

GC/MS BATCH NUMBER: L60109

ESSENTIAL OIL: LEMON

BOTANICAL NAME: CITRUS X LIMON

ORIGIN: ARGENTINA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LEMON OIL	%
LIMONENE	65.7
β-PINENE	13.2
γ-TERPINENE	8.6
SABINENE	2.2
α-PINENE	1.9
MYRCENE	1.4
GERANIAL	1.3

Comments from Robert Tisserand: Super-zesty, fresh citrus odor profile. All 13 key ISO constituents are within range.

Date : September 26, 2017

SAMPLE IDENTIFICATION

Internal code : 17I20-PTH1-1-DM

Customer identification : Lemon - Argentina - L6010974R

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).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-09-26

Checked and approved by :

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

Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Tricyclene	3.22	915	0.01				Monoterpene
α -Thujene	3.31	920	0.39	0.87	948	1.23	Monoterpene
α -Pinene	3.42	926	1.86	1.36	938	1.19	Monoterpene
Camphene	3.70	943	0.06	0.06	989	1.49	Monoterpene
Sabinene	4.14	969	2.21	2.92	1056	2.04	Monoterpene
β -Pinene	4.23	974	13.18	12.45	1037	1.88	Monoterpene
Myrcene	4.48	989	1.40	1.57	1112	2.63*	Monoterpene
α -Phellandrene	4.75*	1005	0.04	[1.57]	1112	2.63*	Monoterpene
Δ 3-Carene	4.75*	1005	[0.04]	0.02	1105	2.54	Monoterpene
Octanal	4.87	1011	0.07	0.10	1229	4.20	Aliphatic aldehyde
α -Terpinene	4.94	1015	0.17	[1.57]	1112	2.63*	Monoterpene
Limonene	5.28*	1033	65.91	65.69	1148	3.10	Monoterpene
para-Cymene	5.28*	1033	[65.91]	0.37	1208	3.88*	Monoterpene
cis- β -Ocimene	5.36	1038	0.08	8.79	1192	3.63*	Monoterpene
trans- β -Ocimene	5.54	1047	0.13	[0.37]	1208	3.88*	Monoterpene
γ -Terpinene	5.76	1059	8.59	[8.79]	1192	3.63*	Monoterpene
cis-Sabinene hydrate	6.05	1075	0.05	0.05	1400	6.91*	Monoterp. alcohol
Terpinolene	6.20	1083	0.36	0.33	1223	4.11	Monoterpene
Linalool	6.69	1106	0.14	0.10	1491	9.09	Monoterp. alcohol
Nonanal	6.78	1109	0.11	0.11	1334	5.78	Aliphatic aldehyde
cis-Limonene oxide	7.34	1130	0.01	0.01	1369	6.36	Monoterp. ether
trans-Limonene oxide	7.46	1134	0.01	[0.05]	1400	6.91*	Monoterp. ether
Citronellal	7.96	1152	0.06	0.05	1411	7.18	Monoterp. aldehyde
Terpinen-4-ol	8.79	1182	0.05	0.41	1522	10.16*	Monoterp. alcohol
α -Terpineol	9.45	1203	0.21	0.21	1616	13.99*	Monoterp. alcohol
Decanal	9.79	1210	0.04	0.04	1433	7.68	Aliphatic aldehyde
Nerol	10.56	1227	0.03	0.05	1723	19.99	Monoterp. alcohol
Neral	11.15	1240	0.77	0.79	1594	12.88	Monoterp. aldehyde
Geraniol	11.86	1256	0.03	0.04	1774	23.45	Monoterp. alcohol
Geranial	12.68	1274	1.25	1.28	1641	15.31*	Monoterp. aldehyde
Neryl acetate	17.84	1359	0.41	0.99	1654	16.00*	Monoterp. ester
Geranyl acetate	19.33	1382	0.25	0.26	1687	17.76	Monoterp. ester
β -Caryophyllene	20.57	1400	0.23	0.19	1515	9.90	Sesquiterpene
trans- α -Bergamotene	22.14	1419	0.35	[0.41]	1522	10.16*	Sesquiterpene
trans- β -Farnesene	24.48	1446	0.03	[0.21]	1616	13.99*	Sesquiterpene
Bicyclogermacrene	26.82	1474	0.06	[1.28]	1641	15.31*	Sesquiterpene
β -Bisabolene	28.83	1498	0.55	[0.99]	1654	16.00*	Sesquiterpene
Spathulenol	33.93	1570	0.04	0.03	2007	37.40	Sesquiterp. alcohol
α -Bisabolol	39.53	1687	0.02	0.03	2124	40.99	Sesquiterp. alcohol
Citropten	45.70	1890	0.21				Coumarin

Oxypeucedanin	58.49	2472	0.07		Coumarin
Total identified		99.44%	99.17%		

*: 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

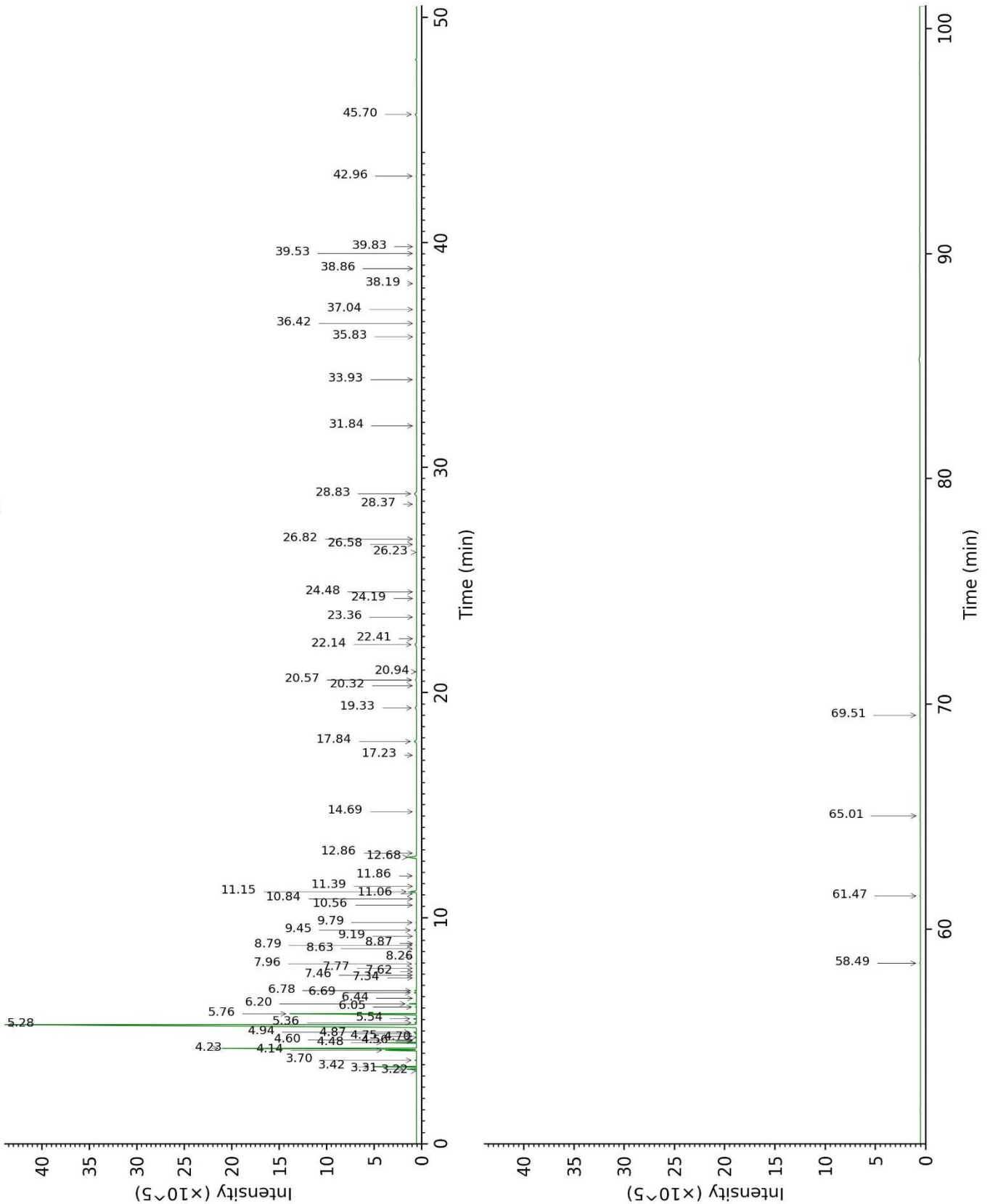
Physical aspect : Yellow liquid

Refractive index : 1.4728 ± 0.0003 (20 °C)

CONCLUSION

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

17120-PTH1-1-DM_BP5



17120-PTH1-1-DM_WAX

