



## GC/MS BATCH NUMBER: O10105

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF ORANGE BLOOD OIL	%
LIMONENE	93.7
MYRCENE	1.9

Comments from Robert Tisserand: Intense sweet, juicy odor quality. Neral and geranial are marginally low (not a concern) otherwise, all twelve key ISO constituents are within range.

**Date :** July 3, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17F28-PTH3-1-DM

**Customer identification :** Blood Orange - Italy - O1010516R

**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 :** 2017-07-03

Checked and approved by :

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Sylvain Mercier, M. Sc., chimiste 2014-005

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
$\alpha$ -Pinene	3.43	929	0.51	0.49	945	1.03	Monoterpene
Sabinene	4.15	972	0.35	0.34	1060	1.76	Monoterpene
$\beta$ -Pinene	4.21	976	0.03	0.02	1043	1.60	Monoterpene
Myrcene	4.50	993	1.90	1.89	1118	2.31	Monoterpene
$\alpha$ -Phellandrene	4.77*	1009	0.21	0.02	1110	2.24	Monoterpene
$\Delta$ 3-Carene	4.77*	1009	[0.21]	0.16	1091	2.06	Monoterpene
Octanal	4.88	1014	0.19	0.18	1232	3.79	Aliphatic aldehyde
Limonene	5.32*	1039	94.29	93.74	1155	2.80	Monoterpene
1,8-Cineole	5.32*	1039	[94.29]	0.81	1156	2.81	Monoterp. ether
<i>trans</i> - $\beta$ -Ocimene	5.56	1051	0.02	0.01	1202	3.38	Monoterpene
Terpinolene	6.19	1086	0.05	0.02	1224	3.67	Monoterpene
Octanol	6.21	1087	0.03	0.05	1498	8.32	Aliphatic alcohol
Linalool	6.69	1109	0.29	0.29	1488	8.10	Monoterp. alcohol
Nonanal	6.79	1113	0.05	0.05	1337	5.32	Aliphatic aldehyde
<i>cis</i> -Limonene oxide	7.36	1133	0.01				Monoterp. ether
<i>trans</i> -Limonene oxide	7.47	1138	0.02	0.02	1382	6.00	Monoterp. ether
Citronellal	7.97	1156	0.05	0.04	1416	6.53	Monoterp. aldehyde
$\alpha$ -Terpineol	9.45	1206	0.05	0.05	1622	12.33	Monoterp. alcohol
Decanal	9.80	1214	0.31	0.30	1441	7.00*	Aliphatic aldehyde
Neral	11.16	1244	0.02				Monoterp. aldehyde
Geranial	12.66	1277	0.03	0.16	1653	13.58*	Monoterp. aldehyde
$\alpha$ -Copaene	17.72	1361	0.02	[0.30]	1441	7.00*	Sesquiterpene
$\beta$ -Cubebene	18.70	1376	0.02	0.01	1478	7.85	Sesquiterpene
$\beta$ -Caryophyllene	20.61	1404	0.02	0.03	1523	8.90	Sesquiterpene
Dodecanal	21.53	1415	0.04	[0.16]	1653	13.58*	Aliphatic aldehyde
Valencene isomer?	26.63	1476	0.28	0.34	1635	12.80*	Sesquiterpene
$\alpha$ -Selinene	26.87	1479	0.02	[0.34]	1635	12.80*	Sesquiterpene
Valencene	27.79	1490	0.02	0.03	1677	14.85	Sesquiterpene
$\beta$ -Bisabolene	28.74	1502	0.02	[0.16]	1653	13.58*	Sesquiterpene
$\delta$ -Cadinene	29.36	1511	0.02	0.04	1667	14.32	Sesquiterpene
$\beta$ -Sinensal	39.77	1698	0.02	0.02	2131	39.36	Sesquiterp. aldehyde
$\alpha$ -Sinensal	41.71	1759	0.01				Sesquiterp. aldehyde
Nootkatone	42.98	1799	0.03	0.02	2349	44.83	Sesquiterp. ketone
Nobiletin	73.04	3354	0.24				Flavonoid
Heptamethoxyflavone isomer?	73.31	3368	0.17				Flavonoid
<b>Total identified</b>			<b>99.34%</b>	<b>99.13%</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*

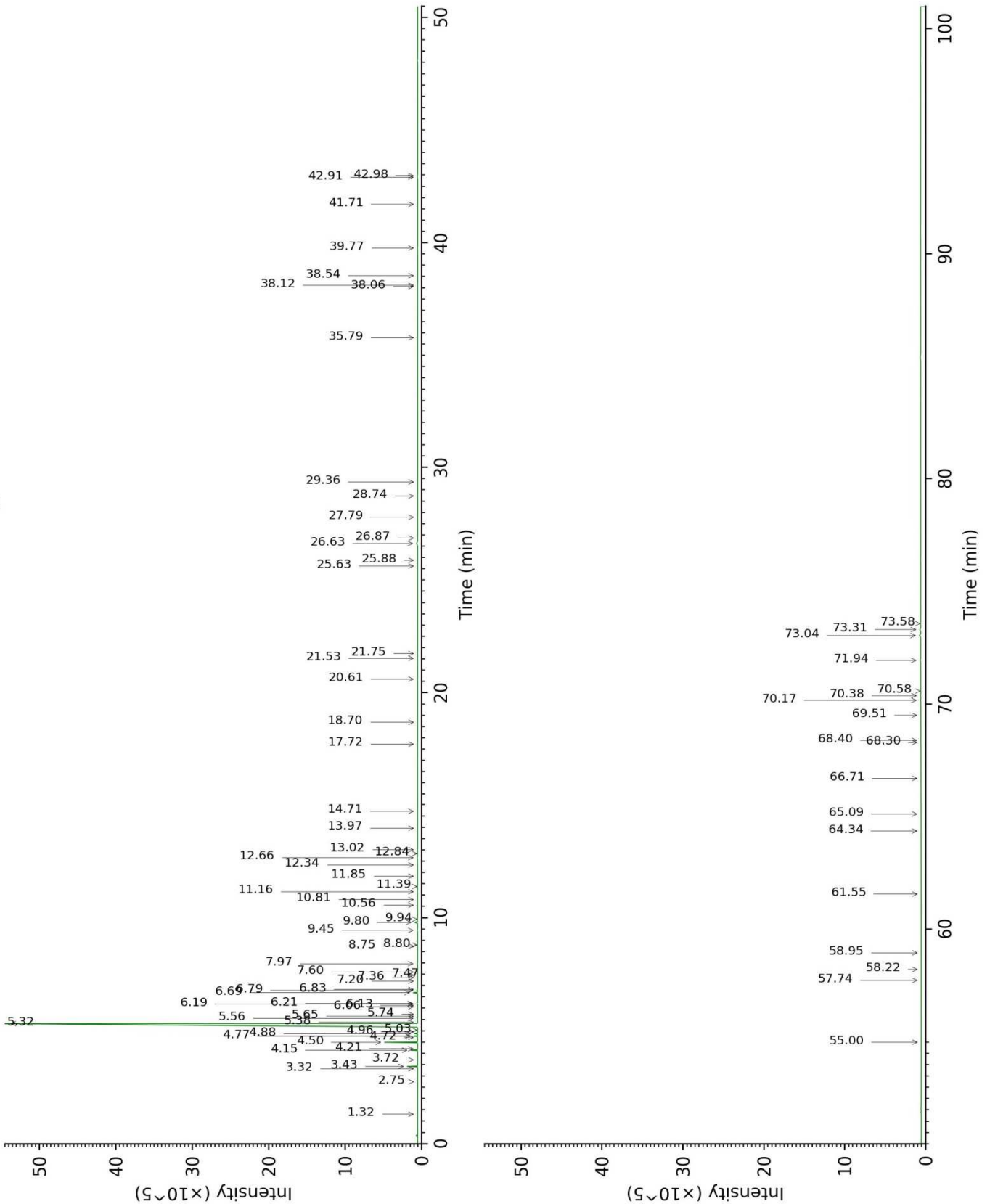
**Physical aspect :** Orange liquid

**Refractive index :**  $1.4718 \pm 0.0003$  (20 °C)

*CONCLUSION*

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

17F28-PTH3-1-DM\_BP5



17F28-PTH3-1-DM\_WAX

