

GC/MS BATCH NUMBER: BQ0100

ESSENTIAL OIL: BERGAMOT ORGANIC
BOTANICAL NAME: CITRUS AURANTIUM
ORIGIN: ITALY

KEY CONSTITUENTS PRESENT IN THIS BATCH OF BERGAMOT ORGANIC OIL	%
LIMONENE	40.5
LINALYL ACETATE	25.5
LINALOOL	11.8
γ-TERPINENE	6.9
β-PINENE	6.3
1,8-CINEOLE	1.4
α-PINENE	1.2
SABINENE	1.1
MYRCENE	1.0

Comments from Robert Tisserand: Excellent dry, Earl Grey tea odor. All 7 key constituents conform to ISO standard.

Date : October 21, 2016

SAMPLE IDENTIFICATION

Internal code : 16J19-PTH10-1-DM

Customer identification : Bergamot Organic - BQ010066

Type : Essential oil

Source : *Citrus aurantium ssp. bergamia*

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 : 2016-10-21

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 -Thujene	3.25	918	0.27	0.37	948	0.87	Monoterpene
α -Pinene	3.35	924	1.21	1.11	941	0.84	Monoterpene
Camphene	3.64	942	0.03	0.03	990	1.05	Monoterpene
Sabinene	4.07	968	1.08	1.19	1051	1.46	Monoterpene
β -Pinene	4.15	972	6.31	6.35	1036	1.34	Monoterpene
Myrcene	4.41	989	1.03	0.97	1111	1.94	Monoterpene
α -Phellandrene	4.68	1004	0.03	0.02	1102	1.87	Monoterpene
Octanal	4.81	1011	0.04	0.03	1227	3.32	Aliphatic aldehyde
α -Terpinene	4.87	1015	0.10	0.14	1118	2.01	Monoterpene
Limonene	5.17*	1031	41.59	40.49	1143	2.31	Monoterpene
para-Cymene	5.17*	1031	[41.59]	0.36	1203	2.99	Monoterpene
1,8-Cineole	5.17*	1031	[41.59]	1.38	1144	2.32	Monoterp. ether
<i>cis</i> - β -Ocimene	5.29	1038	0.03	6.88	1185	2.80*	Monoterpene
<i>trans</i> - β -Ocimene	5.47	1048	0.20	0.22	1197	2.94	Monoterpene
γ -Terpinene	5.67	1059	6.89	[6.88]	1185	2.80*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.94	1073	0.03	0.02	1371	5.34	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.00	1076	0.03	0.02	1401	5.78	Monoterp. alcohol
Terpinolene	6.12	1083	0.26	0.24	1219	3.21	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.20	1087	0.01	0.01	1413	5.95	Monoterp. alcohol
Fenchone	6.25	1090	0.03	0.02	1334	4.80	Monoterp. ketone
Linalool	6.71	1109	11.80	11.51	1489	7.34	Monoterp. alcohol
Terpinen-4-ol	8.67	1183	0.04	0.26	1531	8.21	Monoterp. alcohol
α -Terpineol	9.35	1203	0.28	0.32	1620	10.90*	Monoterp. alcohol
Decanal	9.64	1210	0.04	0.04	1454	6.68	Aliphatic aldehyde
Octyl acetate	9.78	1213	0.17	0.16	1423	6.10	Aliphatic ester
Nerol	10.59	1231	0.05	0.04	1725	15.41	Monoterp. alcohol
Neral	11.02	1241	0.17	0.14	1594	10.10*	Monoterp. aldehyde
Linalyl acetate	11.43	1250	25.53	25.66	1499	7.55	Monoterp. ester
Geraniol	11.81	1259	0.05	0.02	1776	18.30	Monoterp. alcohol
Geranial	12.48	1273	0.25	0.21	1646	11.96	Monoterp. aldehyde
α -Terpinyl acetate	16.39	1340	0.16	0.14	1613	10.67	Monoterp. ester
Neryl acetate	17.62	1359	0.44	0.37	1655	12.38	Monoterp. ester
Geranyl acetate	19.10	1381	0.33	0.27	1687	13.72	Monoterp. ester
β -Caryophyllene	20.23	1398	0.33	0.16	1525	8.07	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.79	1417	0.20	0.18	1523	8.00	Sesquiterpene
α -Humulene	22.99	1431	0.02	[0.14]	1594	10.10*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.16	1446	0.04	[0.32]	1620	10.90*	Sesquiterpene
Germacrene D	25.17	1458	0.04	[0.32]	1620	10.90*	Sesquiterpene
β -Bisabolene	28.43	1497	0.30	0.30	1661	12.60	Sesquiterpene
α -Bisabolol	39.36	1685	0.01	0.02	2138	38.18	Sesquiterp. alcohol
Nootkatone	42.80	1791	0.06	0.04	2352	43.52	Sesquiterp. ketone

Citropten	47.95	1986	0.09		Coumarin
Bergapten	49.62	2057	0.13		Coumarin
Total identified			99.7%	99.69%	

*: 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 yellow liquid

Refractive index : 1.4670 ± 0.0003 (20 °C)

CONCLUSION

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



