubenol?	13.14*	1959.5	[0.06]	12.95*	1623.4	[0.21]
Isospathulenol	15.20*	2159.1	[0.05]	13.07	1633.0	0.05
Cubenol	13.46*	1989.8	[0.27]	13.12	1637.8	0.12
α-Muurolol	14.96*	2135.0	[0.06]	13.17	1641.9	0.05
Methyl eudesmate				13.94	1706.0	0.02
Total reported		99.00%			99.37%	

*: 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