



GC/MS BATCH NUMBER: G50105

ESSENTIAL OIL: GRAPEFRUIT
BOTANICAL NAME: CITRUS X PARADISI
ORIGIN: USA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF GRAPEFRUIT OIL	%
LIMONENE	93.5
MYRCENE	1.8

Comments from Robert Tisserand: Delightful fresh, sweet, juicy odor quality. All ten key ISO constituents are within range.

Date : July 6, 2017

SAMPLE IDENTIFICATION

Internal code : 17G04-PTH1-1-DM

Customer identification : Grapefruit - USA - G5010575R

Type : Essential oil

Source : *Citrus x paradisi*

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 : 2017-07-06

Checked and approved by :



Sylvain Mercier, M. Sc., chimiste 2014-005

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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	923	0.01	0.70	943	1.02*	Monoterpene
α -Pinene	3.43	929	0.70	[0.70]	943	1.02*	Monoterpene
Sabinene	4.15	972	0.32	0.31	1059	1.75	Monoterpene
β -Pinene	4.21	976	0.12	0.12	1042	1.60	Monoterpene
Myrcene	4.50	993	1.78	1.79	1115	2.30	Monoterpene
α -Phellandrene	4.77*	1009	0.08	0.03	1109	2.23	Monoterpene
Δ 3-Carene	4.77*	1009	[0.08]	0.04	1089	2.05	Monoterpene
Octanal	4.88	1014	0.31	0.30	1231	3.78	Aliphatic aldehyde
Limonene	5.32*	1039	93.50	93.53	1154	2.78	Monoterpene
para-Cymene	5.32*	1039	[93.50]	0.03	1205	3.43	Monoterpene
1,8-Cineole	5.32*	1039	[93.50]	0.46	1154	2.79	Monoterpene
cis- β -Ocimene	5.38	1042	0.02	0.06	1187	3.19*	Monoterpene
trans- β -Ocimene	5.56	1051	0.06	0.06	1199	3.37	Monoterpene
γ -Terpinene	5.74	1062	0.05	[0.06]	1187	3.19*	Monoterpene
Terpinolene	6.19*	1086	0.11	0.01	1222	3.65	Monoterpene
Octanol	6.19*	1086	[0.11]	0.09	1497	8.29	Aliphatic alcohol
Linalool	6.69	1109	0.23	0.23	1487	8.07	Monoterp. alcohol
Nonanal	6.79	1113	0.07	0.07	1336	5.30	Aliphatic aldehyde
cis-Limonene oxide	7.35	1133	0.02	0.01	1368	5.80	Monoterp. ether
trans-Limonene oxide	7.47	1138	0.01	0.01	1380	5.98	Monoterp. ether
Citronellal	7.97	1156	0.05	0.04	1415	6.51	Monoterp. aldehyde
α -Terpineol	9.45	1206	0.07	0.09	1621	12.28*	Monoterp. alcohol
Decanal	9.80	1214	0.45	0.44	1441	6.98	Aliphatic aldehyde
Neral	11.16	1244	0.04	0.03	1596	11.37	Monoterp. aldehyde
Geranial	12.67	1278	0.07	0.08	1651	13.49	Monoterp. aldehyde
α -Copaene	17.72	1361	0.04	0.03	1425	6.67	Sesquiterpene
β -Cubebene	18.71	1376	0.05	0.04	1476	7.80	Sesquiterpene
Geranyl acetate	19.36	1386	0.04	0.03	1689	15.42	Monoterp. ester
β -Caryophyllene	20.62	1404	0.32	0.33	1521	8.85	Sesquiterpene
Germacrene D	25.61	1464	0.04	[0.09]	1621	12.28*	Sesquiterpene
δ -Cadinene	29.36	1511	0.05	0.06	1675	14.72	Sesquiterpene
Nootkatone	42.99	1799	0.14	0.14	2346	44.77	Sesquiterp. ketone
7-Methoxy-8-(2-formylmethylpropyl)-coumarin	53.57	2239	0.05	0.05	3411	63.30	Coumarin
Unknown (m/z = 131, 187 (49), 202 (41), 159 (40), 43 (28), 77 (26), 103 (23), 260 (20))	53.75	2248	0.07	0.05	3395	63.06	Coumarin
Auraptene	61.26	2636	0.34	0.26	3713	67.56	Coumarin
Epoxyauraptene?	63.67	2774	0.13				Coumarin

Heptamethoxyflavone isomer?	73.02	3353	0.11			Flavonoid
Hexamethoxyflavone isomer?	73.28	3366	0.07			Flavonoid
Total identified			99.52%	99.52%		

*: 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

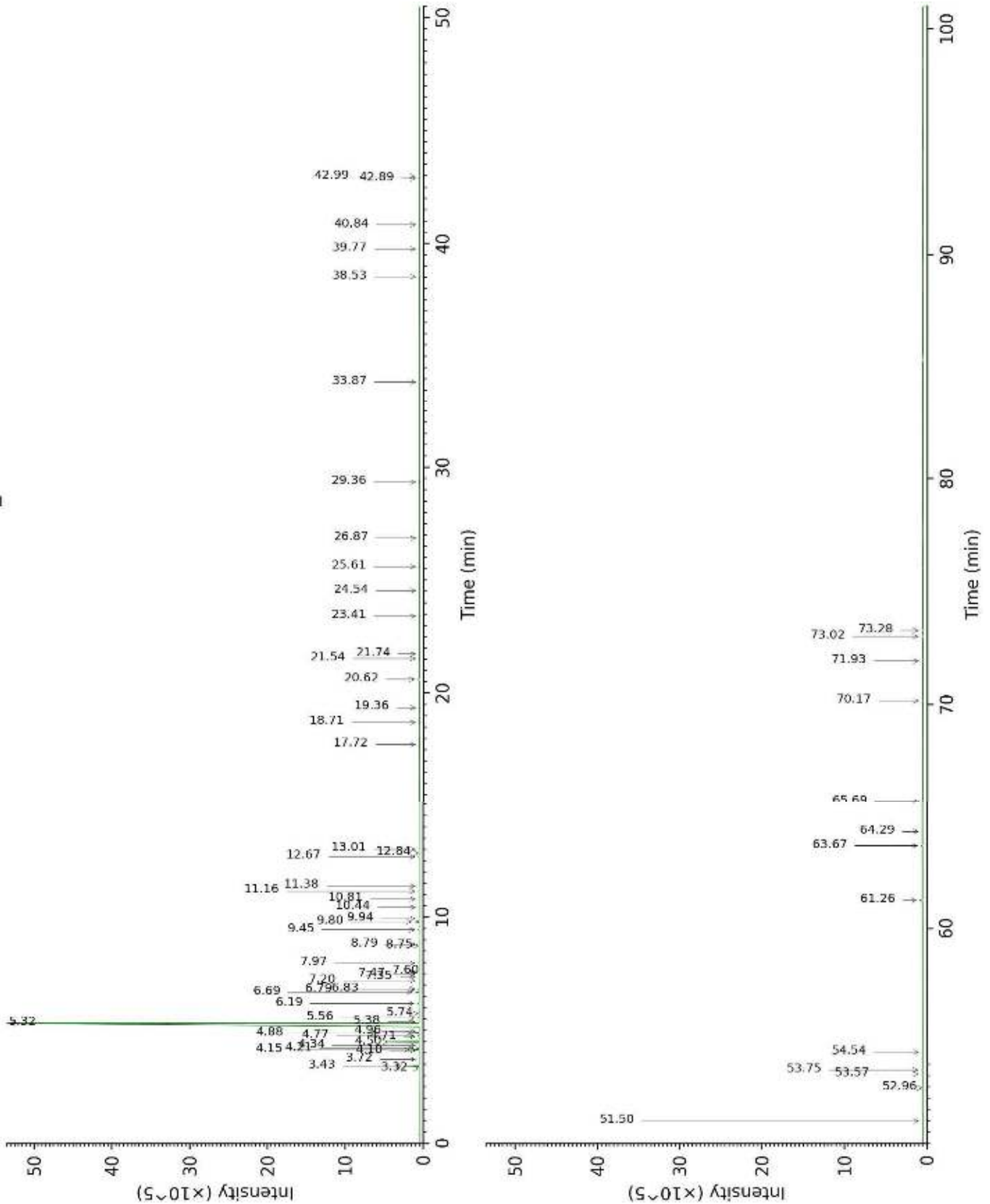
Physical aspect : Orange liquid

Refractive index : 1.4720 ± 0.0003 (20 °C)

CONCLUSION

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

17G04-PTH1-1-DM_BP5



17G04-PTH1-1-DM_WAX

