



GC/MS BATCH NUMBER: O20106

ESSENTIAL OIL: ORANGE (SWEET)
BOTANICAL NAME: CITRUS SINENSIS
ORIGIN: USA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF ORANGE (SWEET) OIL	%
LIMONENE	95.4
MYRCENE	1.9

Comments from Robert Tisserand: Has a fresh, zesty kick without being over-sweet. All twelve key ISO constituents are within range of the standard.

Date : October 23, 2017

SAMPLE IDENTIFICATION

Internal code : 17J16-PTH3-1-CC

Customer identification : Sweet Orange - USA - O2010675R

Type : Essential oil

Source : *Citrus sinensis*

Customer : Plant Therapy

ANALYSIS

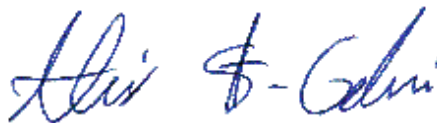
Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-10-23

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.	
α -Thujene	3.32	921	tr	0.55	956	1.18*	Monoterpene
α -Pinene	3.42	927	0.53	[0.55]	956	1.18*	Monoterpene
Sabinene	4.14	969	0.31	0.30	1058	2.02	Monoterpene
β -Pinene	4.21	973	0.02	0.02	1043	1.85	Monoterpene
Myrcene	4.49	990	1.93	1.94	1121	2.62*	Monoterpene
Δ 3-Carene	4.77*	1005	0.11	0.06	1099	2.34	Monoterpene
α -Phellandrene	4.77*	1005	[0.11]	[1.94]	1121	2.62*	Monoterpene
Octanal	4.88	1012	0.21	0.22	1235	4.18	Aliphatic aldehyde
Limonene	5.32*	1035	93.67	95.41	1159	3.12	Monoterpene
para-Cymene	5.32*	1035	[93.67]	0.03	1208	3.77*	Monoterpene
cis- β -Ocimene	5.38	1039	0.01				Monoterpene
trans- β -Ocimene	5.55	1048	0.03	[0.03]	1208	3.77*	Monoterpene
Octanol	6.22*	1084	0.08	0.09	1506	9.24	Aliphatic alcohol
Terpinolene	6.22*	1084	[0.08]	0.01	1229	4.09	Monoterpene
Linalool	6.72	1107	0.45	0.45	1498	9.01	Monoterp. alcohol
Nonanal	6.80	1110	0.04	0.03	1339	5.76	Aliphatic aldehyde
cis-Limonene oxide	7.38	1131	tr				Monoterp. ether
trans-Limonene oxide	7.49	1135	0.01				Monoterp. ether
Citronellal	8.00	1153	0.07	0.06	1418	7.13	Monoterp. aldehyde
α -Terpineol	9.52	1204	0.07	0.07	1623	13.81*	Monoterp. alcohol
Decanal	9.83	1211	0.21	0.24	1441	7.64	Aliphatic aldehyde
Neral	11.21	1242	0.06	0.06	1601	12.73	Monoterp. aldehyde
Geranial	12.73	1275	0.10	0.14	1648	15.11*	Monoterp. aldehyde
α -Copaene	17.75	1358	0.02	0.01	1425	7.30	Sesquiterpene
β -Cubebene	18.74	1373	0.02	0.01	1480	8.60	Sesquiterpene
β -Caryophyllene	20.66	1401	0.02	0.05	1522	9.84*	Sesquiterpene
β -Copaene	21.58	1412	0.03	[0.05]	1522	9.84*	Sesquiterpene
Dodecanal	21.80	1415	0.04	[0.14]	1648	15.11*	Aliphatic aldehyde
Germacrene D	25.68	1461	0.02	[0.07]	1623	13.81*	Sesquiterpene
α -Selinene	26.69	1473	0.03	0.04	1634	14.37	Sesquiterpene
Valencene	27.85	1487	0.01	0.02	1671	16.31	Sesquiterpene
δ -Cadinene	29.42	1507	0.02	0.01	1679	16.71	Sesquiterpene
β -Sinensal	39.84	1694	0.04	0.04	2128	40.67	Sesquiterp. aldehyde
α -Sinensal	41.79	1755	0.03	0.03	2229	43.25	Sesquiterp. aldehyde
Nootkatone	43.10	1796	0.06	0.04	2421	47.51	Sesquiterp. ketone
Tangeretin	70.38	3173	0.17				Flavonoid
Heptamethoxyflavone isomer?	73.33	3346	0.57				Flavonoid

Hexamethoxyflavone isomer?	73.64	3362	0.52			Flavonoid
Total identified			99.51%	99.93%		

*: 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

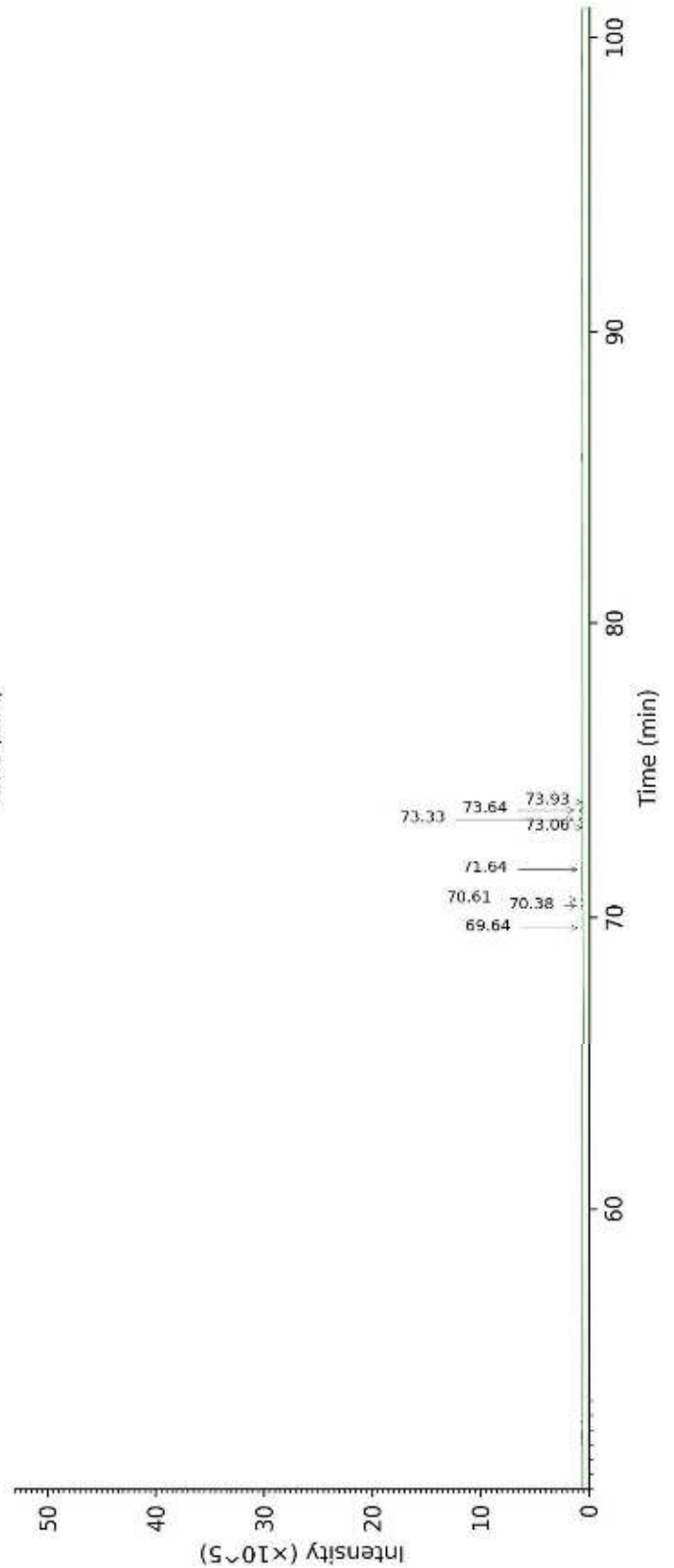
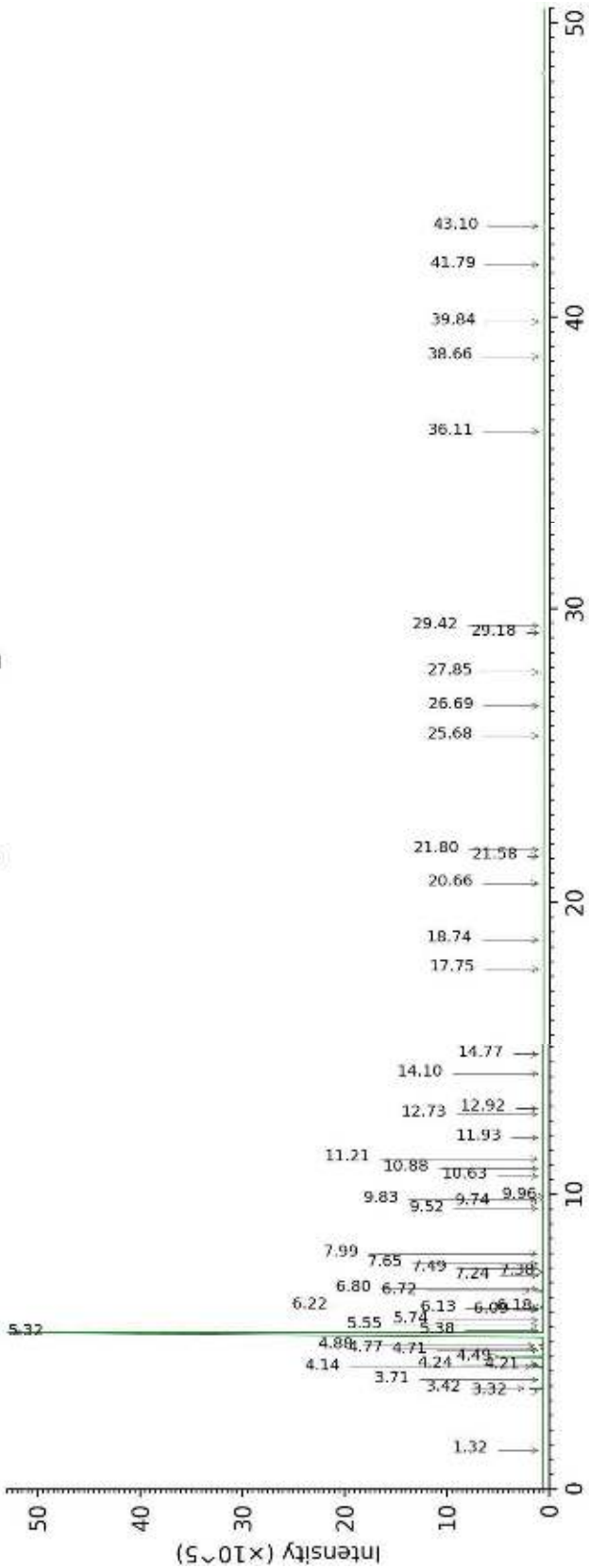
Physical aspect : Yellow liquid

Refractive index : 1.4723 ± 0.0003 (20 °C)

CONCLUSION

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

17J16-PTH3-1-CC_BP5



17J16-PTH3-1-CC_WAX

