



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: O10104

ESSENTIAL OIL: BLOOD ORANGE
BOTANICAL NAME: CITRUS SINENSIS
ORIGIN: ITALY

KEY CONSTITUENTS PRESENT IN THIS BATCH OF BLOOD ORANGE OIL	%
Limonene	93.47
Myrcene	1.76

Comments from Robert Tisserand: Excellent juicy-fruity odor profile. All twelve key ISO constituents are within range.

Date : February 23, 2017

SAMPLE IDENTIFICATION

Internal code : 17B06-PTH9-1-DM

Customer identification : Blood orange - Italy - O1010469R

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).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-02-21

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 -Pinene	3.38	927	0.46	0.44	948	1.20	Monoterpene
Sabinene	4.09	969	0.33	0.32	1058	2.05	Monoterpene
β -Pinene	4.16	973	0.05	0.05	1040	1.88	Monoterpene
Myrcene	4.43	989	1.76	1.77	1116	2.65	Monoterpene
Δ^3 -Carene	4.71*	1005	0.15	0.12	1095	2.37	Monoterpene
α -Phellandrene	4.71*	1005	[0.15]	0.03	1109	2.56	Monoterpene
Octanal	4.81	1011	0.23	0.23	1232	4.26	Aliphatic aldehyde
Limonene	5.24*	1034	92.22	93.47	1153	3.15	Monoterpene
1,8-Cineole	5.24*	1034	[92.22]	0.26	1154	3.16	Monoterp. ether
para-Cymene	5.24*	1034	[92.22]	0.02	1209	3.91	Monoterpene
<i>trans</i> - β -Ocimene	5.48	1048	0.03	0.03	1202	3.80	Monoterpene
γ -Terpinene	5.66	1057	0.04	0.04	1190	3.63	Monoterpene
<i>cis</i> -Sabinene hydrate	5.96	1074	0.01	0.01	1418	7.38	Monoterp. alcohol
Octanol	6.07	1080	0.07	0.08	1502	9.50	Aliphatic alcohol
Terpinolene	6.13	1083	0.04	0.04	1223	4.12	Monoterpene
Linalool	6.54	1104	0.55	0.57	1495	9.25	Monoterp. alcohol
Nonanal	6.70	1109	0.07	0.07	1333	5.81	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.25	1130	0.02	0.02	1370	6.42	Monoterp. ether
<i>trans</i> -Limonene oxide	7.36	1134	0.02	0.02	1383	6.63	Monoterp. ether
Citronellal	7.85	1152	0.06	0.05	1412	7.24	Monoterp. aldehyde
Terpinen-4-ol	8.59	1178	0.01	0.01	1534	10.74	Monoterp. alcohol
α -Terpineol	9.16	1199	0.10	0.10	1621	14.40	Monoterp. alcohol
Decanal	9.63	1210	0.34	0.31	1432	7.73	Aliphatic aldehyde
Neral	10.94	1239	0.05	0.06	1597	13.10	Monoterp. aldehyde
Geranial	12.40	1272	0.09	0.09	1643	15.57	Monoterp. aldehyde
Undecanal	14.44	1311	0.01	0.01	1552	11.42	Aliphatic aldehyde
α -Copaene	17.39	1356	0.02	0.02	1423	7.51	Sesquiterpene
β -Cubebene	18.37	1371	0.01	0.01	1468	8.60	Sesquiterpene
β -Caryophyllene	20.20	1399	0.02	0.02	1511	9.86	Sesquiterpene
Dodecanal	21.12	1410	0.03	0.02	1654	16.15	Aliphatic aldehyde
Germacrene D	25.11	1458	0.01	0.02	1626	14.67	Sesquiterpene
Valencene	27.24	1484	0.01	0.02	1667	16.86	Sesquiterpene
δ -Cadinene	28.78	1503	0.02	0.02	1664	16.71	Sesquiterpene
β -Sinensal	39.45	1690	0.02	0.02	2117	40.90	Sesquiterp. aldehyde
α -Sinensal	41.40	1749	0.03	0.02	2229	43.74	Sesquiterp. aldehyde
Nootkatone	42.60	1787	0.01	0.01	2339	46.26	Sesquiterp. ketone
Tangeretin	69.60	3142	0.21				Flavonoid
Nobiletin	72.39	3320	0.52				Flavonoid

Heptamethoxyflavone isomer?	72.59	3330	0.49		Flavonoid
Total identified			98.11%	98.40%	

*: 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-orange liquid

Refractive index : 1.4710 ± 0.0003 (20 °C)

CONCLUSION

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



