



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: MJ0100

ESSENTIAL OIL: MARJORAM ORGANIC
BOTANICAL NAME: ORIGANUM MARJORANA
ORIGIN: EGYPT

KEY CONSTITUENTS PRESENT IN THIS BATCH OF MARJORAM ORGANIC OIL	%
TERPINEN-4-OL	23.1
γ-TERPINENE	13.4
Trans-SABINENE HYDRATE	11.7
α-TERPINENE	8.3
SABINENE	8.2
cis-SABINENE HYDRATE	3.5
LINALOOL	3.4
α-TERPINEOL	3.4
TERPINOLENE	3.1
β-CARYOPHYLLENE	2.6
MYRCENE	2.1
LIMONENE	2.0
β-PHELLANDRENE	1.8
LINALYL ACETATE	1.7
BICYCLOGERMACRENE	1.6
cis-PARA-MENTH-2-EN-1-OL	1.6
p-CYMENE	1.3

Comments from Robert Tisserand: Excellent green-herbaceous odor profile, with constituents all in expected ranges.

Date : September 28, 2016

SAMPLE IDENTIFICATION

Internal code : 16I16-PTH7-1-DM

Customer identification : Organic Marjoram - MJ010063R

Type : Essential oil

Source : *Origanum marjorana*

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 : 2016-09-26

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.	
<i>cis</i> -Hex-3-en-1-ol	2.50	865	0.02	0.01	1344	4.95	Aliphatic alcohol
<i>trans</i> -Hex-2-en-1-ol	2.68	879	0.01	0.01	1352	5.05	Aliphatic alcohol
Hashishene	3.14	911	0.01	0.74	951	0.88*	Monoterpene
α -Thujene	3.25	918	0.68	[0.74]	951	0.88*	Monoterpene
α -Pinene	3.35	924	0.81	0.75	944	0.85	Monoterpene
Camphene	3.64*	941	0.03	0.03	995	1.07	Monoterpene
α -Fenchene	3.64*	941	[0.03]	tr	984	1.02	Monoterpene
Sabinene	4.09	969	8.15	8.24	1057	1.51	Monoterpene
β -Pinene	4.14	972	0.47	0.45	1037	1.35	Monoterpene
Myrcene	4.42	989	2.14	2.04	1114	1.97	Monoterpene
α -Phellandrene	4.68	1004	0.40	0.40	1106	1.90	Monoterpene
α -Terpinene	4.90	1016	8.34	8.52	1123	2.08	Monoterpene
para-Cymene	5.07	1026	1.31	1.34	1206	3.04	Monoterpene
Limonene	5.11	1028	1.95	1.75	1139	2.26	Monoterpene
β -Phellandrene	5.14	1029	1.83	2.33	1144	2.33*	Monoterpene
1,8-Cineole	5.16	1031	0.20	[2.33]	1144	2.33*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.28	1037	0.03	13.39	1190	2.86*	Monoterpene
<i>trans</i> - β -Ocimene	5.46	1047	0.04	0.09	1200	2.97	Monoterpene
γ -Terpinene	5.69	1060	13.37	[13.39]	1190	2.86*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.94	1073	tr	tr	1393	5.65	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.03	1078	3.52	3.64	1407	5.86	Monoterp. alcohol
Terpinolene	6.13	1084	3.08	3.04	1223	3.26	Monoterpene
para-Cymenene	6.34	1095	0.02	0.01	1366	5.27	Monoterpene
<i>trans</i> -Sabinene hydrate	6.72	1109	11.69	14.32	1482	7.22	Monoterp. alcohol
Linalool	6.73	1110	3.44	2.57	1491	7.39	Monoterp. alcohol
<i>cis</i> -para-Menth-2-en-1-ol	7.18	1127	1.55	1.72	1498	7.52*	Monoterp. alcohol
<i>trans</i> -Pinocarveol	7.56	1141	0.06	0.05	1578	9.64	Monoterp. alcohol
<i>trans</i> -para-Menth-2-en-1-ol	7.71	1147	0.90	0.88	1554	8.94	Monoterp. alcohol
Terpinen-4-ol	8.85	1189	23.07	26.04	1534	8.31*	Monoterp. alcohol
<i>cis</i> -Sabinyl acetate	9.31	1202	0.30				Monoterp. ester
α -Terpineol	9.43	1205	3.40	3.23	1626	11.09	Monoterp. alcohol
<i>trans</i> -Piperitol	9.91	1216	0.44	0.44	1666	12.84	Monoterp. alcohol
Nerol	10.55	1230	0.05	0.04	1729	15.60	Monoterp. alcohol
Neral	11.16	1244	0.46	0.34	1599	10.26	Monoterp. aldehyde
Linalyl acetate	11.28	1247	1.72	[1.72]	1498	7.52*	Monoterp. ester
Geraniol	11.83	1259	0.09	0.08	1780	18.51	Monoterp. alcohol
Geranial	12.49	1273	0.08	1.59	1646	11.96*	Monoterp. aldehyde
<i>trans</i> -Sabinyl acetate	13.42	1294	0.17	0.18	1542	8.56	Monoterp. ester
Carvacrol	16.29	1338	0.07	0.09	2132	37.95	Monoterp. alcohol
α -Copaene	17.57	1358	0.03	0.04	1433	6.30	Sesquiterpene
Eugenol	17.63	1359	0.02	0.03	2056	35.43	Phenylpropanoid

Geranyl acetate	19.12	1382	0.04	0.04	1690	13.88	Monoterp. ester
β -Caryophyllene	20.28	1399	2.63	[26.04]	1534	8.31*	Sesquiterpene
α -Humulene	22.99	1431	0.11	0.09	1586	9.85	Sesquiterpene
Germacrene D	25.16	1458	0.02	0.01	1632	11.35	Sesquiterpene
Bicyclogermacrene	26.46	1472	1.58	[1.59]	1646	11.96*	Sesquiterpene
γ -Cadinene	28.22	1494	0.02	0.03	1672	13.09	Sesquiterpene
δ -Cadinene	28.71	1500	0.04	0.04	1678	13.39	Sesquiterpene
Caryophyllene oxide	33.48	1566	0.06	0.04	1851	22.83	Sesquiterp. ether
Spathulenol	33.71	1569	0.06	0.06	2027	33.94	Sesquiterp. alcohol
τ -Cadinol	37.32	1637	0.03	0.05	2075	36.07	Sesquiterp. alcohol
Total identified			98.54%	98.78%			

*: 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 : Clear liquid

Refractive index : 1.4713 \pm 0.0003 (20 °C)

CONCLUSION

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



