



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: P40105

ESSENTIAL OIL: PEPPERMINT ORGANIC
BOTANICAL NAME: MENTHA X PIPERITA
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF PEPPERMINT ORGANIC OIL	%
MENTHOL	43.8
MENTHONE	22.8
MENTHYL ACETATE	5.4
1,8-CINEOLE	4.6
ISOMENTHONE	3.9
NEO-MENTHOL	3.2
β-CARYOPHYLLENE	3.0
LIMONENE	2.4
MENTHOFURAN	1.4
β-PINENE	1.1

Comments from Robert Tisserand: Excellent clean, creamy-mint odor quality. Eleven of twelve key ISO constituents for Indian Peppermint oil are within range, with cis-sabinene hydrate slightly low - not a concern.

Date : May 5, 2017

SAMPLE IDENTIFICATION

Internal code : 17D28-PTH2-1-DM

Customer identification : Organic Peppermint - India - P40105611R

Type : Essential oil

Source : *Mentha x piperita*

Customer : Plant Therapy

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 : 2017-05-02

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.	
Hexanol	2.69	881	0.03	0.03	1301	5.00	Aliphatic alcohol
2,5-Diethyltetrahydrofuran	2.91	898	0.02	0.02	978	1.25	Furan
α -Thujene	3.31	922	0.03	0.04	957	1.16	Monoterpene
α -Pinene	3.41	928	0.73	0.70	947	1.11	Monoterpene
Camphene	3.70	945	0.03	0.02	1001	1.39	Monoterpene
3-Methylcyclohexanone	4.00	963	0.04	0.04	1247	4.22	Aliphatic ketone
Sabinene	4.12	971	0.31	0.29	1056	1.90	Monoterpene
β -Pinene	4.19	975	1.05	1.00	1040	1.74	Monoterpene
Myrcene	4.46*	991	0.17	0.14	1117	2.46	Monoterpene
Octen-3-ol	4.46*	991	[0.17]	0.06	1399	6.54	Aliphatic alcohol
Octan-3-one	4.52	994	0.01	0.01	1200	3.54	Aliphatic ketone
Pseudolimonene	4.68	1004	0.01	0.01	1113	2.40	Monoterpene
α -Phellandrene	4.75*	1007	0.17	0.02	1111	2.38	Monoterpene
Octan-3-ol	4.75*	1007	[0.17]	0.14	1347	5.70	Aliphatic alcohol
α -Terpinene	4.92	1017	0.09	0.08	1124	2.55	Monoterpene
para-Cymene	5.11	1027	0.14	0.14	1209	3.66	Monoterpene
Limonene	5.16	1030	2.38	2.21	1143	2.79	Monoterpene
1,8-Cineole	5.22	1033	4.62	4.79	1148	2.87	Monoterp. ether
<i>cis</i> - β -Ocimene	5.33	1039	0.07	0.16	1189	3.39*	Monoterpene
<i>trans</i> - β -Ocimene	5.51	1049	0.03	0.03	1203	3.57	Monoterpene
γ -Terpinene	5.70	1059	0.15	[0.16]	1189	3.39*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.97	1074	0.01	0.01	1378	6.18	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.00	1076	0.12	1.42	1412	6.73*	Monoterp. alcohol
Octanol	6.14	1083	0.05	0.11	1511	9.05*	Aliphatic alcohol
Terpinolene	6.17	1085	0.06	0.06	1224	3.88	Monoterpene
Linalool	6.63	1107	0.16	0.31	1505	8.91*	Monoterp. alcohol
Isopulegol	7.78	1149	0.16	[0.31]	1505	8.91*	Monoterp. alcohol
Menthone	8.07	1160	22.80	22.82	1395	6.47	Monoterp. ketone
Menthofuran	8.15	1163	1.35	[1.42]	1412	6.73*	Monoterp. ether
Isomenthone	8.26	1167	3.87	3.65	1418	6.83	Monoterp. ketone
neo-Menthol	8.45	1173	3.22	3.24	1535	9.81	Monoterp. alcohol
Borneol	8.51	1176	0.04	0.21	1616	12.82*	Monoterp. alcohol
<i>trans</i> -Isopulegone	8.58	1178	0.09	3.01	1524	9.43*	Monoterp. ketone
Menthol	8.99*	1193	43.87	43.80	1581	11.55	Monoterp. alcohol
Terpinen-4-ol	8.99*	1193	[43.87]	0.25	1531	9.67*	Monoterp. alcohol
Isomenthol	9.08	1197	0.52	0.48	1557	10.66	Monoterp. alcohol
neoiso-Menthol	9.25	1202	0.30	0.32	1625	13.17	Monoterp. alcohol
β -Phellandren-8-ol	9.39*	1205	0.41	0.22	1710	17.63*	Monoterp. alcohol
α -Terpineol	9.39*	1205	[0.41]	1.10	1628	13.32*	Monoterp. alcohol
Pulegone	10.90	1238	0.67	0.69	1551	10.44	Monoterp. ketone
Carvone	11.29	1247	0.03	0.02	1635	13.73	Monoterp. ketone

Piperitone	11.67	1255	0.75	[1.10]	1628	13.32*	Monoterp. ketone
neo-Menthyl acetate	12.32	1270	0.19	0.19	1463	7.93	Monoterp. ester
Decanol	12.86	1282	0.20	[0.22]	1710	17.63*	Aliphatic alcohol
Menthyl acetate	13.34	1292	5.39	5.73	1502	8.82	Monoterp. ester
Isomenthyl acetate	13.94	1304	0.10	[0.11]	1511	9.05*	Monoterp. ester
Bicycloelemene	14.96	1319	0.11	0.15	1424	6.99	Sesquiterpene
Menthofuro lactone	16.80	1347	0.02				Monoterp. lactone
Eugenol	17.27	1354	0.03	0.03	2062	38.09	Phenylpropanoid
α -Copaene	17.60	1359	0.07	0.08	1432	7.19	Sesquiterpene
β -Bourbonene	18.02	1366	0.21	0.26	1452	7.65	Sesquiterpene
β -Elemene	18.79	1378	0.10	[0.25]	1531	9.67*	Sesquiterpene
β -Caryophyllene	20.51	1403	3.00	[3.01]	1524	9.43*	Sesquiterpene
Aromadendrene	21.36	1413	0.08	[0.25]	1531	9.67*	Sesquiterpene
Isogermacrene D	22.04	1421	0.01				Sesquiterpene
<i>cis</i> - β -Farnesene	22.41	1426	0.04	0.22	1585	11.71*	Sesquiterpene
α -Humulene	23.21	1435	0.19	[0.22]	1585	11.71*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.37	1449	0.10	[0.21]	1616	12.82*	Sesquiterpene
γ -Muurolene	25.40*	1462	0.33	0.08	1608	12.54	Sesquiterpene
Germacrene D	25.40*	1462	[0.33]	[1.10]	1628	13.32*	Sesquiterpene
Bicyclogermacrene	26.64	1477	0.06	0.06	1642	14.10	Sesquiterpene
γ -Cadinene	28.28	1496	0.01	0.01	1665	15.24	Sesquiterpene
Mint lactone	28.43	1498	0.01	0.01	2129	40.14	Monoterp. lactone
δ -Cadinene	29.10	1507	0.04	0.05	1673	15.71	Sesquiterpene
Caryophyllene oxide	33.58*	1570	0.05	0.04	1849	26.67	Sesquiterp. ether
Spathulenol	33.58*	1570	[0.05]	0.02	2028	36.98	Sesquiterp. alcohol
Viridiflorol	34.51	1583	0.03	0.03	1981	34.85	Sesquiterp. alcohol
Total identified			98.93%	98.61%			

*: 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

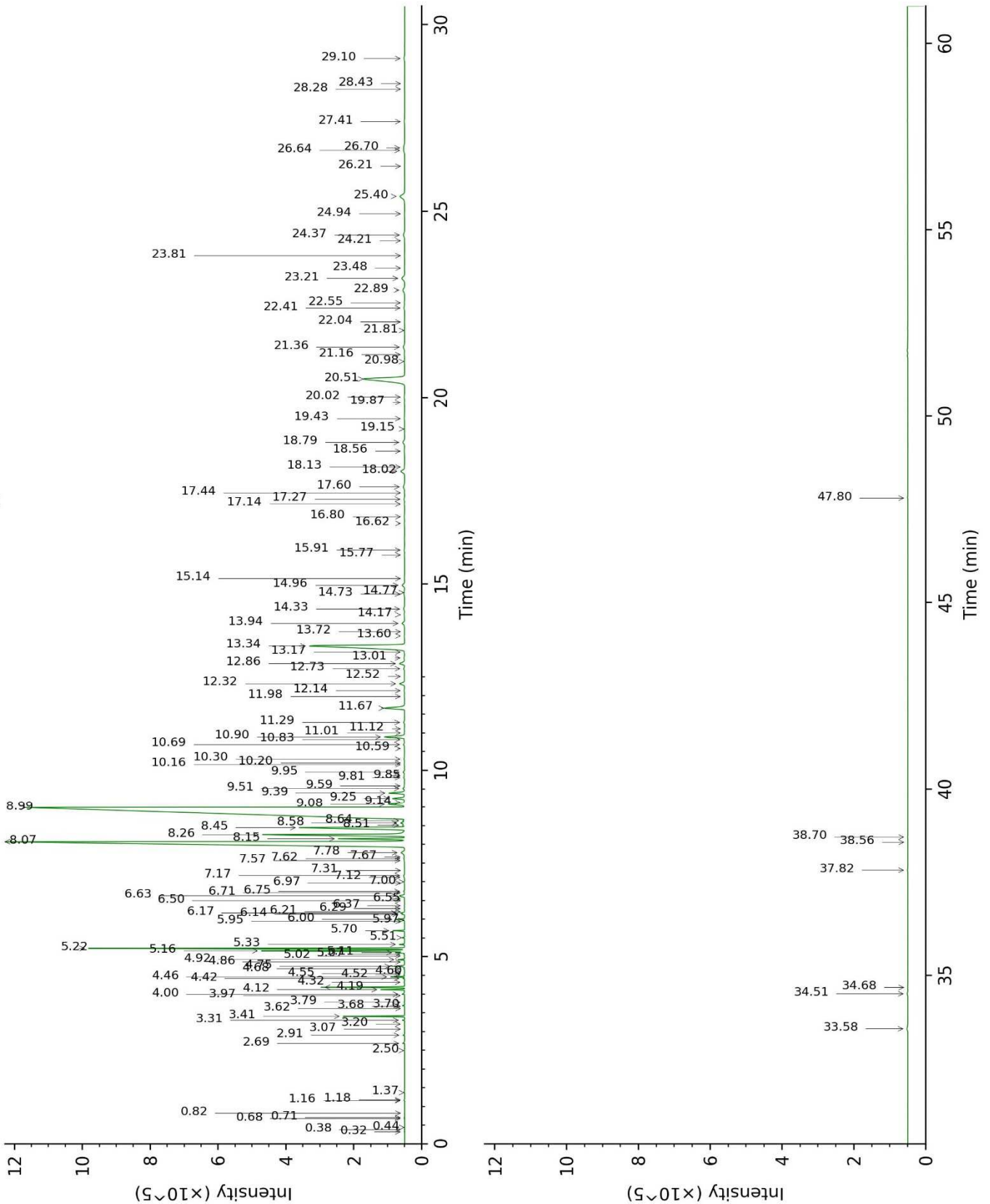
Physical aspect : Clear liquid

Refractive index : 1.4595 \pm 0.0003 (20 °C)

CONCLUSION

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

17D28-PTH2-1-DM_BP5



17D28-PTH2-1-DM_WAX

