



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: O10102

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF BLOOD ORANGE OIL	%
LIMONENE	95.2
MYRCENE	2.0

Comments from Robert Tisserand: Excellent fresh, fruity odor profile, and all 12 ISO constituents are within range.

Date : August 25, 2016

SAMPLE IDENTIFICATION

Internal code : 16H10-PTH7-1-DM

Customer identification : Blood Orange - O1010263R

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 : 2016-08-25

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	3.35	924	0.55	0.57	948	0.87	Monoterpene
Sabinene	4.07	968	0.38	0.38	1057	1.51	Monoterpene
β-Pinene	4.13	971	0.04	0.03	1040	1.37	Monoterpene
Myrcene	4.42	989	1.97	2.02	1117	2.00	Monoterpene
α-Phellandrene	4.69*	1004	0.21	0.03	1111	1.94	Monoterpene
Δ3-Carene	4.69*	1004	[0.21]	0.15	1091	1.78	Monoterpene
Octanal	4.81	1011	0.17	0.16	1233	3.41	Aliphatic aldehyde
Limonene	5.23*	1034	95.35	95.15	1154	2.45	Monoterpene
1,8-Cineole	5.23*	1034	[95.35]	0.36	1155	2.45	Monoterp. ether
<i>trans</i> -β-Ocimene	5.48	1048	0.02	0.01	1205	3.03	Monoterpene
γ-Terpinene	5.66	1058	0.01	0.01	1191	2.86	Monoterpene
<i>cis</i> -Sabinene hydrate	6.01	1077	0.01	0.01	1409	5.89	Monoterp. alcohol
Terpinolene	6.12	1083	0.03	0.02	1226	3.30	Monoterpene
Octanol	6.19	1087	0.01				Aliphatic alcohol
Linalool	6.66	1107	0.33	0.32	1494	7.44	Monoterp. alcohol
Nonanal	6.70	1109	0.04	0.03	1340	4.89	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.24	1129	tr				Monoterp. ether
<i>trans</i> -Limonene oxide	7.37	1134	0.01	0.01	1388	5.58	Monoterp. ether
Citronellal	7.87	1152	0.05	0.04	1421	6.06	Monoterp. aldehyde
α-Terpineol	9.37	1204	0.04	0.04	1629	11.21*	Monoterp. alcohol
Decanal	9.66	1210	0.17	0.15	1442	6.47*	Aliphatic aldehyde
Neral	11.01	1241	0.04	0.03	1601	10.34	Monoterp. aldehyde
Geranial	12.51	1273	0.06	0.07	1653	12.28*	Monoterp. aldehyde
α-Copaene	17.39	1355	0.02	[0.15]	1442	6.47*	Sesquiterpene
β-Cubebene	18.38	1370	0.01	0.01	1482	7.21	Sesquiterpene
β-Caryophyllene	20.26	1398	0.02				Sesquiterpene
Dodecanal	21.45	1413	0.03	[0.07]	1653	12.28*	Aliphatic aldehyde
Germacrene D	25.23	1459	0.02	[0.04]	1629	11.21*	Sesquiterpene
α-Selinene	26.22	1470	0.14	0.12	1640	11.67	Sesquiterpene
Valencene	27.38	1484	0.02	0.01	1671	13.07	Sesquiterpene
δ-Cadinene	28.94	1503	0.02	0.01	1676	13.26	Sesquiterpene
β-Sinensal	39.63	1691	0.02	0.03	2138	38.17	Sesquiterp. aldehyde
α-Sinensal	41.57	1752	0.02	0.02	2241	40.96	Sesquiterp. aldehyde
Nootkatone	42.82	1791	0.02	0.02	2363	43.77	Sesquiterp. ketone
Total identified			99.83%	99.81%			

*: 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 : 1.4725 ± 0.0003 (20 °C)

CONCLUSION

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



