

GC/MS BATCH NUMBER: L60105

ESSENTIAL OIL: LEMON

BOTANICAL NAME: CITRUS X LIMON

ORIGIN: USA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LEMON OIL	%
LIMONENE	68.4
β-PINENE	11.9
γ-TERPINENE	7.7
α-PINENE	1.9
SABINENE	1.6
MYRCENE	1.5
GERANIAL	1.3
NERAL	0.8
β-BISABOLENE	0.5
p-CYMENE	0.4
NERYL ACETATE	0.4
α-THUJENE	0.4
GERANYL ACETATE	0.1
α-TERPINEOL	0.1

Comments from Robert Tisserand: Excellent odor profile. Of the 13 key ISO constituents, 11 are within range for US coast type, with γ-terpinene and geranyl acetate slightly low - not a concern.

Date : November 22, 2016

SAMPLE IDENTIFICATION

Internal code : 16K14-PTH17-1-DM

Customer identification : Lemon - L6010564R

Type : Essential oil

Source : *Citrus x limon*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2016-11-22

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	3.17	913	0.01	0.01	922	0.77	Monoterpene
α -Thujene	3.25	918	0.32	0.45	948	0.87	Monoterpene
α -Pinene	3.36	925	1.88	1.79	941	0.84	Monoterpene
Camphene	3.64	942	0.06	0.06	990	1.04	Monoterpene
Sabinene	4.09	969	1.61	1.87	1052	1.47	Monoterpene
β -Pinene	4.18	975	11.85	12.23	1040	1.37	Monoterpene
Myrcene	4.43	989	1.53	1.55	1111	1.94	Monoterpene
α -Phellandrene	4.69*	1005	0.04	0.03	1104	1.88	Monoterpene
Δ 3-Carene	4.69*	1005	[0.04]	tr	1087	1.74	Monoterpene
Octanal	4.82	1012	0.03	0.04	1227	3.31	Aliphatic aldehyde
α -Terpinene	4.88	1015	0.10	0.12	1117	2.00	Monoterpene
Limonene	5.27*	1036	68.91	68.48	1152	2.41	Monoterpene
para-Cymene	5.27*	1036	[68.91]	0.39	1203	3.00	Monoterpene
1,8-Cineole	5.27*	1036	[68.91]	0.17	1152	2.42	Monoterpene
<i>cis</i> - β -Ocimene	5.32	1039	0.21	7.64	1189	2.84*	Monoterpene
<i>trans</i> - β -Ocimene	5.48	1049	0.11	0.16	1198	2.95	Monoterpene
γ -Terpinene	5.71	1061	7.69	[7.64]	1189	2.84*	Monoterpene
<i>cis</i> -Sabinene hydrate	6.01	1077	0.02	0.02	1400	5.76	Monoterp. alcohol
Terpinolene	6.13	1083	0.28	0.26	1220	3.21	Monoterpene
Linalool	6.65	1107	0.09	0.07	1483	7.23	Monoterp. alcohol
Nonanal	6.71	1109	0.06	0.05	1334	4.80	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.25	1129	0.01	0.01	1366	5.27	Monoterp. ether
<i>trans</i> -Limonene oxide	7.36	1134	0.01	0.01	1378	5.45	Monoterp. ether
Citronellal	7.87	1153	0.04	0.03	1412	5.93	Monoterp. aldehyde
Terpinen-4-ol	8.69	1183	0.06	0.08	1523	8.01	Monoterp. alcohol
α -Terpineol	9.36	1203	0.12	0.14	1617	10.79	Monoterp. alcohol
Decanal	9.66	1210	0.03	0.02	1435	6.33	Aliphatic aldehyde
Nerol	10.53	1230	0.05	0.04	1720	15.22	Monoterp. alcohol
Neral	11.03	1241	0.85	0.83	1591	10.01	Monoterp. aldehyde
Geraniol	11.84	1259	0.02	0.02	1772	18.09	Monoterp. alcohol
Geranial	12.56	1275	1.34	1.31	1644	11.86	Monoterp. aldehyde
Citronellyl acetate	17.01	1349	0.02	0.02	1607	10.52	Monoterp. ester
Neryl acetate	17.66	1359	0.41	0.38	1653	12.26	Monoterp. ester
Geranyl acetate	19.13	1382	0.16	0.15	1684	13.58	Monoterp. ester
β -Caryophyllene	20.25	1398	0.23	0.12	1521	7.95	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.83	1417	0.34	0.27	1528	8.16	Sesquiterpene
β -Bisabolene	28.50	1497	0.52	0.52	1660	12.53	Sesquiterpene
Spathulenol	33.73	1569	0.02	0.02	2020	33.56	Sesquiterp. alcohol

Citropten	48.01	1988	0.06			Coumarin
Total identified			99.09%	99.36%		

*: 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

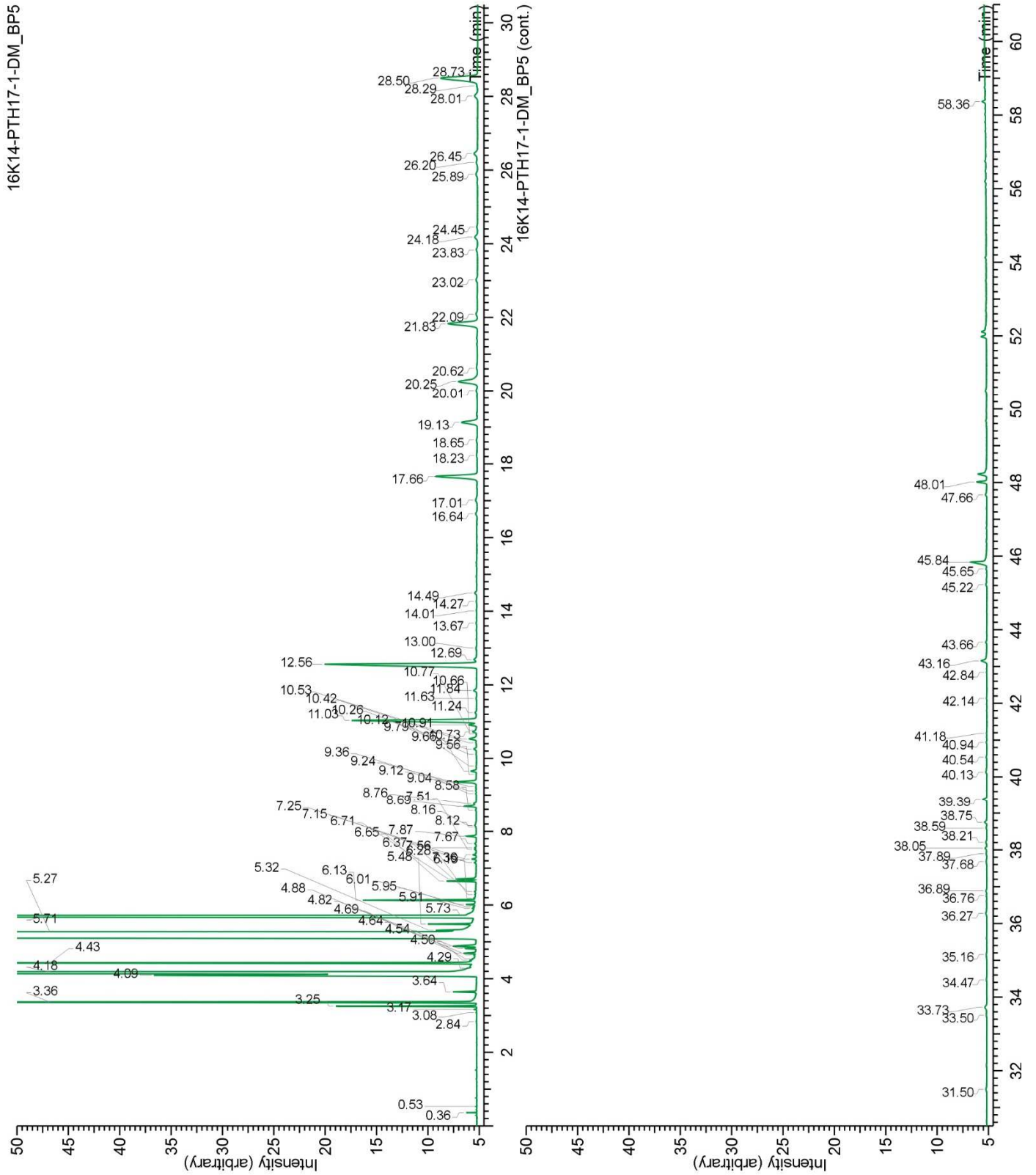
OTHER DATA

Physical aspect : Bright yellow liquid

Refractive index : 1.4740 ± 0.0003 (20 °C)

CONCLUSION

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



16K14-PTH17-1-DM_WAX

