



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: T10103

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**ESSENTIAL OIL:** TANGERINE  
**BOTANICAL NAME:** CITRUS RETICULATA  
**ORIGIN:** MEXICO

KEY CONSTITUENTS PRESENT IN THIS BATCH OF TANGERINE OIL	%
LIMONENE	88.3
γ-TERPINENE	3.1
MYRCENE	1.8

Comments from Robert Tisserand: Rich, radiant, Tangerine odor. Constituents are in expected amounts.

**Date :** March 31, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17C20-PTH7-1-DM

**Customer identification :** Tangerine - Mexico - T1010356R

**Type :** Essential oil

**Source :** *Citrus reticulata*

**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 :** 2017-03-29

Checked and approved by :

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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	3.30	922	0.14	0.14	955	1.21	Monoterpene
α-Pinene	3.40	928	0.81	0.79	943	1.16	Monoterpene
Sabinene	4.12	970	0.16	0.15	1057	1.98	Monoterpene
β-Pinene	4.18	974	0.35	0.34	1039	1.81	Monoterpene
Myrcene	4.46	991	1.76	1.74	1116	2.56	Monoterpene
α-Phellandrene	4.73	1006	0.04	0.03	1109	2.47	Monoterpene
Octanal	4.85	1013	0.05	0.05	1232	4.14	Aliphatic aldehyde
α-Terpinene	4.92	1017	0.06	0.07	1122	2.64	Monoterpene
Limonene	5.27*	1036	89.09	88.32	1153	3.05	Monoterpene
para-Cymene	5.27*	1036	[89.09]	0.25	1208	3.79	Monoterpene
1,8-Cineole	5.27*	1036	[89.09]	0.28	1154	3.06	Monoterp. ether
cis-β-Ocimene	5.34	1040	tr	3.07	1190	3.54*	Monoterpene
trans-β-Ocimene	5.51	1049	0.06	0.06	1201	3.69	Monoterpene
γ-Terpinene	5.71	1060	3.09	[3.07]	1190	3.54*	Monoterpene
Octanol	6.12	1082	0.02	0.02	1504	9.17	Aliphatic alcohol
Terpinolene	6.16	1085	0.14	0.14	1223	4.00	Monoterpene
Linalool	6.59	1105	0.18	0.18	1494	8.93	Monoterp. alcohol
Nonanal	6.74	1111	0.02	0.02	1335	5.68	Aliphatic aldehyde
cis-Limonene oxide	7.29	1131	0.01	0.01	1371	6.25	Monoterp. ether
trans-Limonene oxide	7.40	1135	0.01	0.01	1383	6.45	Monoterp. ether
Citronellal	7.90	1153	0.02	0.02	1415	7.04	Monoterp. aldehyde
α-Terpineol	9.27	1202	0.05	0.04	1623	13.75	Monoterp. alcohol
Decanal	9.70	1212	0.07	0.06	1435	7.52	Aliphatic aldehyde
Geranial	12.64	1277	0.02	0.02	1648	15.03	Monoterp. aldehyde
Thymol	15.31	1325	0.01	0.01	2109	40.01	Monoterp. alcohol
α-Copaene	17.52	1358	0.02	0.03	1427	7.32	Sesquiterpene
Neryl acetate	17.68	1361	0.03	0.03	1657	15.55	Monoterp. ester
β-Elemene	18.49	1373	0.02	0.01	1520	9.72	Sesquiterpene
Geranyl acetate	19.14	1383	0.02	0.09	1688	17.16*	Monoterp. ester
β-Caryophyllene	20.34	1401	0.01	0.01	1527	9.98	Sesquiterpene
trans-β-Farnesene	24.27	1448	0.02	0.02	1613	13.23	Sesquiterpene
Germacrene D	25.28	1460	0.05	0.03	1618	13.47	Sesquiterpene
α-Selinene	26.28	1472	0.04	0.03	1627	13.92	Sesquiterpene
(E,E)-α-Farnesene	28.79	1503	0.08	[0.09]	1688	17.16*	Sesquiterpene
δ-Cadinene	28.99	1506	0.04	0.04	1670	16.17	Sesquiterpene
β-Sinensal	39.56	1693	0.01	0.01	2125	40.49	Sesquiterp. aldehyde
α-Sinensal	41.49	1752	0.01	0.01	2225	43.09	Sesquiterp. aldehyde
Tangeretin	69.85	3159	0.89				Flavonoid
Nobiletin	72.61	3331	0.44	0.49	4071	73.76	Flavonoid

Heptamethoxyflavone isomer ?	72.82	3342	0.26	0.29	4079	74.55	Flavonoid
<b>Total identified</b>			<b>98.10%</b>	<b>96.91%</b>			

\*: 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 :** Bright orange liquid

**Refractive index :** 1.4735 ± 0.0003 (20 °C)

#### CONCLUSION

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



