

**Date :** June 14, 2023

**CERTIFICATE OF ANALYSIS – GC PROFILING**

**SAMPLE IDENTIFICATION**

**Internal code :** 23E25-PTH05


**Customer identification :** Blue Lilly Pilly (Mango Myrtle) - Australia - MT2100R

**Type :** Essential oil

**Source :** *Syzygium oleosum*

**Customer :** Plant Therapy

**ANALYSIS**

**Method:** PC-MAT-014  - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.

**Analyst :** Sylvain Mercier, M. Sc., Chimiste 2014-005

**Analysis date :** May 30, 2023

Checked and approved by :

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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*Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.*

*This report is an update from the first version issued on June 1, 2023, to change the customer identification.*

### *PHYSICOCHEMICAL DATA*

**Physical aspect:** Clear liquid

**Refractive index:**  $1.4796 \pm 0.0003$  (20 °C; method PC-MAT-016)

### *CONCLUSION*

No clear adulterant, contaminant or diluent has been detected using this method. No scientific literature is available for the composition of mango myrtle essential oil, to the best of our knowledge, and therefore the laboratory withholds its conclusions regarding the botanical origin.

## ANALYSIS SUMMARY – CONSOLIDATED CONTENTS

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

Identification	%	Class
Methyl 2-methylbutyrate	0.02	Aliphatic ester
Octane	tr	Alkane
(2E)-Hexenal	tr	Aliphatic aldehyde
(3Z)-Hexenol	0.01	Aliphatic alcohol
Hexanol	0.02	Aliphatic alcohol
Bornylene	tr	Monoterpene
Tricyclene	0.01	Monoterpene
$\alpha$ -Thujene	2.70	Monoterpene
$\alpha$ -Pinene	9.69	Monoterpene
Camphene	0.11	Monoterpene
$\alpha$ -Fenchene	0.04	Monoterpene
$\beta$ -Pinene	33.21	Monoterpene
Sabinene	0.21	Monoterpene
3-Methyl-3-cyclohexenone	0.04	Aliphatic ketone
Myrcene	3.58	Monoterpene
2-Carene	0.02	Monoterpene
$\alpha$ -Phellandrene	1.03	Monoterpene
$\Delta^3$ -Carene	0.01	Monoterpene
(3Z)-Hexenyl acetate	0.03	Aliphatic ester
$\alpha$ -Terpinene	1.09	Monoterpene
Carvomenthene	0.02	Aliphatic alcohol
para-Cymene	1.08	Monoterpene
1,8-Cineole	0.72	Monoterpenic ether
Limonene	1.86	Monoterpene
(Z)- $\beta$ -Ocimene	0.10	Monoterpene
(E)- $\beta$ -Ocimene	0.24	Monoterpene
$\gamma$ -Terpinene	7.57	Monoterpene
cis-Sabinene hydrate	0.02	Monoterpenic alcohol
Terpinolene	30.00	Monoterpene
para-Cymenene	0.07	Monoterpene
Methyl benzoate	0.02	Phenolic ester
trans-Sabinene hydrate	0.03	Monoterpenic alcohol
Unknown	0.03	Oxygenated monoterpene
Linalool	0.27	Monoterpenic alcohol
1,3,8-para-Menthatriene	0.03	Monoterpene
endo-Fenchol	0.09	Monoterpenic alcohol
cis-para-Menth-2-en-1-ol	0.05	Monoterpenic alcohol
trans-Pinocarveol	0.04	Monoterpenic alcohol
trans-para-Menth-2-en-1-ol	0.04	Monoterpenic alcohol
Camphene hydrate	0.37	Monoterpenic alcohol
Epoxyterpinolene	0.02	Monoterpenic ether
Unknown	0.01	Oxygenated monoterpene
1,4-Dimethyl-4-acetylcyclohexene	0.02	Monoterpenic ketone
Pinocarvone	0.01	Monoterpenic ketone
Borneol	0.07	Monoterpenic alcohol

Isopinocampnone	0.01	Monoterpenic ketone
Unknown	0.01	Oxygenated monoterpene
Terpinen-4-ol	1.36	Monoterpenic alcohol
4-Methylacetophenone	0.02	Simple phenolic
para-Cymen-8-ol	0.28	Monoterpenic alcohol
Myrtenal	0.02	Monoterpenic aldehyde
$\alpha$ -Terpineol	1.42	Monoterpenic alcohol
Myrtenol	0.01	Monoterpenic alcohol
Unknown	0.03	Unknown
Unknown	0.04	Unknown
<i>trans</i> -Piperitol	0.02	Monoterpenic alcohol
Unknown	0.02	Oxygenated monoterpene
Citronellol	0.02	Monoterpenic alcohol
Unknown	0.10	Oxygenated monoterpene
Neral	0.01	Monoterpenic aldehyde
Geraniol	0.02	Monoterpenic alcohol
Geranial	0.03	Monoterpenic aldehyde
Unknown	0.10	Oxygenated monoterpene
Bornyl acetate	0.07	Monoterpenic ester
<i>trans</i> -Pinocarvyl acetate	0.03	Monoterpenic ester
Unknown	0.02	Unknown
Unknown	0.02	Unknown
Unknown	0.01	Unknown
Myrtenyl acetate	0.01	Monoterpenic ester
Unknown	0.01	Unknown
Unknown	0.04	Unknown
Citronellyl acetate	0.01	Monoterpenic ester
Neryl acetate	0.02	Monoterpenic ester
$\alpha$ -Copaene	0.02	Sesquiterpene
<i>trans</i> -Myrtenyl acetate	0.02	Monoterpenic ester
Geranyl acetate	0.05	Monoterpenic ester
Tetradecane	0.01	Alkane
Methyleugenol	0.02	Phenylpropanoid
$\beta$ -Caryophyllene	0.33	Sesquiterpene
Aromadendrene	0.04	Sesquiterpene
$\alpha$ -Humulene	0.03	Sesquiterpene
allo-Aromadendrene	0.02	Sesquiterpene
$\delta$ -Selinene	0.01	Sesquiterpene
Viridiflorene	0.09	Sesquiterpene
Bicyclogermacrene	0.01	Sesquiterpene
$\delta$ -Cadinene	0.01	Sesquiterpene
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.02	Sesquiterpenic ether
Globulol	0.04	Sesquiterpenic alcohol
Viridiflorol	0.02	Sesquiterpenic alcohol
Cubeban-11-ol	0.02	Sesquiterpenic alcohol
Eudesm-5-en-11-ol analog	0.02	Sesquiterpenic alcohol
Rosifoliol	0.01	Sesquiterpenic alcohol
meta-Camphorene	0.01	Diterpene
<b>Consolidated total</b>	<b>99.21%</b>	

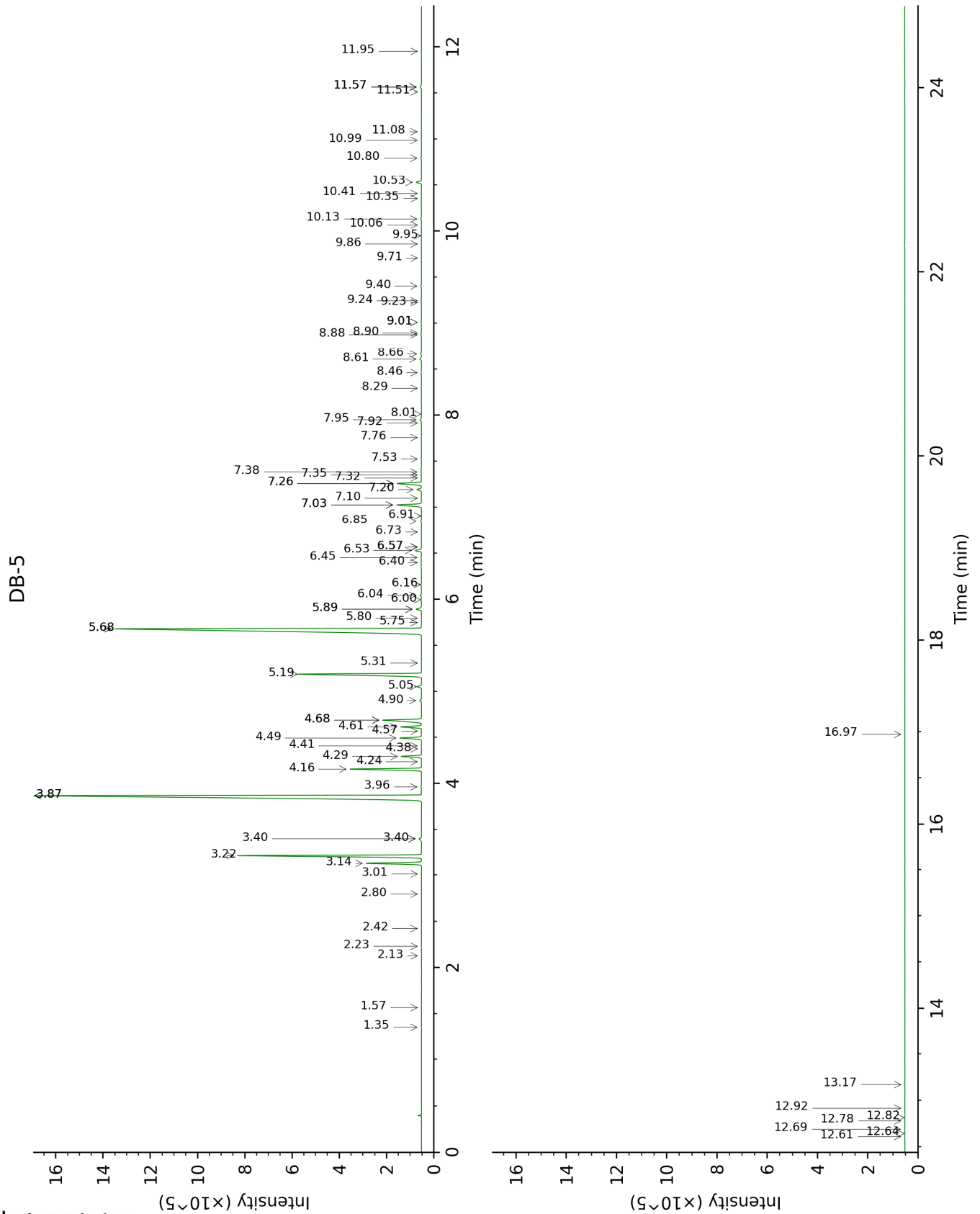
tr: The compound has been detected below 0.005% of total signal.

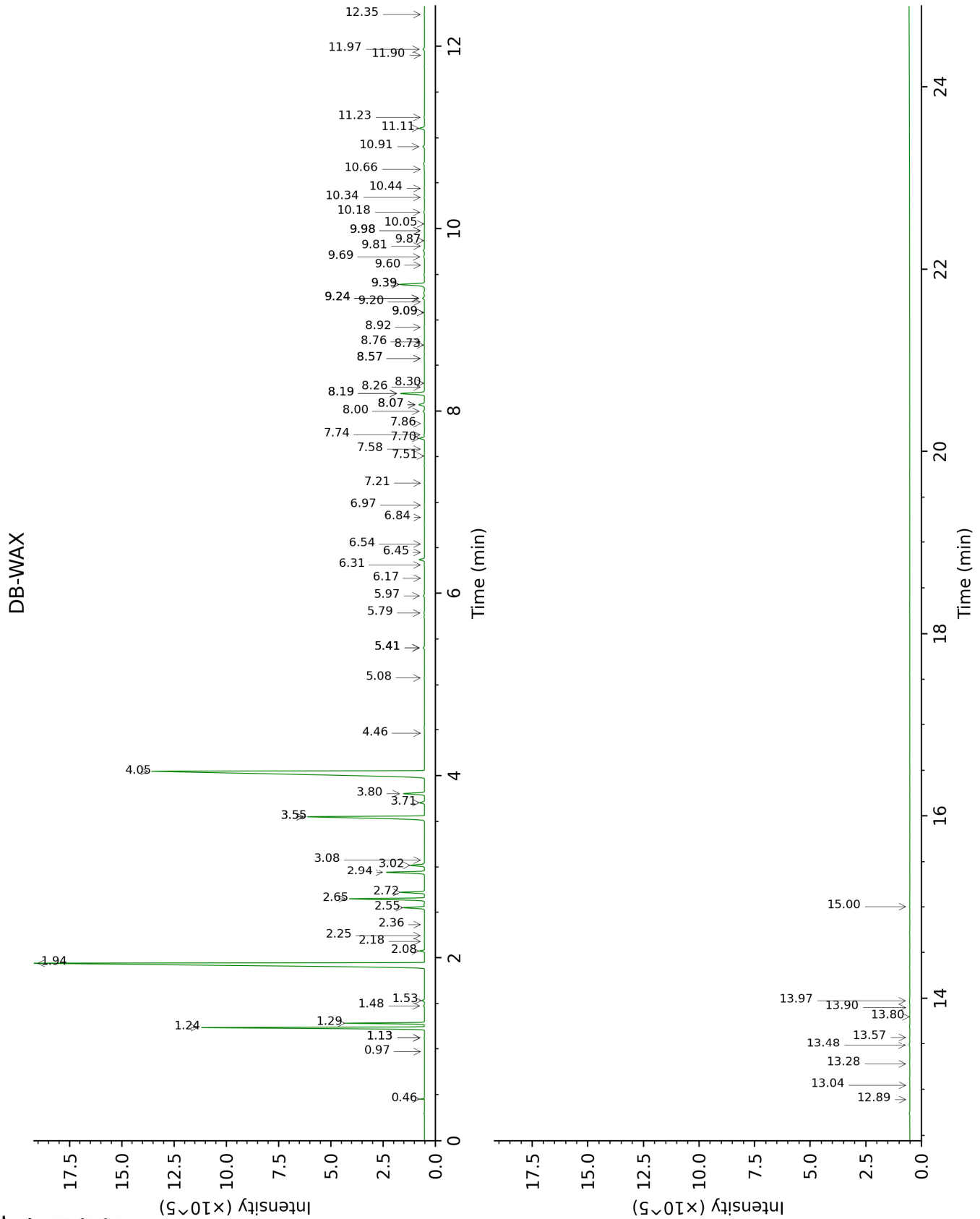
Note: no correction factor was applied

**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.

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







FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Methyl 2-methylbutyrate	1.35	774	0.02	1.13*	976	0.02
Octane	1.57	803	tr	0.46	785	0.07
(2E)-Hexenal	2.13	849	tr	3.08	1172	0.01
(3Z)-Hexenol	2.23	858	0.01	5.40*	1344	0.08
Hexanol	2.42	874	0.02	5.08	1320	0.02
Bornylene	2.80	904	tr	0.97	949	tr
Tricyclene	3.01	918	0.01	1.13*	976	[0.02]
$\alpha$ -Thujene	3.14	926	2.70	1.29	1004	2.70
$\alpha$ -Pinene	3.22	932	9.69	1.24	995	9.68
Camphene	3.40*	944	0.16	1.54	1029	0.11
$\alpha$ -Fenchene	3.40*	944	[0.16]	1.48	1023	0.04
$\beta$ -Pinene	3.87*	974	33.40	1.94	1071	33.21
Sabinene	3.87*	974	[33.40]	2.08	1085	0.21
3-Methyl-3-cyclohexenone	3.96	981	0.04	5.79	1372	0.04
Myrcene	4.16	993	3.58	2.65	1136	3.58
2-Carene	4.24	998	0.02	2.18	1096	0.01
$\alpha$ -Phellandrene	4.29	1002	1.03	2.55	1128	0.99
$\Delta$ 3-Carene	4.38	1008	0.01	2.36	1113	0.01
(3Z)-Hexenyl acetate	4.41	1010	0.03	4.46	1281	0.02
$\alpha$ -Terpinene	4.49	1015	1.09	2.72	1142	1.09
Carvomenthene	4.57	1020	0.02	2.24	1103	0.01
para-Cymene	4.61	1022	1.08	3.80	1230	1.08
1,8-Cineole	4.68*	1027	2.58	3.02	1167	0.72
Limonene	4.68*	1027	[2.58]	2.94	1160	1.86
(Z)- $\beta$ -Ocimene	4.90	1040	0.10	3.55*	1211	7.65
(E)- $\beta$ -Ocimene	5.06	1050	0.24	3.70	1222	0.25
$\gamma$ -Terpinene	5.19	1058	7.57	3.55*	1211	[7.65]
cis-Sabinene hydrate	5.31	1066	0.02	6.54	1428	0.01
Terpinolene	5.68*	1089	30.06	4.05	1249	30.00
para-Cymenene	5.68*	1089	[30.06]	5.97	1386	0.07
Methyl benzoate	5.75	1093	0.02	8.26	1561	0.02
trans-Sabinene hydrate	5.80	1096	0.03	7.58	1507	0.01
Unknown [m/z 95, 150 (45), 110 (35), 107 (23), 109 (21)]	5.89*	1102	0.32	5.40*	1344	[0.08]
Linalool	5.89*	1102	[0.32]	7.70	1517	0.27
1,3,8-para-Menthatriene	6.00	1109	0.03	5.40*	1344	[0.08]
endo-Fenchol	6.04	1112	0.09	8.00	1540	0.08
cis-para-Menth-2-en-1-ol	6.16	1119	0.05	7.74	1520	0.04
trans-Pinocarveol	6.40	1134	0.04	8.76	1600	0.03
trans-para-Menth-2-en-1-ol	6.45	1138	0.04	8.57*	1585	0.04
Camphene hydrate	6.53	1143	0.37	8.07*	1546	0.38

Epoxyterpinolene	6.57*	1145	0.03	6.31	1411	0.02
Unknown [m/z 109, 41 (49), 124 (41), 43 (31), 95 (28), 84 (22)... 152 (7)]	6.57*	1145	[0.03]	6.45	1421	0.01
1,4-Dimethyl-4-acetylcyclohexene	6.57*	1145	[0.03]	6.97	1461	0.02
Pinocarvone	6.73	1156	0.01	7.51	1502	0.02
Borneol	6.85	1163	0.07	9.39*	1652	1.49
Isopinocampone	6.91	1167	0.01	7.21	1479	0.02
Unknown [m/z 69, 84 (62), 41 (30), 123 (26), 97 (24), 109 (23)...]	7.03*	1175	1.52	9.24*	1639	0.11
Terpinen-4-ol	7.03*	1175	[1.52]	8.19*	1555	1.40
4-Methylacetophenone	7.10	1179	0.02	10.05	1706	0.01
para-Cymen-8-ol	7.20	1185	0.28	11.11	1797	0.29
Myrtenal	7.26*	1189	1.45	8.30	1564	0.02
α-Terpineol	7.26*	1189	[1.45]	9.39*	1652	[1.49]
Myrtenol	7.32	1193	0.01	10.44	1740	0.02
Unknown [m/z 43, 71 (70), 83 (57), 69 (35), 41 (25), 61 (21)...]	7.35	1195	0.03			
Unknown [m/z 43, 83 (29), 55 (14), 98 (9), 71 (6)...]	7.38	1197	0.04			
trans-Piperitol	7.53	1206	0.02	9.98*	1700	0.03
Unknown [m/z 119, 43 (52), 59 (45), 91 (36), 79 (24), 134 (23)...]	7.76	1222	0.02	10.66	1758	0.03
Citronellol	7.92	1232	0.02	10.34	1731	0.02
Unknown [m/z 137, 152 (28), 43 (25), 91 (24), 109 (23), 119 (19)]	7.95	1235	0.10	10.91	1780	0.11
Neral	8.01	1239	0.01	9.08*	1626	0.02
Geraniol	8.29	1257	0.02	11.23	1807	0.03
Geranial	8.46	1269	0.03	9.69	1677	0.06
Unknown [m/z 95, 67 (45), 41 (42), 110 (42), 43 (41), 59 (36)]	8.61	1278	0.10	11.97	1874	0.09
Bornyl acetate	8.66	1282	0.07	7.86	1529	0.03
trans-Pinocarvyl acetate	8.88	1296	0.03	8.73	1598	0.03
Unknown [m/z 136, 93 (94), 91 (39), 77 (35), 79 (34), 121 (29), 108 (17)...]	8.90	1298	0.02	11.90	1868	0.01
Unknown [m/z 69, 41 (79), 91 (59), 92 (55), 79 (52), 107 (40)...]	9.01*	1306	0.04			

Unknown [m/z 93, 111 (86), 43 (70), 110 (55), 59 (53), 69 (52), 41 (47)...]	9.01*	1306	[0.04]	13.04	1974	0.01
Myrtenyl acetate	9.23	1321	0.01	9.20	1636	0.02
Unknown [m/z 69, 41 (58), 114 (29), 43 (25), 83 (24), 123 (20)...]	9.24	1322	0.01			
Unknown [m/z 135, 91 (76), 43 (59), 77 (39), 93 (33)...]	9.40	1333	0.04			
Citronellyl acetate	9.71	1354	0.01	9.08*	1626	[0.02]
Neryl acetate	9.86	1365	0.02	9.81	1686	0.02
$\alpha$ -Copaene	9.95	1372	0.02	6.84	1451	0.01
<i>trans</i> -Myrtenyl acetate	10.06	1380	0.02	9.87	1691	0.01
Geranyl acetate	10.13	1384	0.05	10.18	1717	0.05
Tetradecane	10.35	1400	0.01	6.17	1400	0.01
Methyleugenol	10.41	1404	0.02	12.89	1959	0.01
$\beta$ -Caryophyllene	10.53	1413	0.33	8.07*	1546	[0.38]
Aromadendrene	10.80	1433	0.04	8.19*	1555	[1.40]
$\alpha$ -Humulene	10.99	1447	0.03	8.92	1613	0.03
allo-Aromadendrene	11.08	1454	0.02	8.57*	1585	[0.04]
$\delta$ -Selinene	11.51	1486	0.01	9.24*	1639	[0.11]
Viridiflorene	11.57*	1490	0.10	9.24*	1639	[0.11]
Bicyclogermacrene	11.57*	1490	[0.10]	9.60	1669	0.01
$\delta$ -Cadinene	11.95	1519	0.01	9.98*	1700	[0.03]
Spathulenol	12.61	1571	0.03	13.97	2063	0.05
Caryophyllene oxide	12.64	1574	0.02	12.35	1908	0.03
Globulol	12.69	1577	0.04	13.48	2015	0.04
Viridiflorol	12.78	1584	0.02	13.57	2024	0.02
Cubeban-11-ol	12.82	1587	0.02	13.28	1996	0.03
Eudesm-5-en-11-ol analog	12.92	1595	0.02	13.80	2046	0.01
Rosifoliol	13.17	1616	0.01	13.90	2056	0.01
meta-Camphorene	16.97	1949	0.01	15.00	2166	0.01
<b>Total identified</b>		<b>98.98%</b>			<b>98.43%</b>	
<b>Total reported</b>		<b>99.35%</b>			<b>98.70%</b>	

\*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken into account in the consolidated total

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