

GC/MS BATCH NUMBER: P60103

ESSENTIAL OIL: PETITGRAIN
BOTANICAL NAME: CITRUS X AURANTIUM
ORIGIN: PARAGUAY

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PETITGRAIN OIL	%
LINALYL ACETATE	49.9
LINALOOL	23.5
α -TERPINEOL	5.6
GERANYL ACETATE	3.7
GERANIOL	3.0
NERYL ACETATE	2.2
MYRCENE	2.0
trans- β -OCIMENE	2.0
LIMONENE	1.6
NEROL	1.2
β -PINENE	1.1

Comments from Robert Tisserand: Fresh, green, eau-de-cologne odor quality. Nine of the ten key ISO constituents are within range with geranyl acetate marginally high - not a concern.

Date : July 20, 2017

SAMPLE IDENTIFICATION

Internal code : 17G11-PTH7-1-DM

Customer identification : Petitgrain - Paraguay - P6010371R

Type : Essential oil

Source : *Citrus aurantium var. amara*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Benoit Roger Ph. D.

Analysis date : 2017-07-14

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.	
Ethanol	0.35	632	0.06	0.06	779	0.61	Aliphatic alcohol
<i>cis</i> -Hex-3-en-1-ol	2.50	867	0.03	0.03	1316	4.99	Aliphatic alcohol
Hexanol	2.73	884	0.03	0.02	1292	4.65	Aliphatic alcohol
α -Thujene	3.32	923	0.01	0.02	950	1.05	Monoterpene
α -Pinene	3.43	930	0.13	0.12	940	1.01	Monoterpene
Sabinene	4.15	972	0.19	0.18	1057	1.73	Monoterpene
β -Pinene	4.21	976	1.13	1.08	1040	1.58	Monoterpene
Myrcene	4.50*	993	2.03	1.99	1113	2.27	Monoterpene
Octen-3-ol	4.50*	993	[2.03]	0.01	1411	6.47	Aliphatic alcohol
6-Methyl-5-hepten-2-one	4.57	997	0.02	0.02	1271	4.35	Aliphatic ketone
α -Phellandrene	4.77*	1009	0.26	0.02	1105	2.19	Monoterpene
Δ^3 -Carene	4.77*	1009	[0.26]	0.22	1086	2.02	Monoterpene
para-Cymene	5.15	1029	0.02	1.92	1197	3.33*	Monoterpene
Limonene	5.19	1031	1.62	1.63	1138	2.57*	Monoterpene
β -Phellandrene	5.21	1033	0.04	[1.63]	1138	2.57*	Monoterpene
1,8-Cineole	5.25	1035	0.04	[1.63]	1138	2.57*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.37	1041	0.69	0.70	1182	3.13*	Monoterpene
<i>trans</i> - β -Ocimene	5.55	1051	1.98	[1.92]	1197	3.33*	Monoterpene
γ -Terpinene	5.73	1061	0.04	[0.70]	1182	3.13*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	6.01	1076	0.05	0.05	1370	5.82	Monoterp. alcohol
Terpinolene	6.21	1087	0.38	0.36	1219	3.61	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.33	1094	0.03	0.03	1396	6.23	Monoterp. alcohol
Linalool	6.81	1114	23.48	23.21	1490	8.15	Monoterp. alcohol
<i>cis</i> - β -Terpineol	7.99	1157	0.07	0.06	1556	9.95	Monoterp. alcohol
Terpinen-4-ol	8.81	1187	0.10	0.12	1526	8.98	Monoterp. alcohol
α -Terpineol	9.57	1209	5.57	5.72	1620	12.25*	Monoterp. alcohol
γ -Terpineol	9.67	1211	0.15	[5.72]	1620	12.25*	Monoterp. alcohol
Nerol	10.74	1235	1.18	1.15	1724	17.26	Monoterp. alcohol
Neral	11.33	1248	0.03	0.03	1594	11.31	Monoterp. aldehyde
Linalyl acetate	11.73	1257	49.93	50.87	1504	8.48	Monoterp. ester
Geraniol	11.96	1262	2.98	2.84	1778	20.42	Monoterp. alcohol
Geranial	12.72	1279	0.07	0.05	1649	13.41	Monoterp. aldehyde
α -Terpinyl acetate	16.69	1346	0.08	0.07	1612	11.94	Monoterp. ester
Neryl acetate	17.95	1365	2.20	2.28	1658	13.88	Monoterp. ester
Geranyl acetate	19.49	1388	3.70	3.72	1689	15.43	Monoterp. ester
β -Caryophyllene	20.66	1405	0.89	0.90	1521	8.86	Sesquiterpene
α -Humulene	23.44	1438	0.07	0.06	1580	10.80	Sesquiterpene
Bicyclogermacrene	26.89	1480	0.21	0.18	1645	13.17	Sesquiterpene
δ -Cadinene	29.38	1511	0.03	0.03	1674	14.67	Sesquiterpene

(E)-Nerolidol	33.87	1574	0.07	0.04	1988	34.00	Sesquiterp. alcohol
Total identified			99.59%	99.79%			

*: 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

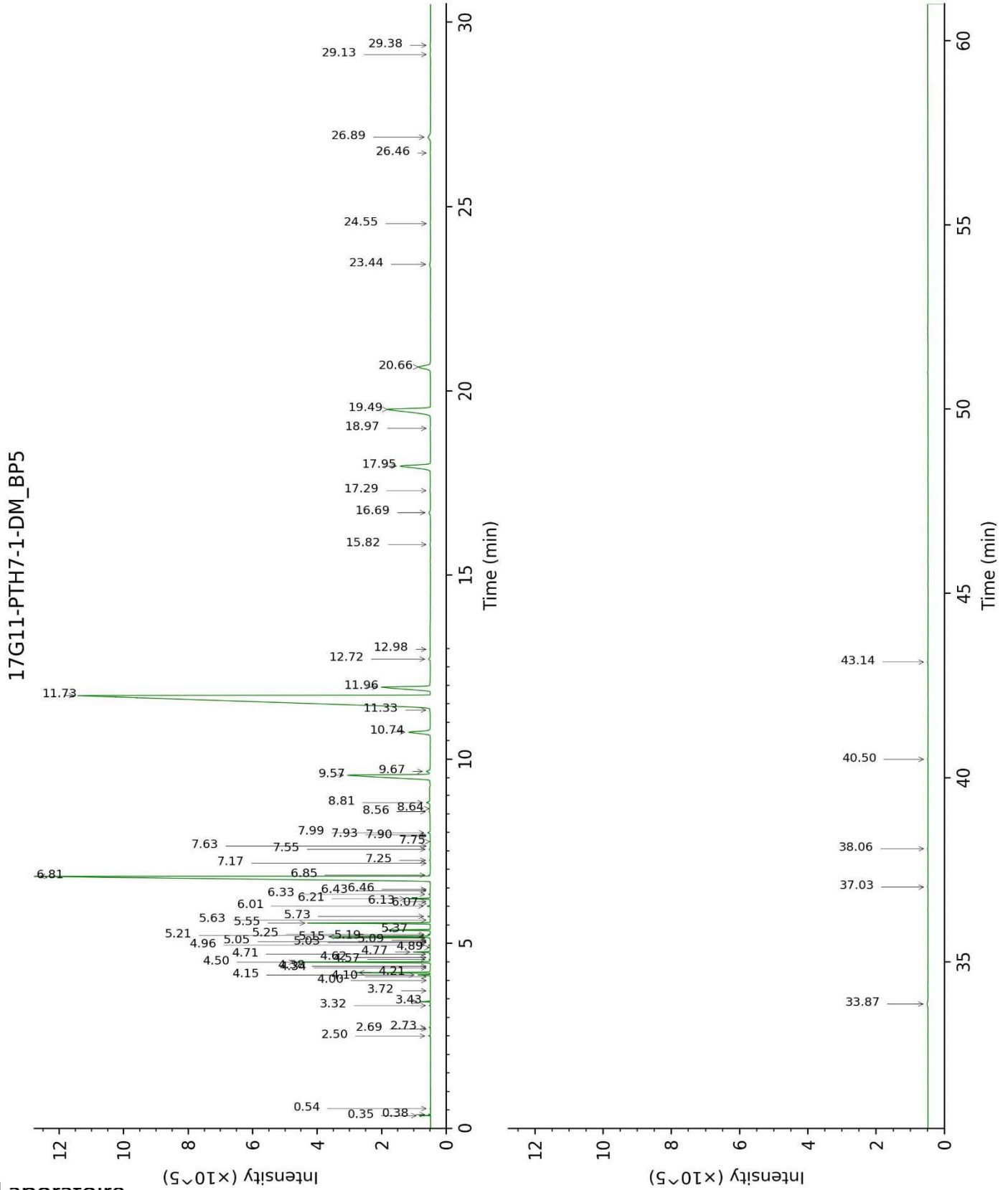
OTHER DATA

Physical aspect : Faintly yellow liquid

Refractive index : 1.4583 ± 0.0003 (20 °C)

CONCLUSION

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



17G11-PTH7-1-DM_WAX

