

# **Analysis Melissa Essential Oil**

Laboratoire  
**PhytoChemia**



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Date : April 7, 2017

SAMPLE IDENTIFICATION

Internal code : 17C27-FSE10

Customer identification : Melissa - Lot #V0-211116

Type : Essential oil

Source : *Melissa officinalis*

Customer : Flowers Shining Everywhere Inc.



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 : 2017-04-04

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.	
Ethanol	0.32	628	0.03				Aliphatic alcohol
Isopropyl alcohol	0.35	632	0.12				Aliphatic alcohol
3-Methyl butanal	0.67	674	0.15				Aliphatic aldehyde
Isoamyl alcohol	1.13	734	0.06	0.08	1149	3.00*	Aliphatic alcohol
2-Methylbutyl alcohol	1.16	738	0.04	[0.08]	1149	3.00*	Aliphatic alcohol
trans-Hex-2-en-1-ol	2.60	875	0.07	0.07	1345	5.85	Aliphatic alcohol
Hexanol	2.66	879	0.07	0.08	1298	5.10*	Aliphatic alcohol
Sabinene	4.12	970	1.40	1.37	1054	1.96	Monoterpene
β-Pinene	4.18*	974	0.49	0.39	1035	1.79	Monoterpene
Benzaldehyde	4.18*	974	[0.49]	0.08	1432	7.45	Simple phenolic
Myrcene	4.45*	990	0.83	0.44	1113	2.52	Monoterpene
Dehydro-1,8-cineole	4.45*	990	[0.83]	0.59	1137	2.84*	Monoterp. ether
6-Methyl-5-hepten-2-one	4.51*	994	3.88	3.74	1275	4.78	Aliphatic ketone
Octen-3-ol	4.51*	994	[3.88]	0.33	1395	6.64	Aliphatic alcohol
trans-2-(2-Pentenyl)furan	4.68	1003	0.09	0.09	1196	3.62	Furan
α-Phellandrene	4.73	1007	0.04	0.05	1109	2.47	Monoterpene
cis-Hex-3-en-1-yl acetate	4.85	1013	0.04	0.04	1258	4.52	Aliphatic ester
Limonene	5.14	1029	0.61	[0.59]	1137	2.84*	Monoterpene
cis-β-Ocimene	5.32	1038	0.31	0.29	1183	3.44*	Monoterpene
trans-β-Ocimene	5.50	1048	0.77	0.76	1199	3.65	Monoterpene
Benzeneacetaldehyde	5.64	1056	0.07				Simple phenolic
γ-Terpinene	5.70	1059	0.02	[0.29]	1183	3.44*	Monoterpene
cis-Linalool oxide (fur.)	5.95	1073	0.03	0.03	1373	6.29	Monoterp. alcohol
trans-Linalool oxide (fur.)	6.26	1090	0.02	0.14	1404	6.78*	Monoterp. alcohol
Linalool	6.60	1106	1.57	1.73	1491	8.87*	Monoterp. alcohol
Nonanal	6.74*	1111	0.15	0.03	1338	5.74	Aliphatic aldehyde
cis-Rose oxide	6.74*	1111	[0.15]	0.10	1291	5.00	Monoterp. ether
trans-Rose oxide	7.10	1124	0.09	[0.08]	1298	5.10*	Monoterp. ether
Camphor	7.70	1146	0.17	5.67	1415	7.05*	Monoterp. ketone
Isopulegol	7.74	1148	0.17	[1.73]	1491	8.87*	Monoterp. alcohol
Citronellal	7.93*	1154	6.02	[5.67]	1415	7.05*	Monoterp. aldehyde
trans-Chrysanthemal	7.93*	1154	[6.02]	0.33	1426	7.30*	Monoterp. aldehyde
(Z)-Isocitral	8.17	1163	0.24	0.07	1473	8.43	Monoterp. aldehyde
Borneol	8.45	1173	1.08	1.14	1616	13.40*	Monoterp. alcohol
Terpinen-4-ol	8.70	1183	0.11	0.08	1530	10.09	Monoterp. alcohol
(E)-Isocitral	8.78	1185	0.33	0.44	1502	9.14*	Monoterp. aldehyde
α-Terpineol	9.26	1202	0.14	[1.14]	1616	13.40*	Monoterp. alcohol
γ-Terpineol	9.61	1210	0.11	0.07	1636	14.41	Monoterp. alcohol
Nerol	10.48	1229	2.49	2.53	1728	19.48	Monoterp. alcohol
Citronellol	10.76	1235	1.60	1.60	1707	18.09	Monoterp. alcohol
Neral	11.19	1245	20.53	20.58	1602	12.77*	Monoterp. aldehyde



Geraniol	11.85	1259	4.59	4.48	1781	22.92	Monoterp. alcohol
Geranial	12.78	1280	29.59	29.54	1652	15.24	Monoterp. aldehyde
Bornyl acetate	12.87	1282	0.04	0.04	1499	9.05	Monoterp. ester
Methyl geranate	15.28	1324	1.27	1.43	1621	13.64*	Monoterp. ester
$\alpha$ -Cubebene	15.87	1333	0.11	[0.14]	1404	6.78*	Sesquiterpene
Citronellyl acetate	17.18	1353	0.28	[20.58]	1602	12.77*	Monoterp. ester
$\alpha$ -Copaene	17.54	1359	0.17	[0.33]	1426	7.30*	Sesquiterpene
Neryl acetate	17.68	1361	0.22	0.20	1656	15.47	Monoterp. ester
$\beta$ -Elemene	18.54*	1374	0.24	0.03	1523	9.83	Sesquiterpene
Citronellic acid	18.54*	1374	[0.24]				Monoterp. acid
Geranyl acetate	19.23	1384	2.15	2.19	1688	17.16	Monoterp. ester
Isocaryophyllene	19.38	1386	0.10	[0.44]	1502	9.14*	Sesquiterpene
$\beta$ -Caryophyllene	20.54	1403	10.29	10.61	1519	9.67	Sesquiterpene
<i>cis</i> - $\beta$ -Farnesene	22.28	1424	0.07	1.17	1577	11.83*	Sesquiterpene
$\alpha$ -Humulene	23.14	1434	1.05	[1.17]	1577	11.83*	Sesquiterpene
Germacrene D	25.29	1460	0.06	[1.43]	1621	13.64*	Sesquiterpene
( <i>Z,E</i> )- $\alpha$ -Farnesene	27.73	1490	0.09	0.14	1668	16.07	Sesquiterpene
Caryophyllene oxide	33.53	1569	2.80	2.75	1844	27.34	Sesquiterp. ether
$\alpha$ -Eudesmol	37.72	1648	0.06	0.04	2121	40.38	Sesquiterp. alcohol
<b>Total identified</b>			<b>97.12%</b>	<b>95.56%</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 :** 1.4805  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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



