

Date : September 19, 2017

SAMPLE IDENTIFICATION

Internal code : 17I07-ORA20-1-DM

Customer identification : Lime

Type : Essential oil

Source : *Citrus aurantifolia*

Customer : Organic Aromas

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Alexis St-Gelais, M. Sc., chimiste

Analysis date : 2017-09-18

Checked and approved by :

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

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Tricyclene	3.22	915	0.01	tr	911	1.08	Monoterpene
α -Thujene	3.31	920	0.56	1.09	949	1.23	Monoterpene
α -Pinene	3.41	926	2.04	1.49	938	1.19	Monoterpene
Camphene	3.70	943	0.06	0.06	989	1.48	Monoterpene
Sabinene	4.14	969	1.69	2.19	1056	2.04	Monoterpene
β -Pinene	4.22	974	10.79	10.22	1037	1.87	Monoterpene
Myrcene	4.48	989	1.30	1.12	1112	2.63	Monoterpene
Δ^3 -Carene	4.75*	1005	0.05	0.01	1090	2.35	Monoterpene
α -Phellandrene	4.75*	1005	[0.05]	0.02	1105	2.54	Monoterpene
α -Terpinene	4.94	1015	0.22	0.38	1118	2.70	Monoterpene
Limonene	5.26*	1032	56.51	54.31	1146	3.08*	Monoterpene
1,8-Cineole	5.26*	1032	[56.51]	[54.31]	1146	3.08*	Monoterp. ether
para-Cymene	5.26*	1032	[56.51]	2.01	1209	3.90*	Monoterpene
<i>cis</i> - β -Ocimene	5.36	1037	0.04	12.71	1193	3.65*	Monoterpene
<i>trans</i> - β -Ocimene	5.53	1047	0.07	[2.01]	1209	3.90*	Monoterpene
γ -Terpinene	5.76	1060	12.67	[12.71]	1193	3.65*	Monoterpene
Terpinolene	6.20	1083	0.58	0.59	1224	4.12	Monoterpene
Linalool	6.68	1106	0.17	0.15	1492	9.11	Monoterp. alcohol
<i>cis</i> -Limonene oxide	7.34	1130	0.03	0.03	1369	6.36	Monoterp. ether
<i>trans</i> -Limonene oxide	7.46	1134	0.02	0.02	1382	6.57	Monoterp. ether
1-Terpineol	7.61	1139	0.03	0.45	1515	9.91*	Monoterp. alcohol
<i>cis</i> - β -Terpineol	7.97	1152	0.02	0.10	1577	12.23	Monoterp. alcohol
<i>trans</i> - β -Terpineol	8.79*	1182	0.16	0.09	1612	13.77*	Monoterp. alcohol
Terpinen-4-ol	8.79*	1182	[0.16]	1.44	1522	10.19*	Monoterp. alcohol
α -Terpineol	9.46	1203	0.27	0.35	1616	14.01*	Monoterp. alcohol
Decanal	9.79	1210	0.05	0.06	1433	7.69	Aliphatic aldehyde
Nerol	10.56	1227	0.09	0.11	1724	20.05*	Monoterp. alcohol
Neral	11.16	1240	1.06	1.06	1594	12.90*	Monoterp. aldehyde
Geraniol	11.86	1256	0.05	0.07	1775	23.49	Monoterp. alcohol
Geranial	12.69	1274	1.73	1.84	1642	15.35*	Monoterp. aldehyde
δ -Elemene	15.30	1321	0.03	0.04	1412	7.20	Sesquiterpene
Neryl acetate	17.87	1360	1.20	3.66	1655	16.07*	Monoterp. ester
β -Elemene	18.92	1375	0.07	[0.45]	1515	9.91*	Sesquiterpene
Geranyl acetate	19.33	1382	0.22	0.48	1688	17.80*	Monoterp. ester
β -Caryophyllene	20.58	1400	0.56	[0.45]	1515	9.91*	Sesquiterpene
Dodecanal	21.71	1413	0.03	[1.84]	1642	15.35*	Aliphatic aldehyde
<i>trans</i> - α -Bergamotene	22.17	1419	1.18	[1.44]	1522	10.19*	Sesquiterpene
α -Humulene	23.37	1433	0.04	[1.06]	1594	12.90*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.49	1447	0.10	[0.35]	1616	14.01*	Sesquiterpene
Germacrene D	25.58	1460	0.05	[0.09]	1612	13.77*	Sesquiterpene
Viridiflorene	26.27	1468	0.07	0.04	1608	13.54	Sesquiterpene

α -Muurolene	27.75	1485	0.07	[1.84]	1642	15.35*	Sesquiterpene
<i>cis</i> - α -Bisabolene	28.37	1493	0.14	[3.66]	1655	16.07*	Sesquiterpene
β -Bisabolene	28.89	1499	1.82	[3.66]	1655	16.07*	Sesquiterpene
(<i>E,E</i>)- α -Farnesene	29.08	1502	0.27	[0.48]	1688	17.80*	Sesquiterpene
Germacrene B	31.84	1541	0.04	[0.11]	1724	20.05*	Sesquiterpene
<i>trans</i> - α -Bisabolene	32.01	1543	0.13	0.15	1715	19.44	Sesquiterpene
α -Bisabolol	39.53	1687	0.09	0.10	2125	41.00	Sesquiterp. alcohol
Herniarin	41.03	1731	0.12				Coumarin
Citropten	48.13	1987	0.32				Coumarin
Bergapten	49.79	2057	0.10				Furocoumarin
Isopimpinellin	53.61	2230	0.10				Furocoumarin
Total identified			97.02%	96.44%			

*: Two or more compounds are coeluting on this column

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

Note: no correction factor was applied

OTHER DATA

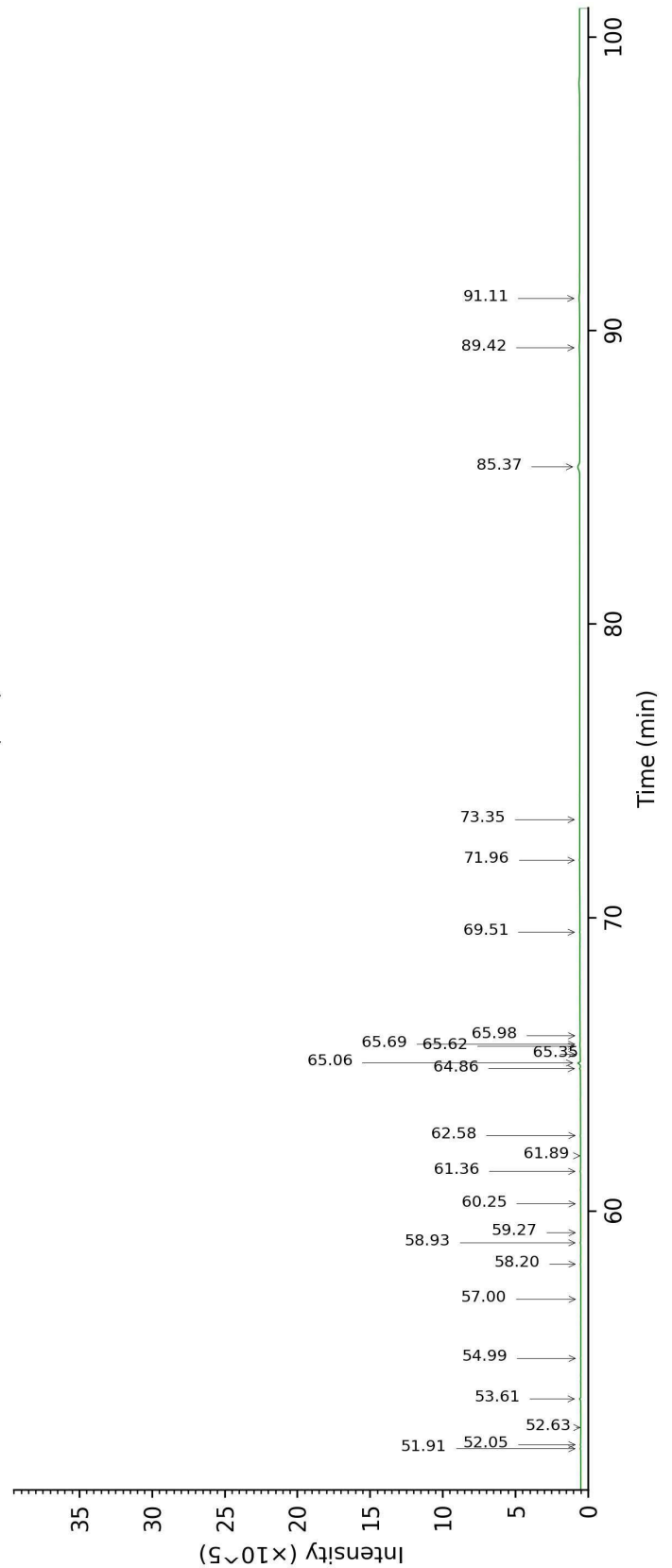
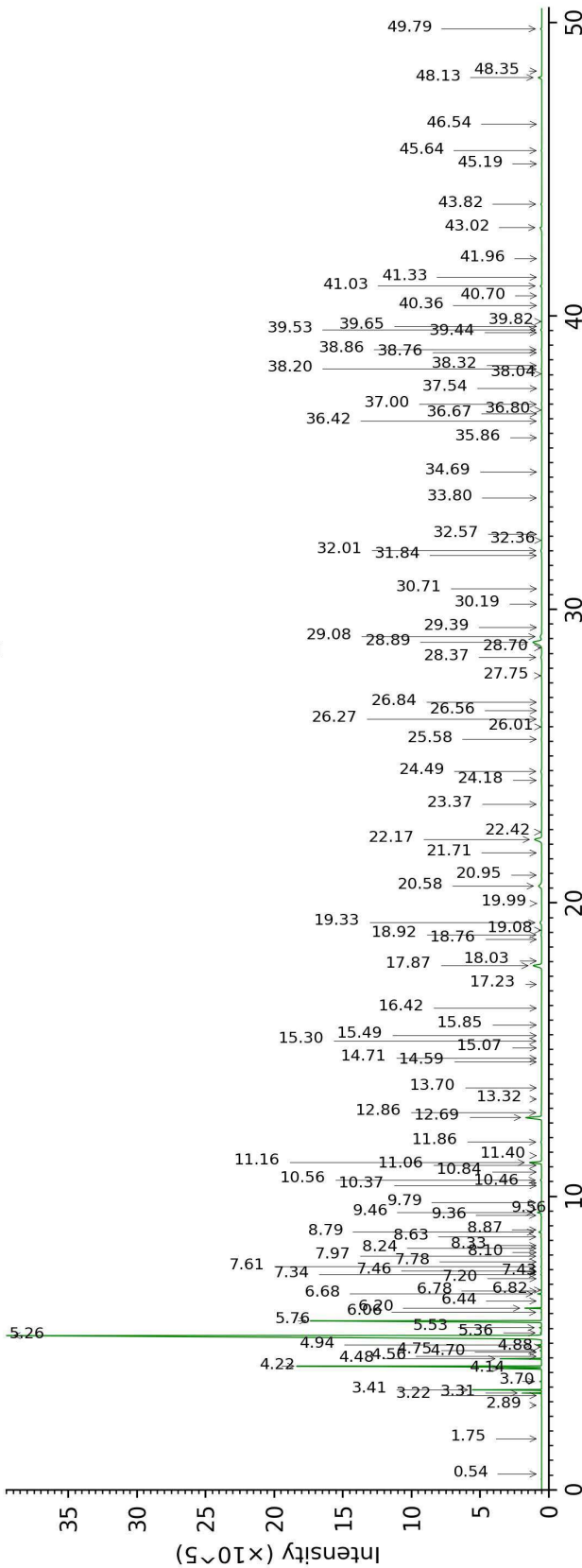
Physical aspect : Orange yellow liquid

Refractive index : 1.4778 \pm 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.

17107-ORA20-1-DM_BP5



17107-ORA20-1-DM_WAX

