

GC/MS BATCH NUMBER: L70100

ESSENTIAL OIL: LEMON ORGANIC
BOTANICAL NAME: CITRUS X LIMON
ORIGIN: ITALY

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LEMON ORGANIC OIL	%
LIMONENE	66.7
β-PINENE	11.4
Cis-β-OCIMENE	8.6
γ-TERPINENE	8.6
α-PINENE	1.9
GERANIAL	1.8
SABINENE	1.6
MYRCENE	1.5
p-CYMENE	0.9
NERAL	0.9
β-BISABOLENE	0.5
NERYL ACETATE	0.5
GERANYL ACETATE	0.4
α-THUJENE	0.4
α-TERPINEOL	0.4

Comments from Robert Tisserand: This is an excellent lemon oil, which conforms to the ISO standard for lemon oil, except that the p-cymene is slightly high. This is not a problem.

Date : August 19, 2015

SAMPLE IDENTIFICATION

Internal code : 15H10-PTH6-1-AS

Customer identification : Organic Lemon – Italy - 1420061

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 : Alexis St-Gelais, M. Sc.

Analysis date : 2015-08-12

IDENTIFIED COMPOUNDS

Identification	Colonne: BP5			Colonne: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Heptanal	2.62	914	0.01	0.00	1149	2.63	Aliphatic aldehyde
α -Thujene	2.71	920	0.43	0.43	993	1.10	Monoterpene
α -Pinene	2.80	926	1.90	1.90	982	1.05	Monoterpene
Camphene	3.06*	942	0.06	0.06	1022	1.33	Monoterpene
α -Fenchene	3.06*	942	[0.06]	0.00	1016	1.28	Monoterpene
Sabinene	3.49	969	1.58	1.86	1082	1.86	Monoterpene
β -Pinene	3.55	973	11.44	11.22	1065	1.71	Monoterpene
Myrcene	3.83	991	1.50	1.51	1134	2.44	Monoterpene
α -Phellandrene	4.06	1005	0.04	0.03	1124	2.32	Monoterpene
Octanal	4.20	1013	0.06	0.06	1253	4.03	Aliphatic aldehyde
α -Terpinene	4.25	1016	0.14	0.15	1138	2.50	Monoterpene
<i>cis</i> - β -Ocimene	4.59*	1035	67.82	8.61	1209	3.39*	Monoterpene
para-Cymene	4.59*	1035	[67.82]	0.90	1228	3.67*	Monoterpene
Limonene	4.59*	1035	[67.82]	66.65	1166	2.85	Monoterpene
1,8-Cineole	4.68	1041	0.23	0.39	1168	2.87	Monoterp. ether
<i>trans</i> - β -Ocimene	4.85	1050	0.11	[0.90]	1228	3.67*	Monoterpene
γ -Terpinene	5.04	1061	8.59	[8.61]	1209	3.39*	Monoterpene
Terpinolene	5.46	1085	0.37	0.36	1239	3.83	Monoterpene
Linalool	5.92	1109	0.12	0.15	1517	8.84	Monoterp. alcohol
Nonanal	5.97	1112	0.10	0.07	1356	5.56	Monoterp. aldehyde
<i>cis</i> -Limonene oxide	6.39	1131	0.05	0.05	1392	6.11	Monoterp. ether
<i>trans</i> -Limonene oxide	6.48	1135	0.04	0.03	1404	6.30	Monoterp. ether
Citronellal	6.91	1154	0.11	0.10	1434	6.92	Monoterp. aldehyde
α -Terpineol	8.07	1204	0.15	0.17	1641	13.50	Monoterp. alcohol
Decanal	8.35	1212	0.04	0.04	1453	7.33	Aliphatic aldehyde
Nerol	8.98	1229	0.03	0.04	1750	19.41	Monoterp. alcohol
Neral	9.45	1242	0.93	1.00	1618	12.42	Monoterp. aldehyde
Geranial	10.71	1276	1.78	2.31	1668	14.79*	Monoterp. aldehyde
Citronellyl acetate	14.58	1352	0.03	0.03	1626	12.78	Monoterp. ester
Neryl acetate	15.13	1362	0.52	0.53	1679	15.32	Monoterp. ester
Geranyl acetate	16.44	1385	0.36	0.36	1710	16.95	Monoterp. ester
β -Caryophyllene	17.27	1399	0.17	0.20	1526	9.13	Sesquiterpene
<i>trans</i> - α -Bergamotene	18.74	1419	0.34	0.37	1532	9.34	Sesquiterpene
β -Bisabolene	24.86	1499	0.54	[2.31]	1668	14.79*	Sesquiterpene
Total identified			99.59%	99.58%			

*: 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 : 1.4755 ± 0.0003 (20 °C)

CONCLUSION

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

Checked and approved by :

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

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