

Date : August 24, 2017

SAMPLE IDENTIFICATION

Internal code : 17H16-BUB4-1-DM

Customer identification : Organic Peppermint Essential Oil - India – Lot# 10001

Type : Essential oil

Source : *Mentha x piperita*

Customer : Buhbli Organics

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-08-23

Checked and approved by :

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.	
<i>cis</i> -Hex-3-en-1-ol	2.50	865	0.02	0.03	1326	5.68	Aliphatic alcohol
2,5-Diethyltetrahydrofuran	2.91	896	0.02	0.03	973	1.36	Furan
α -Thujene	3.32	921	0.03	0.69	945	1.22*	Monoterpene
α -Pinene	3.42	927	0.68	[0.69]	945	1.22*	Monoterpene
Camphene	3.71	944	0.02				Monoterpene
3-Methylcyclohexanone	4.02	962	0.06	0.07	1249	4.48	Aliphatic ketone
Sabinene	4.14	969	0.41	0.42	1060	2.08	Monoterpene
β -Pinene	4.21	973	1.10	1.04	1040	1.90	Monoterpene
Myrcene	4.48	989	0.16	0.14	1115	2.68	Monoterpene
Octen-3-ol	4.53	992	0.05	27.03	1396	6.82*	Aliphatic alcohol
α -Phellandrene	4.76	1005	0.03	0.02	1109	2.59	Monoterpene
Octan-3-ol	4.81	1008	0.17	0.17	1346	5.98	Aliphatic alcohol
α -Terpinene	4.95	1015	0.14	0.15	1123	2.77	Monoterpene
para-Cymene	5.15	1026	0.11	0.16	1212	3.94	Monoterpene
Limonene	5.19	1028	2.55	7.57	1146	3.07*	Monoterpene
1,8-Cineole	5.25	1032	5.01	[7.57]	1146	3.07*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.36	1037	0.11	0.41	1193	3.65*	Monoterpene
<i>trans</i> - β -Ocimene	5.54	1047	0.03	0.03	1206	3.84	Monoterpene
γ -Terpinene	5.73	1058	0.30	[0.41]	1193	3.65*	Monoterpene
<i>cis</i> -Sabinene hydrate	6.06	1076	0.26	0.24	1406	7.05	Monoterp. alcohol
Terpinolene	6.20*	1083	0.22	0.09	1227	4.17	Monoterpene
Octanol	6.20*	1083	[0.22]	0.16	1508	9.70*	Aliphatic alcohol
Linalool	6.72	1107	0.25	6.20	1501	9.43*	Monoterp. alcohol
<i>cis</i> -para-Menth-2-en-1-ol	7.26	1126	0.05	[6.20]	1501	9.43*	Monoterp. alcohol
Isopulegol	7.88	1149	0.13	[6.20]	1501	9.43*	Monoterp. alcohol
Menthone	8.16	1159	26.66	[27.03]	1396	6.82*	Monoterp. ketone
Menthofuran	8.24	1162	2.84	7.23	1413	7.22*	Monoterp. ether
Isomenthone	8.35	1166	4.50	[7.23]	1413	7.22*	Monoterp. ketone
neo-Menthol	8.58	1175	3.49	3.73	1531	10.53	Monoterp. alcohol
Borneol	8.66	1177	0.22	1.87	1620	14.22*	Monoterp. alcohol
Menthol	9.10*	1193	34.27	34.08	1579	12.32	Monoterp. alcohol
Terpinen-4-ol	9.10*	1193	[34.27]	0.33	1527	10.37	Monoterp. alcohol
Isomenthol	9.20	1197	0.53	0.47	1557	11.50	Monoterp. alcohol
neiso-Menthol	9.37	1201	0.35	0.36	1598	13.10	Monoterp. alcohol
α -Terpineol	9.54	1205	0.42	[1.87]	1620	14.22*	Monoterp. alcohol
Pulegone	11.02	1237	0.94	1.00	1549	11.18	Monoterp. ketone
Carvone	11.42	1246	0.13	0.09	1629	14.67	Monoterp. ketone
Piperitone	11.82	1255	0.65	[1.87]	1620	14.22*	Monoterp. ketone
neo-Menthyl acetate	12.41	1268	0.23	0.22	1466	8.47	Monoterp. ester
Dihydroedulan I	13.07*	1282	0.12	0.12	1434	7.70*	Edulan
Bornyl acetate	13.07*	1282	[0.12]	[6.20]	1501	9.43*	Monoterp. ester

Menthyl acetate	13.44	1290	5.47	[6.20]	1501	9.43*	Monoterp. ester
Isomenthyl acetate	14.05	1302	0.13	[0.16]	1508	9.70*	Monoterp. ester
Bicycloelemene	15.05	1317	0.13	0.14	1423	7.45	Sesquiterpene
α-Copaene	17.72	1357	0.06	[0.12]	1434	7.70*	Sesquiterpene
β-Bourbonene	18.15	1364	0.24	0.26	1454	8.18	Sesquiterpene
β-Elemene	18.96	1376	0.10	3.21	1521	10.13*	Sesquiterpene
β-Caryophyllene	20.69	1401	3.20	[3.21]	1521	10.13*	Sesquiterpene
β-Copaene	21.55	1412	0.08	[3.21]	1521	10.13*	Sesquiterpene
cis-β-Farnesene	23.10	1430	0.12	0.15	1583	12.47	Sesquiterpene
α-Humulene	23.42	1434	0.21	0.23	1587	12.61	Sesquiterpene
trans-β-Farnesene	24.54	1447	0.21	0.27	1616	13.98	Sesquiterpene
Germacrene D	25.65	1460	0.82	[1.87]	1620	14.22*	Sesquiterpene
Bicyclgermacrene	26.88	1475	0.13	0.12	1634	14.92	Sesquiterpene
γ-Cadinene	28.73	1497	0.07	0.11	1667	16.70	Sesquiterpene
δ-Cadinene	29.37	1506	0.16	0.17	1674	17.09	Sesquiterpene
Caryophyllene oxide	33.85*	1569	0.16	0.08	1843	28.41	Sesquiterp. ether
(E)-Nerolidol	33.85*	1569	[0.16]	0.05	1983	36.39	Sesquiterp. alcohol
Spathulenol	33.97	1571	0.04	0.04	2014	37.62	Sesquiterp. alcohol
Viridiflorol	34.84	1583	0.09	0.09	1974	35.96	Sesquiterp. alcohol
Total identified			98.68%	99.07%			

*: 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

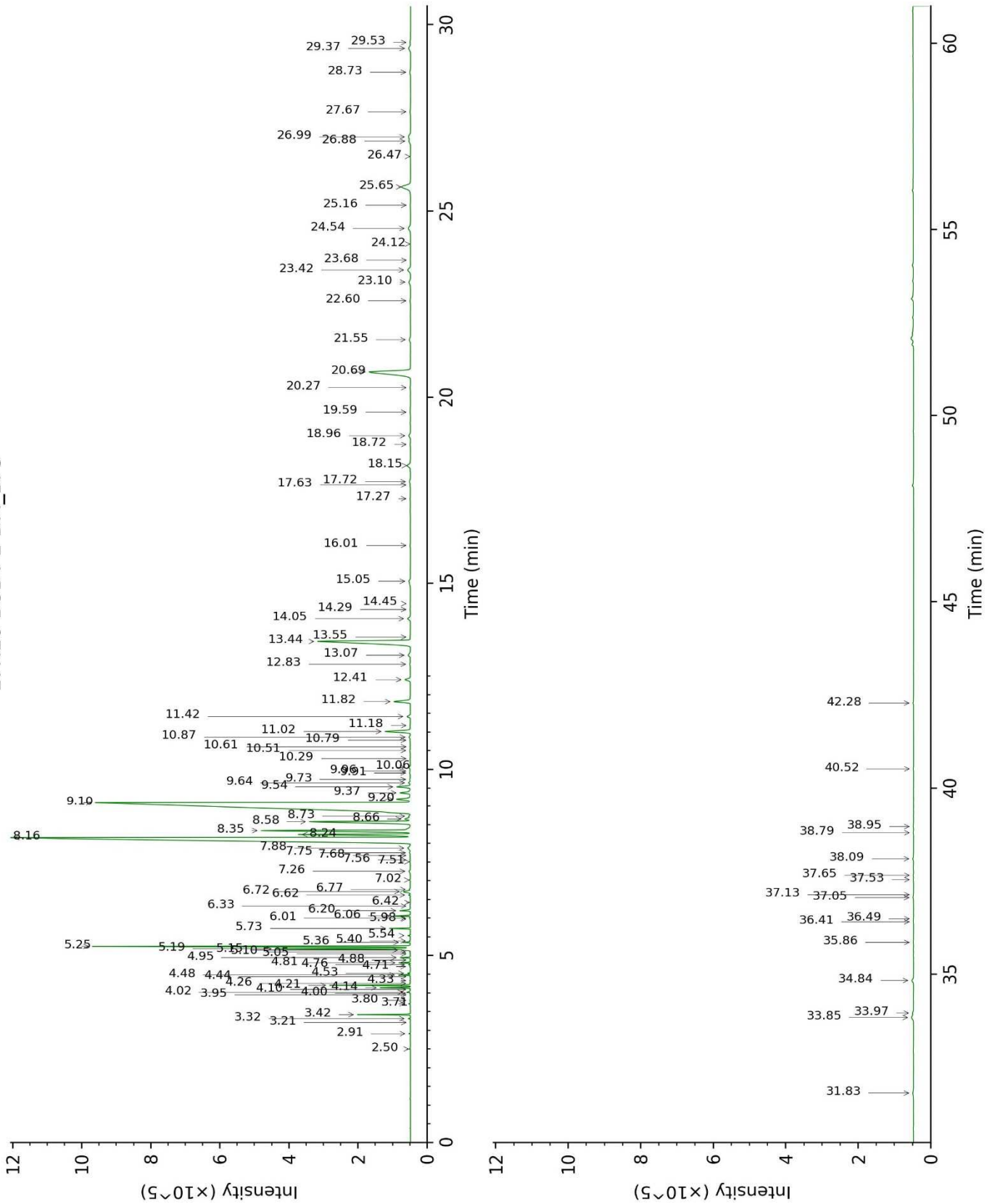
Physical aspect : Clear liquid

Refractive index : 1.4600 ± 0.0003 (20 °C)

CONCLUSION

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

17H16-BUB4-1-DM_BP5



17H16-BUB4-1-DM_WAX

