

## GC/MS BATCH NUMBER: G50103

---

**ESSENTIAL OIL:** GRAPEFRUIT  
**BOTANICAL NAME:** CITRUS X PARADISI  
**ORIGIN:** ARGENTINA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF OIL	%
LIMONENE	92.9
MYRCENE	2.0
SABINENE	0.6
$\alpha$ -PINENE	0.6
OCTANAL	0.4
$\beta$ -CARYOPHYLLENE	0.2
NERAL	0.1
NONANAL	0.1
NOOTKATONE	0.6
$\beta$ -PINENE	0.04

Comments from Robert Tisserand: Excellent fresh fruity odor profile, and lasts well for a citrus oil. 9 of 10 key constituents conform to the ISO standard.

**Date :** August 30, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16H23-PTH1-1-DM

**Customer identification :** Pink Grapefruit - G5010363R

**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 :** 2016-08-29

Checked and approved by :

---

Alexis St-Gelais, M. Sc., chimiste 2013-174

*Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.*

*This report is digitally signed, it is only considered valid if the digital signature is intact.*

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
α-Pinene	3.35	924	0.58	0.62	947	0.86	Monoterpene
Camphene	3.64	942	tr	tr	998	1.08	Monoterpene
Sabinene	4.07	968	0.61	0.64	1056	1.50	Monoterpene
β-Pinene	4.13	971	0.04	0.04	1039	1.37	Monoterpene
Myrcene	4.42	989	1.97	2.08	1116	1.99	Monoterpene
α-Phellandrene	4.69	1004	0.03	0.03	1110	1.93	Monoterpene
Octanal	4.81	1011	0.37	0.38	1233	3.40	Aliphatic aldehyde
Limonene	5.22*	1034	92.89	93.99	1153	2.43	Monoterpene
1,8-Cineole	5.22*	1034	[92.89]	0.26	1154	2.44	Monoterp. ether
<i>trans</i> -β-Ocimene	5.47	1048	0.20	0.21	1204	3.01	Monoterpene
γ-Terpinene	5.65	1058	tr	tr	1188	2.83	Monoterpene
Terpinolene	6.12	1083	tr	tr	1225	3.29	Monoterpene
Octanol	6.18	1086	0.05	0.04	1504	7.61	Aliphatic alcohol
Linalool	6.65	1107	0.11	0.10	1493	7.42	Monoterp. alcohol
Nonanal	6.70	1109	0.06	0.05	1339	4.88	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.24	1129	0.02	0.02	1373	5.37	Monoterp. ether
<i>trans</i> -Limonene oxide	7.36	1133	0.02	0.01	1386	5.55	Monoterp. ether
Citronellal	7.86	1152	0.05	0.04	1420	6.04	Monoterp. aldehyde
α-Terpineol	9.35	1203	0.06	0.21	1628	11.16*	Monoterp. alcohol
Decanal	9.65	1210	0.27	0.29	1441	6.45*	Aliphatic aldehyde
<i>trans</i> -Piperitol	9.79	1213	0.02	0.02	1675	13.22	Monoterp. alcohol
Neral	10.99	1240	0.08	0.05	1601	10.32	Monoterp. aldehyde
Geranial	12.49	1273	0.11	0.11	1652	12.23	Monoterp. aldehyde
α-Copaene	17.38	1355	0.09	[0.29]	1441	6.45*	Sesquiterpene
β-Cubebene	18.36	1370	0.08	0.06	1481	7.19	Sesquiterpene
Geranyl acetate	19.12	1382	0.03	0.02	1694	14.04	Monoterp. ester
β-Caryophyllene	20.24	1398	0.20	0.21	1527	8.13	Sesquiterpene
α-Humulene	23.01	1432	0.03	0.02	1588	9.94	Sesquiterpene
<i>trans</i> -β-Farnesene	24.18	1446	0.09	[0.21]	1628	11.16*	Sesquiterpene
Germacrene D	25.20	1458	0.07	[0.21]	1628	11.16*	Sesquiterpene
δ-Cadinene	28.91	1503	0.09	0.08	1680	13.46	Sesquiterpene
α-Bisabolol	39.61	1691	0.12	0.10	2137	38.13	Sesquiterp. alcohol
Nootkatone	43.17	1804	0.06				Sesquiterp. ketone
7-Methoxy-8-(2-formyl-methylpropyl)-coumarin	53.51	2234	0.30				Coumarin
Unknown (m/z = 131, 187 (49), 202 (41), 159 (40), 43 (28), 77 (26), 103 (23), 260 (20))	53.71	2243	0.76				Coumarin

Auraptenol?	54.50	2281	0.10		Coumarin
<b>Total identified</b>			<b>98.50%</b>	<b>99.68%</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 :** Yellow liquid

**Refractive index :** 1.4750 ± 0.0003 (20 °C)

#### CONCLUSION

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



