

Date : March 31, 2022

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 22C16-MSR06

Customer identification : Douceur Florale

Type : Essential oil

Source : Blend of oils

Customer : Essence et Sérénité

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 : Pamela Lavoie, M.Sc., Chimiste

Analysis date : March 29, 2022

Checked and approved by :

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 original version issued on March 30, 2022, to correct the customer's name.

PHYSICOCHEMICAL DATA

Physical aspect: Faintly yellow liquid

Refractive index: 1.4703 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method. Characteristic compounds confirm the presence of essential oils of *Salvia sclarea* (linalyl acetate, sclareol), *Amyris balsamifera* (valerianol, eudesmols), *Santalum austrocaledonicum* (santalol, lanceol), and *Melissa officinalis* (methyl citronellate, methyl geranate). High limonene confirms the presence of citrus oils, but the different species listed as ingredients (*Citrus reticulata*, *Citrus limon*, *Citrus sinensis* and *Citrus aurantium*) could not be differentiated individually.

ANALYSIS SUMMARY – CONSOLIDATED CONTENTS

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

Identification	%	Class
(2E)-Hexenal	0.01	Aliphatic aldehyde
(3Z)-Hexenol	0.01	Aliphatic alcohol
2-Methyloctane	0.01	Alkane
Hexanol	0.01	Aliphatic alcohol
Heptanal	0.01	Aliphatic aldehyde
α -Thujene	0.08	Monoterpene
α -Pinene	0.64	Monoterpene
Camphene	0.03	Monoterpene
β -Pinene	2.24	Monoterpene
Sabinene	0.54	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	1.27	Monoterpene
Octanal	0.09	Aliphatic aldehyde
Δ^3 -Carene	0.05	Monoterpene
α -Terpinene	0.02	Monoterpene
para-Cymene	0.96	Monoterpene
1,8-Cineole	0.18	Monoterpenic ether
Limonene	61.82	Monoterpene
(Z)- β -Ocimene	0.08	Monoterpene
(E)- β -Ocimene	0.17	Monoterpene
γ -Terpinene	0.71	Monoterpene
cis-Sabinene hydrate	0.02	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.04	Monoterpenic alcohol
Octanol	0.03	Aliphatic alcohol
Terpinolene	0.06	Monoterpene
trans-Linalool oxide (fur.)	0.04	Monoterpenic alcohol
6,7-Epoxymyrcene	0.01	Monoterpenic ether
trans-Sabinene hydrate	0.02	Monoterpenic alcohol
Linalool	5.78	Monoterpenic alcohol
trans-para-Mentha-2,8-dien-1-ol	0.05	Monoterpenic alcohol
cis-Limonene oxide	0.13	Monoterpenic ether
cis-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
trans-Limonene oxide	0.08	Monoterpenic ether
Epoxyterpinolene	0.02	Monoterpenic ether
Citronellal	0.05	Monoterpenic aldehyde
Borneol	0.01	Monoterpenic alcohol
Terpinen-4-ol	0.04	Monoterpenic alcohol
Cryptone	0.01	Normonoterpenic ketone
α -Terpineol	0.59	Monoterpenic alcohol
Hodiendiol	0.03	Monoterpenic alcohol
Decanal	0.09	Aliphatic aldehyde
Linalyl formate	0.09	Monoterpenic ester
trans-Carveol	0.05	Monoterpenic alcohol
Nerol	0.19	Monoterpenic alcohol
Neral	0.25	Monoterpenic aldehyde

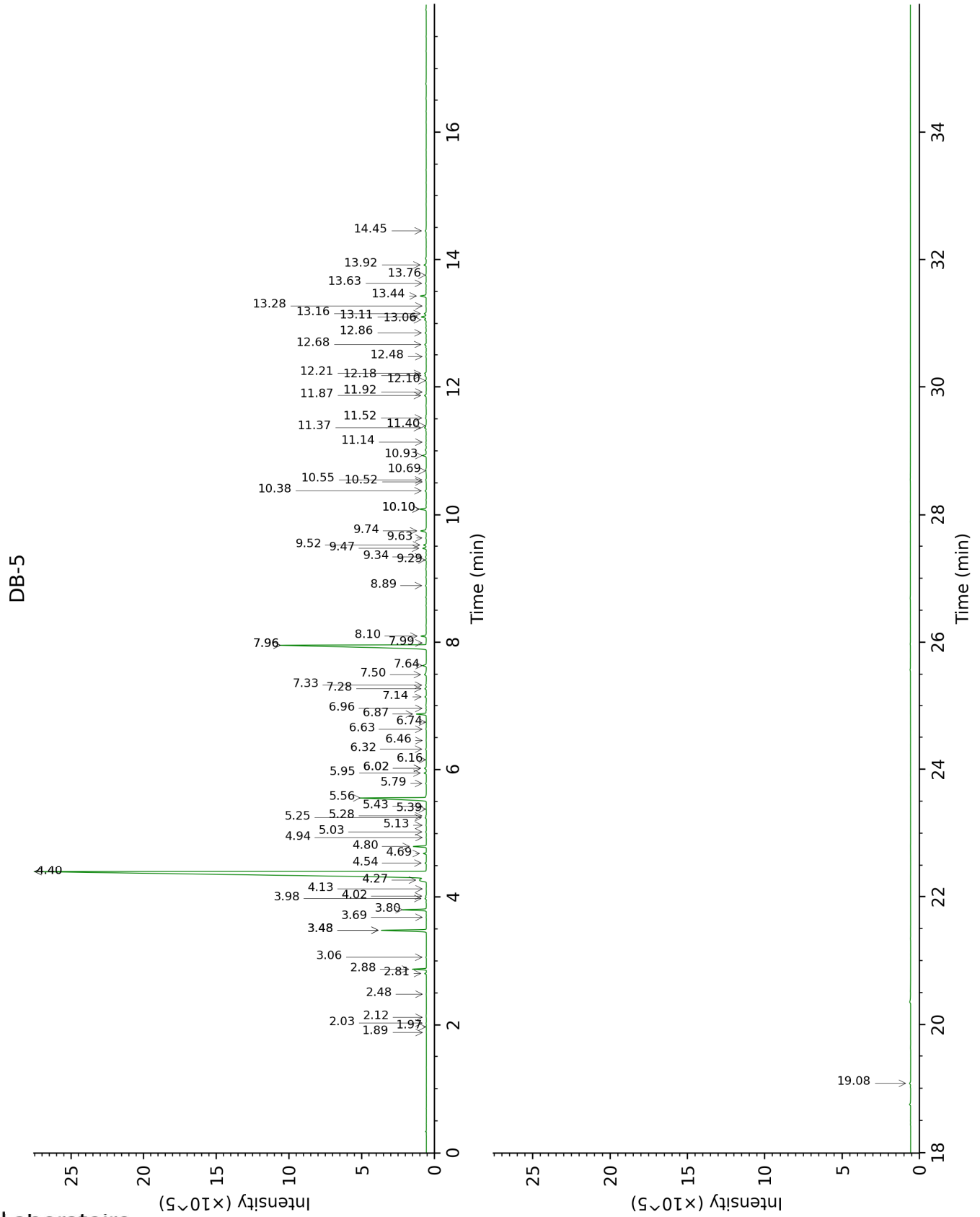
Geraniol	0.29	Monoterpenic alcohol
Linalyl acetate	15.50	Monoterpenic ester
Methyl citronellate	0.02	Monoterpenic ester
Geranial	0.34	Monoterpenic aldehyde
Methyl geranate	0.05	Monoterpenic ester
Unknown	0.04	Oxygenated monoterpene
Unknown	0.05	Oxygenated monoterpene
Neryl acetate	0.23	Monoterpenic ester
α -Copaene	0.19	Sesquiterpene
β -Bourbonene	0.04	Sesquiterpene
Geranyl acetate	0.39	Monoterpenic ester
<i>cis</i> - α -Bergamotene	0.01	Sesquiterpene
β -Caryophyllene	0.43	Sesquiterpene
<i>trans</i> - α -Bergamotene	0.08	Sesquiterpene
epi- β -Santalene	0.01	Sesquiterpene
α -Humulene	0.04	Sesquiterpene
β -Santalene	0.02	Sesquiterpene
Germacrene D	0.26	Sesquiterpene
Valencene	0.03	Sesquiterpene
β -Bisabolene	0.13	Sesquiterpene
γ -Cadinene	0.04	Sesquiterpene
δ -Cadinene	0.06	Sesquiterpene
α -Elemol	0.13	Sesquiterpenic alcohol
Salviadienol?	0.02	Sesquiterpenic alcohol
(<i>E</i>)-Nerolidol	0.04	Sesquiterpenic alcohol
Spathulenol	0.10	Sesquiterpenic alcohol
Caryophyllene oxide	0.13	Sesquiterpenic ether
Guaiol	0.03	Sesquiterpenic alcohol
10-epi- γ -Eudesmol	0.11	Sesquiterpenic alcohol
γ -Eudesmol	0.08	Sesquiterpenic alcohol
β -Eudesmol	0.14	Sesquiterpenic alcohol
α -Eudesmol	0.37	Sesquiterpenic alcohol
Valerianol	0.16	Sesquiterpenic alcohol
7-epi- γ -Eudesmol	0.04	Sesquiterpenic alcohol
(<i>Z</i>)- α -Santalol	0.45	Sesquiterpenic alcohol
(<i>Z</i>)- α - <i>trans</i> -Bergamotol	0.06	Sesquiterpenic alcohol
(<i>Z</i>)-epi- β -Santalol	0.06	Sesquiterpenic alcohol
(<i>Z</i>)- β -Santalol	0.17	Sesquiterpenic alcohol
(<i>Z</i>)-Lanceol	0.10	Sesquiterpenic alcohol
Sclareol	0.10	Diterpenic alcohol
Consolidated total	97.17%	

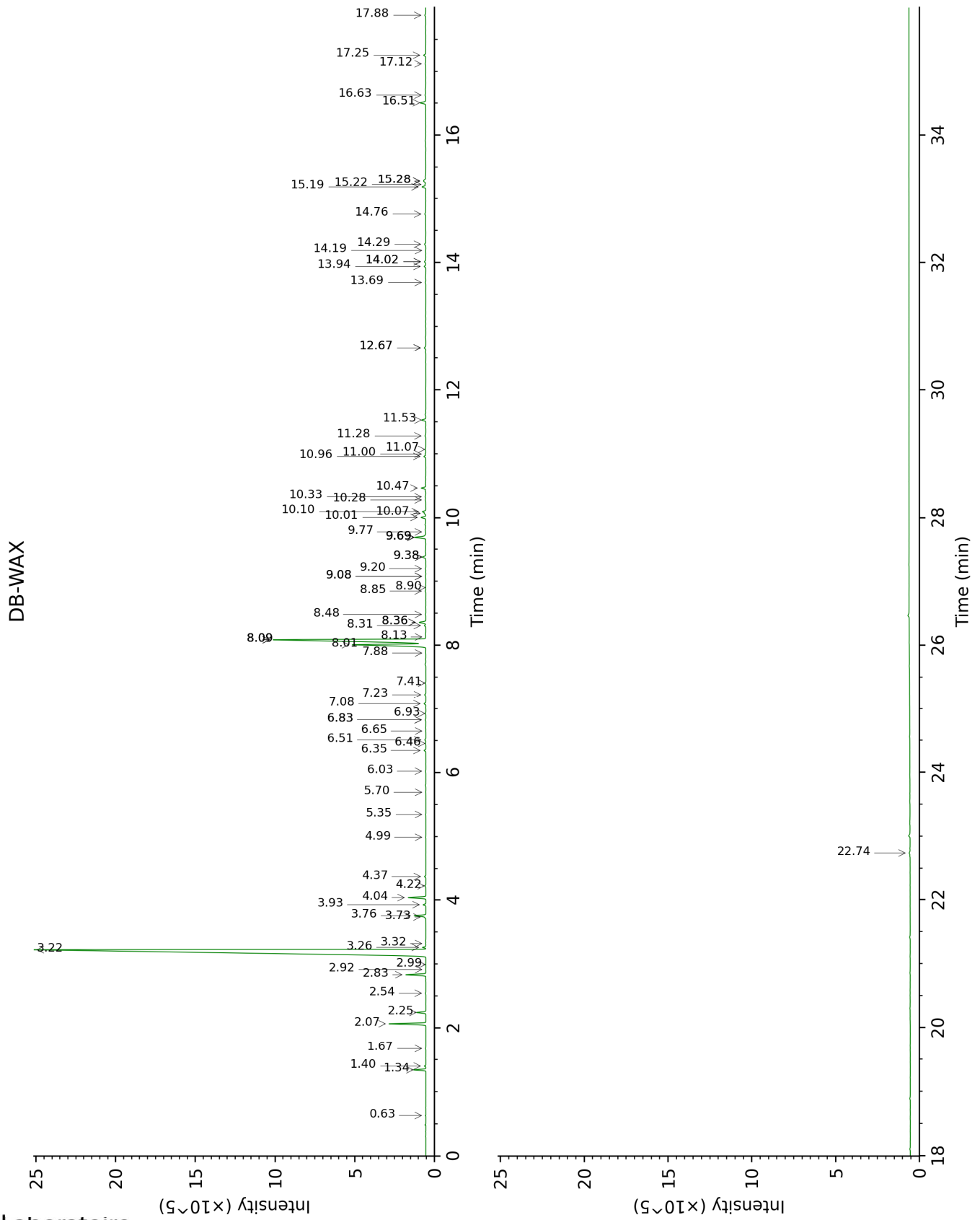
Note: no correction factor was applied

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	%
(2E)-Hexenal	1.88	850	0.01	3.32	1171	0.01
(3Z)-Hexenol	1.97	858	0.01	5.70	1346	0.01
2-Methyloctane	2.03	863	0.01	0.63	846	0.01
Hexanol	2.12	871	0.01	5.35	1321	0.02
Heptanal	2.48	902	0.01	2.99	1145	0.01
α -Thujene	2.81	925	0.08	1.40	1000	0.08
α -Pinene	2.88	929	0.64	1.34	990	0.64
Camphene	3.06	942	0.03	1.67	1027	0.02
β -Pinene	3.48*	970	2.79	2.07	1066	2.24
Sabinene	3.48*	970	[2.79]	2.24	1083	0.54
6-Methyl-5-hepten-2-one	3.68	984	0.02	4.99	1298	0.01
Myrcene	3.80	992	1.27	2.83	1133	1.26
Octanal	3.98	1004	0.09	4.37	1251	0.09
Δ^3 -Carene	4.02	1006	0.05	2.54	1110	0.03
α -Terpinene	4.13	1014	0.02	2.92	1139	0.01
para-Cymene	4.27	1022	0.96	4.04	1226	1.11
1,8-Cineole	4.40*	1031	62.12	3.26	1167	0.18
Limonene	4.40*	1031	[62.12]	3.22	1164	61.82
(Z)- β -Ocimene	4.54	1040	0.08	3.74	1204	0.07
(E)- β -Ocimene	4.69	1049	0.17	3.93	1218	0.17
γ -Terpinene	4.80	1056	0.71	3.76	1206	0.73
cis-Sabinene hydrate	4.94	1065	0.02	6.83*	1428	0.05
cis-Linalool oxide (fur.)	5.03	1071	0.04	6.46	1401	0.04
Octanol	5.13	1077	0.03	8.09*	1523	15.58
Terpinolene	5.25	1085	0.06	4.22	1240	0.07
trans-Linalool oxide (fur.)	5.28	1086	0.04	6.83*	1428	[0.05]
6,7-Epoxyterpinolene	5.39	1093	0.01	6.02	1370	0.03
trans-Sabinene hydrate	5.43	1096	0.02	7.88	1507	0.02
Linalool	5.56	1104	5.78	8.01	1517	5.87
trans-para-Mentha-2,8-dien-1-ol	5.79	1119	0.05	8.85	1582	0.04
cis-Limonene oxide	5.95	1129	0.13	6.35	1393	0.13
cis-para-Mentha-2,8-dien-1-ol	6.02*	1134	0.13	9.38*	1624	0.27
trans-Limonene oxide	6.02*	1134	[0.13]	6.51	1405	0.08
Epoxyterpinolene	6.16	1143	0.02	6.65	1415	0.01
Citronellal	6.32	1153	0.05	6.93	1436	0.04
Borneol	6.46	1162	0.01	9.69*	1649	0.91
Terpinen-4-ol	6.63	1173	0.04	8.48	1554	0.03

Cryptone	6.74	1180	0.01	9.08*	1600	0.03
α -Terpineol	6.87	1188	0.59	9.69*	1649	[0.91]
Hodiendiol	6.96	1194	0.03	12.67*	1905	0.14
Decanal	7.14	1206	0.09	7.23	1458	0.09
Linalyl formate	7.28	1215	0.09	8.31	1540	0.10
<i>trans</i> -Carveol	7.33	1219	0.05	11.28	1782	0.06
Nerol	7.50	1230	0.19	10.96	1755	0.14
Neral	7.64	1239	0.25	9.38*	1624	[0.27]
Geraniol	7.96*	1261	15.80	11.53	1804	0.29
Linalyl acetate	7.96*	1261	[15.80]	8.09*	1523	[15.58]
Methyl citronellate	7.99	1263	0.02	8.09*	1523	[15.58]
Geranial	8.10	1270	0.34	10.01	1675	0.34
Methyl geranate	8.89	1324	0.05	9.69*	1649	[0.91]
Unknown [m/z 43, 79 (47), 71 (31), 94 (27), 81 (23), 41 (22)... 197 (0)]	9.29	1352	0.04	11.00	1758	0.05
Unknown [m/z 43, 79 (46), 71 (30), 94 (25), 41 (23), 81 (21)... 197 (0)]	9.34	1356	0.05	11.07	1764	0.05
Neryl acetate	9.47	1365	0.23	10.10	1683	0.24
α -Copaene	9.52	1369	0.19	7.08	1447	0.14
β -Bourbonene	9.63	1377	0.04	7.41	1472	0.03
Geranyl acetate	9.74	1385	0.39	10.47	1713	0.34
<i>cis</i> - α -Bergamotene	10.10*	1410	0.44	8.13	1526	0.01
β -Caryophyllene	10.10*	1410	[0.44]	8.36*	1544	0.51
<i>trans</i> - α -Bergamotene	10.38	1431	0.08	8.36*	1544	[0.51]
epi- β -Santalene	10.52	1442	0.01	8.90	1586	0.02
α -Humulene	10.55	1444	0.04	9.20	1609	0.03
β -Santalene	10.69	1455	0.02	9.08*	1600	[0.03]
Germacrene D	10.93	1472	0.26	9.69*	1649	[0.91]
Valencene	11.14	1488	0.03	9.77	1656	0.02
β -Bisabolene	11.37	1505	0.13	10.07	1680	0.11
γ -Cadinene	11.40	1507	0.04	10.28	1698	0.05
δ -Cadinene	11.52	1517	0.06	10.33	1702	0.06
α -Elemol	11.87	1544	0.13	13.94	2025	0.13
Salviadienol?	11.92	1549	0.02	14.19	2049	0.02
(<i>E</i>)-Nerolidol	12.10	1563	0.04	13.69	2000	0.04
Spathulenol	12.18	1569	0.10	14.29	2058	0.11
Caryophyllene oxide	12.22	1572	0.13	12.67*	1905	[0.14]
Guaiol	12.48	1592	0.03	14.02*	2032	0.12
10-epi- γ -Eudesmol	12.68	1608	0.11	14.02*	2032	[0.12]
γ -Eudesmol	12.86	1623	0.08	14.76	2104	0.10
β -Eudesmol	13.06	1640	0.14	15.28*	2157	0.28

α-Eudesmol	13.11	1644	0.37	15.18	2147	0.30
Valerianol	13.16	1648	0.16	15.22	2151	0.07
7-epi-γ-Eudesmol	13.28	1658	0.04	15.28*	2157	[0.28]
(Z)-α-Santalol	13.44	1671	0.45	16.51	2285	0.45
(Z)-α-trans-Bergamotol	13.63	1687	0.06	16.63	2298	0.06
(Z)-epi-β-Santalol	13.76	1698	0.06	17.12	2351	0.05
(Z)-β-Santalol	13.92	1712	0.17	17.25	2366	0.17
(Z)-Lanceol	14.45	1758	0.10	17.88	2435	0.08
Sclareol	19.08	2202	0.10	22.74	3044	0.09
Total identified		97.25%			97.07%	
Total reported		97.34%			97.17%	

*: Two or more compounds are coeluting on this column

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

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index