

Date : March 07, 2018

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 18B20-PLG31-1-CC

Customer identification : Basil

Type : Essential oil

Source : *Ocimum basilicum* ct. Methylchavicol

Customer : Plant Guru

ANALYSIS

Method: PC-PA-014-17J19 - Analysis of the composition of an essential oil, or other volatile liquid, by FAST GC-FID (in French); identifications validated by GC-MS.

Analyst : Sarah-Eve Tremblay, M. Sc. A., Chimiste

Analysis date : March 06, 2018

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid

Refractive index: 1.5035 ± 0.0003 (20 °C)

CONCLUSION

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

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
2-Methyl-3-buten-2-ol	tr	0.01	Aliphatic alcohol
Isoamyl alcohol	tr	0.02	Aliphatic alcohol
Toluene	tr	tr	Simple phenolic
(3Z)-Hexenol	0.02	0.03	Aliphatic alcohol
α -Pinene	0.05	0.05	Monoterpene
Camphene	0.02		Monoterpene
Benzaldehyde	tr	tr*	Simple phenolic
β -Pinene	0.09*	0.07	Monoterpene
Sabinene	[0.09]*	0.03	Monoterpene
Octen-3-ol	0.02	0.02	Aliphatic alcohol
6-Methyl-5-hepten-2-one	0.26	0.28	Aliphatic ketone
Myrcene	0.31	0.31	Monoterpene
Octan-3-ol	0.07	0.07	Aliphatic alcohol
Octanal	0.03	0.03	Aliphatic aldehyde
Δ^3 -Carene	0.08		Monoterpene
(3Z)-Hexenyl acetate	0.04	0.03	Aliphatic ester
α -Terpinene	0.01	0.01	Monoterpene
para-Cymene	0.12	0.11	Monoterpene
Limonene	1.33*	0.70	Monoterpene
1,8-Cineole	[1.33]*	0.64*	Monoterpenic ether
β -Phellandrene	[1.33]*	[0.64]*	Monoterpene
2-Ethylhexanol	tr	[tr]*	Aliphatic alcohol
(Z)- β -Ocimene	0.09	0.09	Monoterpene
(E)- β -Ocimene	0.31	0.31	Monoterpene
γ -Terpinene	0.02	0.02	Monoterpene
cis-Linalool oxide (fur.)	0.10	0.10	Monoterpenic alcohol
Octanol	0.07	0.05*	Aliphatic alcohol
Fenchone	0.02	0.02	Aliphatic alcohol
Terpinolene	0.02	0.02	Monoterpene
trans-Linalool oxide (fur.)	0.12	0.12	Monoterpenic alcohol
Linalool	18.29	18.19	Monoterpenic alcohol
6-Methyl-3,5-heptadien-2-one	0.03	0.02*	Aliphatic ketone
Octen-3-yl acetate	0.01	0.01	Aliphatic ester
Unknown	0.07	0.01*	Unknown
neo-Isopulegol	0.01	[0.05]*	Monoterpenic alcohol
trans-Chrysanthemal	0.01	0.01	Monoterpenic aldehyde
Menthone	0.07	0.07	Monoterpenic ketone
Isomenthone	0.02	0.05*	Monoterpenic ketone
Menthol	0.28	0.29*	Monoterpenic alcohol
Terpinen-4-ol	0.08	0.04	Monoterpenic alcohol
Methylchavicol	73.56*	72.90*	Phenylpropanoid
α -Terpineol	[73.56]*	0.15	Monoterpenic alcohol
Octyl acetate	0.04	[0.05]*	Aliphatic ester
Nerol	0.04	0.04	Monoterpenic alcohol
Neral	0.30*	0.29	Monoterpenic aldehyde
(3Z)-Hexenyl isovalerate	[0.30]*	0.05*	Aliphatic ester
Piperitone	0.04	0.04*	Monoterpenic ketone
para-Anisaldehyde	0.05	0.02	Simple phenolic

Geranial	0.39	0.40*	Monoterpenic aldehyde
(<i>E</i>)-Anethole	0.06		Phenylpropanoid
Menthyl acetate	0.01	0.03	Monoterpenic ester
Eugenol	0.06		Phenylpropanoid
8-Hydroxylinalool isomer	0.02		Monoterpenic alcohol
Neryl acetate	0.01	0.12*	Monoterpenic ester
α -Copaene	0.06	[0.05]*	Sesquiterpene
β -Bourbonene	0.02	0.02	Sesquiterpene
Geranyl acetate	0.09	0.02	Monoterpenic ester
(3 <i>Z</i>)-Hexenyl (3 <i>Z</i>)-hexenoate	[0.09]	0.05	Aliphatic ester
β -Elemene	tr	0.81*	Sesquiterpene
α -Gurjunene	0.02*	[0.01]*	Sesquiterpene
Methyleugenol	[0.02]*	0.03	Phenylpropanoid
β -Caryophyllene	0.49*	[0.81]*	Sesquiterpene
<i>cis</i> - α -Bergamotene	[0.49]*	[0.02]*	Sesquiterpene
<i>trans</i> - α -Bergamotene	0.38	[0.81]*	Sesquiterpene
Sesquisabinene A	0.02	[0.29]*	Sesquiterpene
α -Humulene	0.19	[72.90]*	Sesquiterpene
(<i>E</i>)- β -Farnesene	0.08	0.06	Sesquiterpene
γ -Murolene	0.01	0.12*	Sesquiterpene
Germacrene D	0.04	0.03	Sesquiterpene
β -Selinene	0.09*	[0.04]*	Sesquiterpene
<i>trans</i> - β -Bergamotene	[0.09]*	[0.12]*	Sesquiterpene
Bicyclogermacrene	0.08	[0.40]*	Sesquiterpene
α -Zingiberene	0.02	[0.12]*	Sesquiterpene
β -Bisabolene	0.07	[0.12]*	Sesquiterpene
δ -Cadinene	0.04	0.04	Sesquiterpene
(<i>E</i>)- α -Bisabolene	0.49	0.49	Sesquiterpene
(<i>E</i>)- <i>para</i> -Methoxycinnamaldehyde	0.18	0.25	Phenylpropanoid
(<i>E</i>)-Nerolidol	0.13*	0.01	Sesquiterpenic alcohol
Unknown	[0.13]*	0.16	Phenylpropanoid
Spathulenol	0.07*	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	[0.07]*	0.05	Sesquiterpenic ether
Caryophyllene oxide isomer	[0.07]*	0.03	Sesquiterpenic ether
Humulene epoxide II	0.02	0.02	Sesquiterpenic ether
Total identified	99.23%	97.96%	

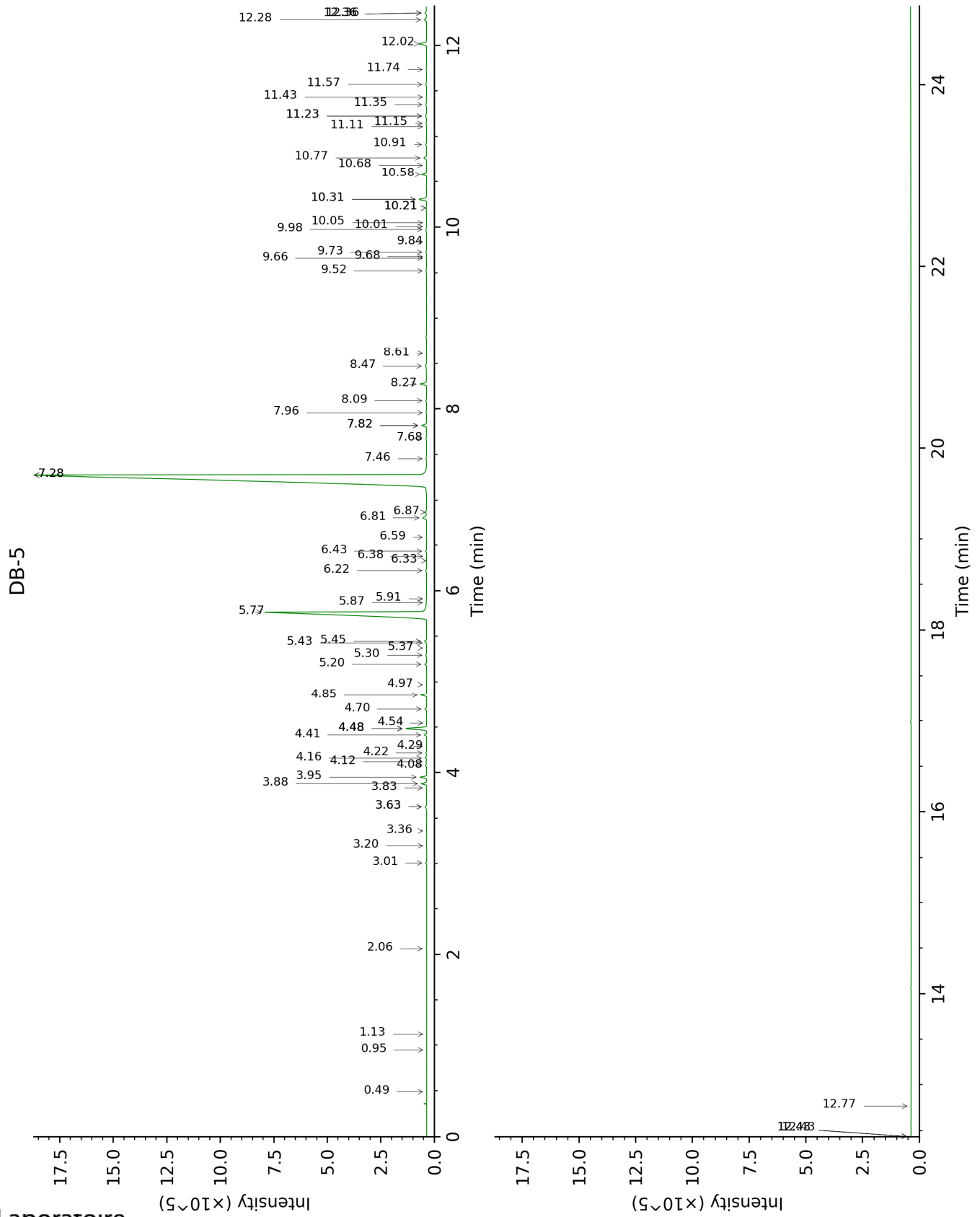
*: Two or more compounds are coeluting on this column

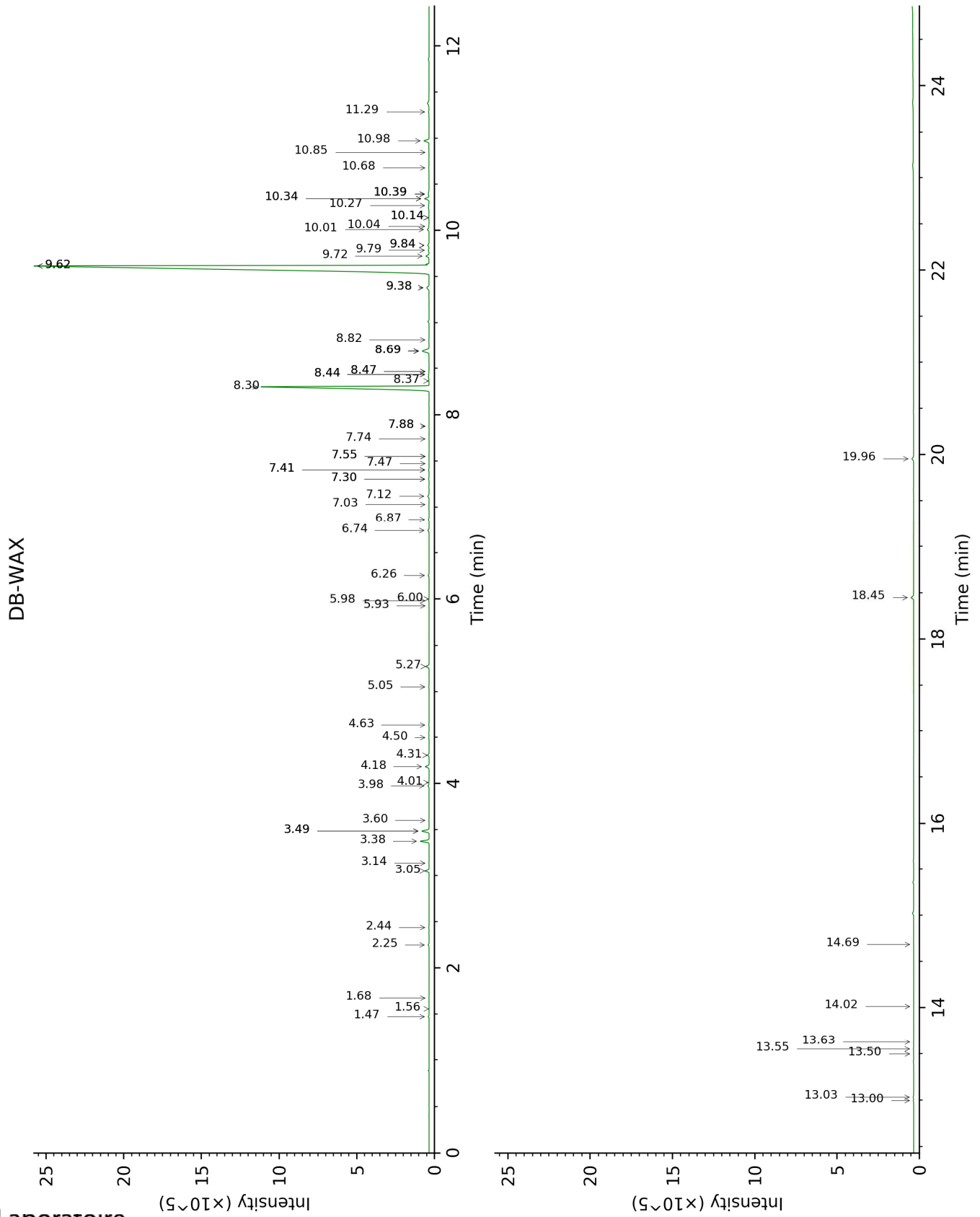
[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

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

Note: no correction factor was applied

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
2-Methyl-3-buten-2-ol	0.49	605	tr	1.68	1015	0.01
Isoamyl alcohol	0.95	727	tr	3.60	1176	0.02
Toluene	1.13	753	tr	1.56	1004	tr
(3Z)-Hexenol	2.06	852	0.02	5.98	1346	0.03
α-Pinene	3.01	925	0.05	1.47	995	0.05
Camphene	3.20	938	0.02			
Benzaldehyde	3.36	948	tr	7.55*	1460	tr
β-Pinene	3.63*	966	0.09	2.25	1069	0.07
Sabinene	3.63*	966	[0.09]	2.44	1086	0.03
Octen-3-ol	3.83	980	0.02	7.03	1422	0.02
6-Methyl-5-hepten-2-one	3.88	983	0.26	5.27	1296	0.28
Myrcene	3.95	988	0.31	3.05	1134	0.31
Octan-3-ol	4.08	996	0.07	6.26	1366	0.07
Octanal	4.12	999	0.03	4.63	1250	0.03
Δ3-Carene	4.16	1001	0.08			
(3Z)-Hexenyl acetate	4.22	1005	0.04	5.05	1280	0.03
α-Terpinene	4.29	1010	0.01	3.14	1141	0.01
para-Cymene	4.41	1017	0.12	4.31	1227	0.11
Limonene	4.48*	1022	1.33	3.38	1159	0.70
1,8-Cineole	4.48*	1022	[1.33]	3.49*	1168	0.64
β-Phellandrene	4.48*	1022	[1.33]	3.49*	1168	[0.64]
2-Ethylhexanol	4.54	1026	tr	7.55*	1460	[tr]
(Z)-β-Ocimene	4.70	1035	0.09	3.98	1204	0.09
(E)-β-Ocimene	4.85	1045	0.31	4.18	1219	0.31
γ-Terpinene	4.97	1052	0.02	4.01	1206	0.02
cis-Linalool oxide (fur.)	5.20	1066	0.10	6.74	1401	0.10
Octanol	5.30	1073	0.07	8.44*	1527	0.05
Fenchone	5.37	1078	0.02	5.93	1343	0.02
Terpinolene	5.43	1081	0.02	4.50	1241	0.02
trans-Linalool oxide (fur.)	5.45	1082	0.12	7.12	1429	0.12
Linalool	5.77	1102	18.29	8.30	1517	18.19
6-Methyl-3,5-heptadien-2-one	5.87	1109	0.03	8.47*	1530	0.02
Octen-3-yl acetate	5.91	1112	0.01	6.00	1348	0.01
Unknown [m/z 95, 67 (86), 41 (68), 82 (64), 123 (62)...]	6.22	1131	0.07	7.88*	1484	0.01
neo-Isopulegol	6.33	1138	0.01	8.44*	1527	[0.05]
trans-Chrysanthemal	6.38	1141	0.01	7.47	1455	0.01
Menthone	6.44	1145	0.07	6.87	1410	0.07
Isomenthone	6.59	1155	0.02	7.30*	1442	0.05
Menthol	6.81	1169	0.28	9.38*	1600	0.29
Terpinen-4-ol	6.87	1173	0.08	8.82	1556	0.04
Methylchavicol	7.28*	1199	73.56	9.62*†	1619	72.90
α-Terpineol	7.28*	1199	[73.56]	10.01	1651	0.15
Octyl acetate	7.46	1210	0.04	7.30*	1442	[0.05]
Nerol	7.68	1225	0.04	11.29	1757	0.04
Neral	7.82*	1235	0.30	9.72	1628	0.29

(3Z)-Hexenyl isovalerate	7.82*	1235	[0.30]	7.40*	1450	0.05
Piperitone	7.96	1244	0.04	10.14*	1661	0.04
para-Anisaldehyde	8.09	1253	0.05	13.50	1952	0.02
Geranial	8.27	1265	0.39	10.34*	1678	0.40
(E)-Anethole	8.47	1278	0.06			
Menthyl acetate	8.61	1288	0.01	8.37	1522	0.03
Eugenol	9.52	1351	0.06			
8-Hydroxylinalool isomer	9.66	1361	0.02			
Neryl acetate	9.68	1362	0.01	10.39*	1682	0.12
α-Copaene	9.73	1366	0.06	7.40*	1450	[0.05]
β-Bourbonene	9.84	1373	0.02	7.74	1474	0.02
Geranyl acetate	9.98†	1383	0.09	10.85	1720	0.02
(3Z)-Hexenyl (3Z)-hexenoate	10.01†	1385	[0.09]	10.27	1672	0.05
β-Elementene	10.05	1388	tr	8.69*	1546	0.81
α-Gurjunene	10.21*	1400	0.02	7.88*	1484	[0.01]
Methyleugenol	10.21*	1400	[0.02]	13.55	1957	0.03
β-Caryophyllene	10.31*	1407	0.49	8.69*	1546	[0.81]
cis-α-Bergamotene	10.31*	1407	[0.49]	8.47*	1530	[0.02]
trans-α-Bergamotene	10.58	1427	0.38	8.69*	1546	[0.81]
Sesquibabinene A	10.68	1435	0.02	9.38*	1600	[0.29]
α-Humulene	10.77	1441	0.19	9.62*†	1619	[72.90]
(E)-β-Farnesene	10.91	1452	0.08	9.79	1633	0.06
γ-Murolene	11.11	1466	0.01	9.84*	1637	0.12
Germacrene D	11.15	1469	0.04	10.04	1654	0.03
β-Selinene	11.23*	1475	0.09	10.14*	1661	[0.04]
trans-β-Bergamotene	11.23*	1475	[0.09]	9.84*	1637	[0.12]
Bicyclogermacrene	11.35	1484	0.08	10.34*	1678	[0.40]
α-Zingiberene	11.43	1490	0.02	10.39*	1682	[0.12]
β-Bisabolene	11.57	1501	0.07	10.39*	1682	[0.12]
δ-Cadinene	11.74	1514	0.04	10.68	1706	0.04
(E)-α-Bisabolene	12.02	1536	0.49	10.98	1730	0.49
(E)-para-Methoxycinnamaldehyde	12.28	1556	0.18	18.45	2457	0.25
(E)-Nerolidol	12.36*	1562	0.13	14.02	2000	0.01
Unknown [m/z 121, 108 (37), 164 (34)]	12.36*	1562	[0.13]	19.96	2632	0.16
Spathulenol	12.43*†	1568	0.07	14.68	2064	0.01
Caryophyllene oxide	12.43*†	1568	[0.07]	13.03	1909	0.05
Caryophyllene oxide isomer	12.43*†	1568	[0.07]	13.00	1906	0.03
Humulene epoxide II	12.77	1594	0.02	13.63	1964	0.02
Total identified		99.23%			97.96%	
Total reported		99.30%			98.13%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified 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