Date : July 23, 2021

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 21G09-PTH02
Customer identification : Coriander Seed - CK010793R
Type : Essential oil
Source : *Coriandrum sativum*
Customer : Plant Therapy

Analysis

Method: PC-MAT-014 ISO - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.
Analyst : Alexis St-Gelais, M. Sc., Chimiste 2013-174
Analysis date : July 20, 2021

Checked and approved by :

Alexis St-Gelais, M. Sc., 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid
Refractive index: 1.4646 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

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

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Analysis summary – Consolidated contents

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

Identification	%	Class
Methyl 2-methylbutyrate	0.01	Aliphatic ester
Hexanol	0.01	Aliphatic alcohol
Tricyclene	0.03	Monoterpene
α-Thujene	0.05	Monoterpene
α-Pinene	5.98	Monoterpene
Camphene	1.12	Monoterpene
β-Pinene	0.49	Monoterpene
Sabinene	0.32	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	0.88	Monoterpene
6-Methyl-5-hepten-2-ol	0.03	Aliphatic alcohol
α-Phellandrene	0.02	Monoterpene
Δ3-Carene	0.02	Monoterpene
α-Terpinene	0.04	Monoterpene
para-Cymene	1.92	Monoterpene
Limonene	2.85	Monoterpene
β-Phellandrene	0.14	Monoterpene
(*Z*)-β-Ocimene	0.02	Monoterpene
(*E*)-β-Ocimene	0.03	Monoterpene
γ-Terpinene	4.37	Monoterpene
cis-Sabinene hydrate	0.07	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.20	Monoterpenic alcohol
para-Cymenene	0.01	Monoterpene
Terpinolene	0.58	Monoterpene
trans-Linalool oxide (fur.)	0.13	Monoterpenic alcohol
2-Hexylfuran	0.01	Furan
trans-Sabinene hydrate	0.02	Monoterpenic alcohol
Linalool	69.90	Monoterpenic alcohol
Camphor	4.95	Monoterpenic ketone
Isopulegol	0.06	Monoterpenic alcohol
Citronellal	0.01	Monoterpenic aldehyde
Pinocarvone	0.03	Monoterpenic ketone
Borneol	0.13	Monoterpenic alcohol
cis-Linalool oxide (pyr.)	0.02	Monoterpenic alcohol
Terpinen-4-ol	0.10	Monoterpenic alcohol
Nonanol	0.01	Aliphatic alcohol
para-Cymen-8-ol	0.03	Monoterpenic alcohol
Myrtenal	tr	Monoterpenic aldehyde
α-Terpineol	0.25	Monoterpenic alcohol
Myrtenol	0.07	Monoterpenic alcohol
Verbenone	0.04	Monoterpenic ketone
Decanal	0.03	Aliphatic aldehyde
Nerol	0.03	Monoterpenic alcohol
Citronellol	0.05	Monoterpenic alcohol
Neral	0.03	Monoterpenic aldehyde

Geraniol	1.28	Monoterpenic alcohol
(2*E*)-Decenal	0.04	Aliphatic aldehyde
Geranial	0.05	Monoterpenic aldehyde
Decanol	0.06	Aliphatic alcohol
(4*E*)-Undecenal	0.01	Aliphatic aldehyde
Undecanal	0.01	Aliphatic aldehyde
Myrtenyl acetate	0.12	Monoterpenic ester
Neryl acetate	0.03	Monoterpenic ester
trans-Myrtanyl acetate	0.02	Monoterpenic ester
Geranyl acetate	2.60	Monoterpenic ester
β-Caryophyllene	0.06	Sesquiterpene
(2*E*)-Dodecenal	0.02	Aliphatic aldehyde
Caryophyllene oxide	0.02	Sesquiterpenic ether
Consolidated total	**99.44%**	

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.

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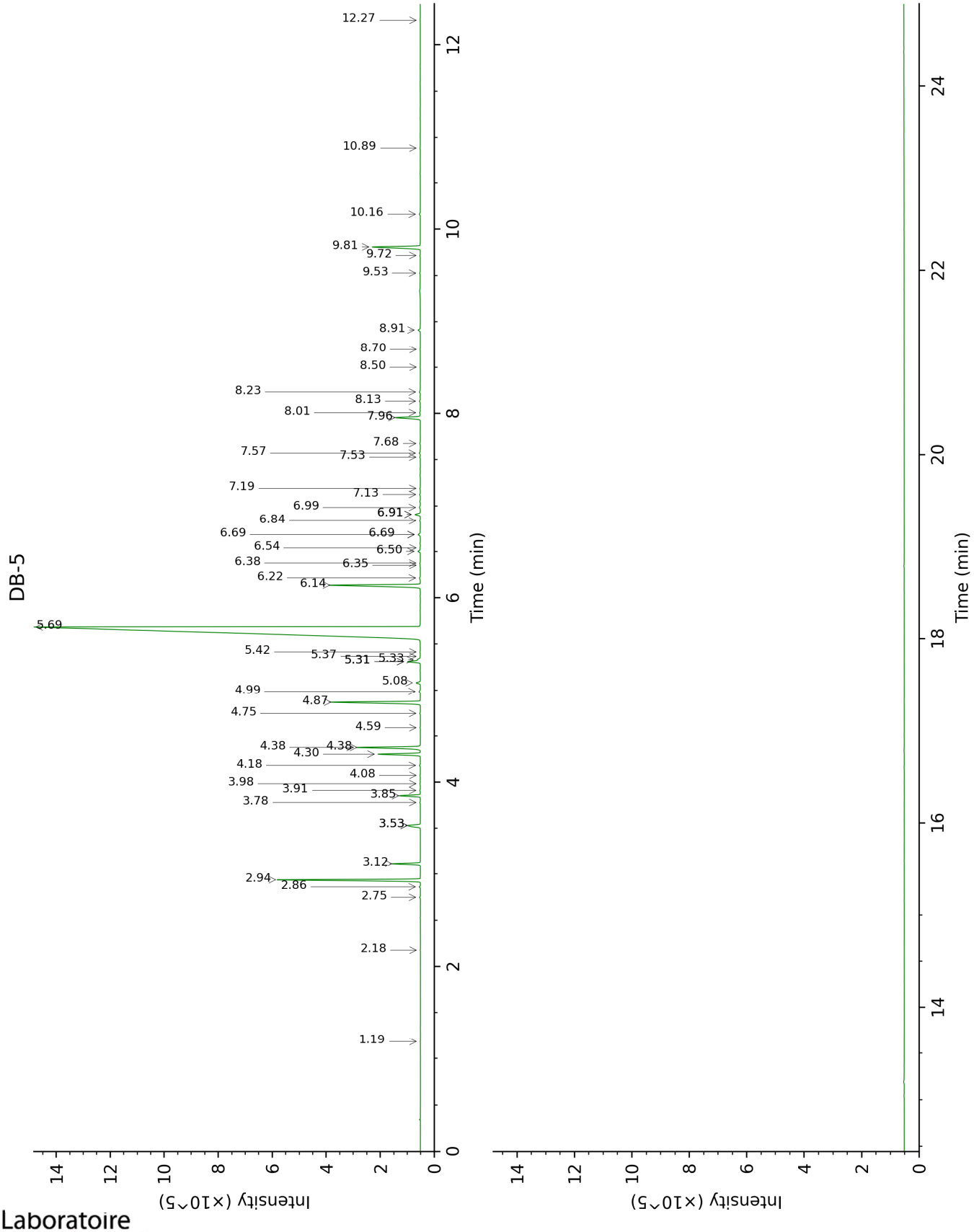
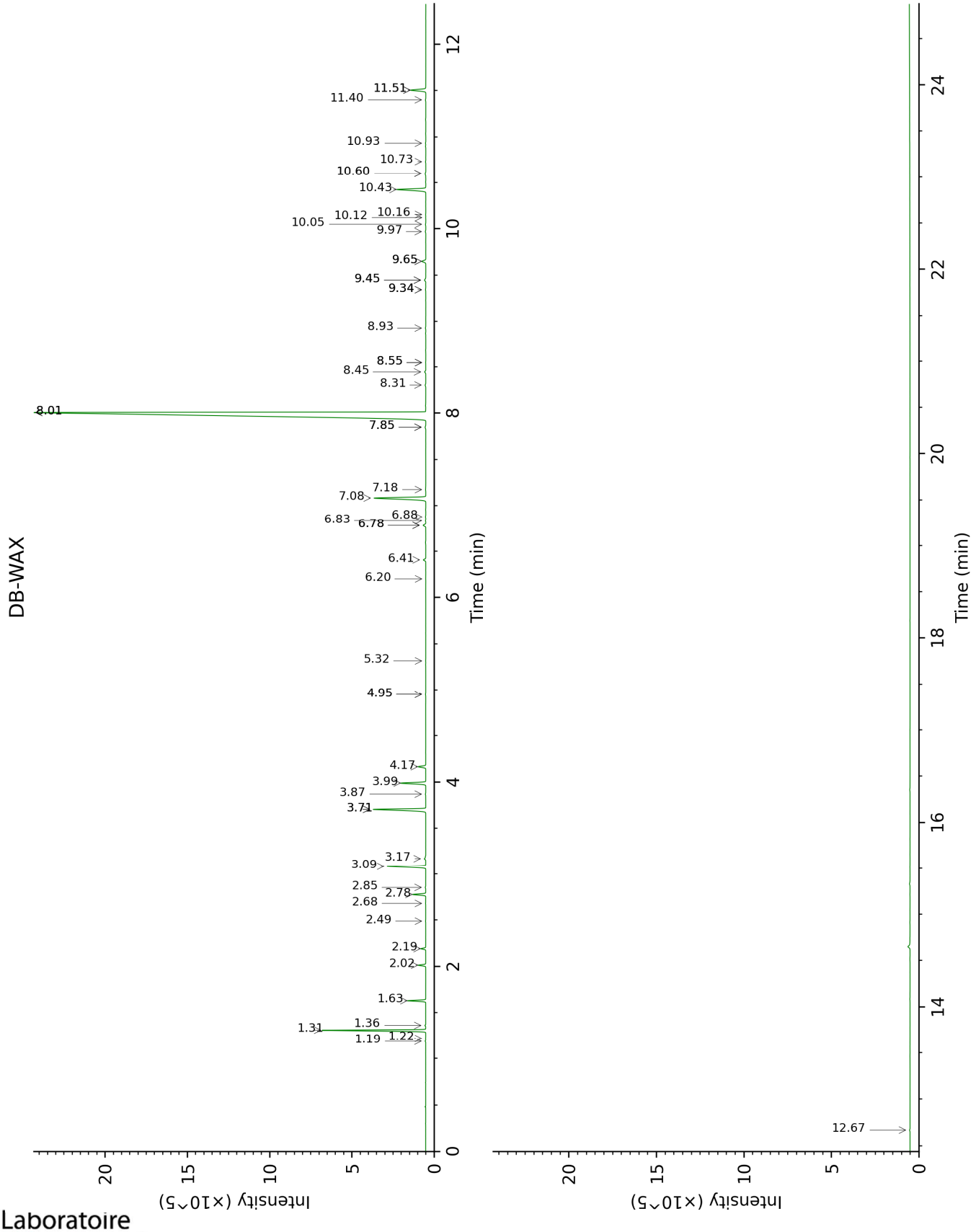

DB-5
12.27
10.89
10.16
9.81
9.72
9.53
8.91
8.70
8.50
8.23
8.13
8.01
7.96
7.68
7.57
7.53
7.19
7.13
6.99
6.91
6.84
6.69
6.69
6.54
6.50
6.38
6.35
6.22
6.14
5.69
5.42
5.37
5.31
5.33
5.08
4.99
4.87
4.75
4.59
4.38
4.38
4.30
4.18
4.08
3.98
3.91
3.85
3.78
3.53
3.12
2.94
2.86
2.75
2.18
1.19
Time (min)
Intensity (×10^5)


DB-WAX
Time (min)
Intensity (×10^5)
11.51
11.40
10.93
10.73
10.60
10.43
10.12
10.16
10.05
9.97
9.65
9.45
9.34
8.93
8.55
8.45
8.31
8.01
7.85
7.18
7.08
6.83
6.88
6.78
6.41
6.20
5.32
4.95
4.17
3.99
3.87
3.71
3.17
3.09
2.85
2.78
2.68
2.49
2.19
2.02
1.63
1.36
1.31
1.19
1.22
12.67

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Methyl 2-methylbutyrate	1.18	774	0.01	1.22	976	0.01
Hexanol	2.18	873	0.01	5.32	1323	0.01
Tricyclene	2.75	918	0.03	1.19	970	0.03
α-Thujene	2.86	926	0.05	1.36	998	0.04
α-Pinene	2.94	931	5.98	1.31	992	5.96
Camphene	3.12	943	1.12	1.63	1026	1.12
β-Pinene	3.53*	971	0.81	2.02	1065	0.49
Sabinene	3.53*	971	[0.81]	2.19	1084	0.32
6-Methyl-5-hepten-2-one	3.78	988	0.02	4.95*	1301	0.03
Myrcene	3.86	993	0.88	2.78	1133	0.88
6-Methyl-5-hepten-2-ol	3.91	997	0.03	6.83	1434	0.03
α-Phellandrene	3.98	1002	0.02	2.68	1126	0.02
Δ3-Carene	4.08	1008	0.02	2.49	1110	0.01
α-Terpinene	4.18	1015	0.04	2.86	1140	0.04
para-Cymene	4.30	1022	1.92	3.99	1229	1.92
Limonene	4.38*	1027	3.00	3.09	1158	2.85
β-Phellandrene	4.38*	1027	[3.00]	3.17	1165	0.14
(*Z*)-β-Ocimene	4.59	1041	0.02	3.71*	1208	4.37
(*E*)-β-Ocimene	4.75	1050	0.03	3.87	1220	0.03
γ-Terpinene	4.87	1058	4.37	3.71*	1208	[4.37]
cis-Sabinene hydrate	4.99	1066	0.07	6.78*	1430	0.24
cis-Linalool oxide (fur.)	5.08	1072	0.20	6.41	1402	0.20
para-Cymenene	5.31*	1087	0.63	6.20	1387	0.01
Terpinolene	5.31*	1087	[0.63]	4.17	1242	0.58
trans-Linalool oxide (fur.)	5.33	1088	0.13	6.78*	1430	[0.24]
2-Hexylfuran	5.37	1090	0.01	4.95*	1301	[0.03]
trans-Sabinene hydrate	5.42	1093	0.02	7.85*	1510	0.08
Linalool	5.69	1111	69.90	8.01*	1522	69.75
Camphor	6.14	1140	4.95	7.08	1452	4.95
Isopulegol	6.22	1145	0.06	8.01*	1522	[69.75]
Citronellal	6.35	1154	0.01	6.88	1437	0.03
Pinocarvone	6.38	1156	0.03	7.85*	1510	[0.08]
Borneol	6.50	1164	0.13	9.65*	1652	0.37
cis-Linalool oxide (pyr.)	6.54	1166	0.02	10.16	1693	0.02
Terpinen-4-ol	6.69*	1176	0.13	8.45	1556	0.10
Nonanol	6.69*	1176	[0.13]	9.34*	1627	0.04
para-Cymen-8-ol	6.84	1186	0.03	11.40	1798	0.04
Myrtenal	6.91*	1190	0.27	8.55*	1564	0.02
α-Terpineol	6.91*	1190	[0.27]	9.65*	1652	[0.37]

Myrtenol	6.98	1195	0.07	10.73	1742	0.03
Verbenone	7.13	1204	0.04	9.45*	1635	0.14
Decanal	7.19	1209	0.03	7.18	1459	0.03
Nerol	7.53	1232	0.03	10.93	1758	0.03
Citronellol	7.57	1235	0.05	10.60*	1731	0.09
Neral	7.68	1242	0.03	9.34*	1627	[0.04]
Geraniol	7.96	1261	1.28	11.51*	1808	1.31
(2*E*)-Decenal	8.01	1265	0.04	8.93	1594	0.04
Geranial	8.14	1273	0.05	9.97	1678	0.05
Decanol	8.23	1280	0.06	10.60*	1731	[0.09]
(4*E*)-Undecenal	8.50	1298	0.01			
Undecanal	8.70	1308	0.01	8.55*	1564	[0.02]
Myrtenyl acetate	8.91	1323	0.12	9.45*	1635	[0.14]
Neryl acetate	9.53	1367	0.03	10.05	1684	0.04
trans-Myrtanyl acetate	9.72	1380	0.02	10.12	1690	0.01
Geranyl acetate	9.81	1387	2.60	10.43	1716	2.59
β-Caryophyllene	10.16	1413	0.06	8.31	1545	0.06
(2*E*)-Dodecenal	10.89	1467	0.02	11.51*	1808	[1.31]
Caryophyllene oxide	12.27	1574	0.02	12.67	1911	0.04
Total identified		**99.51%**			**99.20%**	
Total reported		**99.51%**			**99.20%**	

*: 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