

Date : March 17, 2017

SAMPLE IDENTIFICATION

Internal code : 17C03-NGA6-1-DM

Customer identification : Helichrysum-SERO - FR-162404

Type : Essential oil

Source : *Helichrysum italicum ssp. serotinum*

Customer : Nature's Gift Aromatherapy

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 : 2017-03-14

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.

This report is digitally signed, it is only considered valid if the digital signature is intact.

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
2-Pentanone	0.84	696	0.07				Aliphatic ketone
2-Methyl-3-pentanone	1.18	741	0.19	0.19	901	0.99	Aliphatic ketone
4-Methyl-3-hexanone	2.11	837	0.43	0.42	1009	1.55	Aliphatic ketone
α -Thujene	3.30	922	0.01	0.02	959	1.22	Monoterpene
α -Pinene	3.40	928	2.65	2.55	949	1.18	Monoterpene
α -Fenchene	3.66	943	0.53	0.49	992	1.42	Monoterpene
Camphene	3.68	945	0.22	0.24	1000	1.47	Monoterpene
β -Pinene	4.17	974	0.89	0.85	1041	1.84	Monoterpene
Myrcene	4.45	990	0.09	0.09	1117	2.58	Monoterpene
<i>trans</i> -Dehydroxylinalool oxide	4.47	991	0.08	0.08	1156	3.09	Monoterp. ether
6-Methyl-5-hepten-2-one	4.53	995	0.02	0.02	1279	4.84	Aliphatic ketone
α -Phellandrene	4.72	1006	0.06	0.06	1111	2.50	Monoterpene
Mentha-1,5,8-triene	4.74	1007	0.07				Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	4.80	1010	tr				Monoterp. ether
<i>cis</i> -Hex-3-en-1-yl acetate	4.86	1013	0.03	0.01	1264	4.60	Aliphatic ester
α -Terpinene	4.91	1016	0.24	0.22	1124	2.67	Monoterpene
para-Cymene	5.09	1026	0.32	0.29	1210	3.82	Monoterpene
Limonene	5.15	1029	6.29	6.01	1145	2.94	Monoterpene
β -Phellandrene	5.17	1030	0.03	0.96	1149	2.99*	Monoterpene
1,8-Cineole	5.21	1032	0.90	[0.96]	1149	2.99*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.31	1038	0.02	0.95	1191	3.55*	Monoterpene
<i>trans</i> - β -Ocimene	5.49	1048	0.21	0.20	1203	3.72	Monoterpene
Isobutyl angelate	5.62	1055	0.17	0.16	1238	4.23	Aliphatic ester
γ -Terpinene	5.68	1058	0.93	[0.95]	1191	3.55*	Monoterpene
<i>cis</i> -Sabinene hydrate	5.96	1074	0.01	0.01	1403	6.75	Monoterp. alcohol
Terpinolene	6.15	1084	0.24	0.23	1225	4.04	Monoterpene
Fenchone	6.30	1092	0.10	0.10	1322	5.49	Monoterp. ketone
Isobutyl tiglate	6.34	1094	0.02	0.03	1292	5.02	Aliphatic ester
2,4-Dimethyl-heptane-3,5-dione	6.43	1099	0.29	2.43	1473	8.43*	Aliphatic ketone
Unknown (m/z = 81, 41 (96), 69 (74), 123 (57), 109 (56), 83 (53)... 137 (28)... 152 (4))	6.49	1102	0.27				Oxygenated monoterp.
2-Methylbutyl 2-methylbutyrate	6.53	1103	0.01	0.01	1232	4.14	Aliphatic ester
Linalool	6.60	1106	1.74	1.62	1499	9.05	Monoterp. alcohol
Nonanal	6.68	1109	0.03	0.04	1338	5.73	Aliphatic aldehyde
endo-Fenchol	7.00	1120	0.06	0.07	1518	9.65	Monoterp. alcohol

Camphor	7.63	1143	0.04	0.64	1432	7.46*	Monoterp. ketone
Isoamyl angelate	7.81*	1150	0.68	0.51	1342	5.80	Aliphatic ester
Nerol oxide	7.81*	1150	[0.68]				Monoterp. ether
Borneol	8.44	1173	0.08	0.14	1619	13.56	Monoterp. alcohol
Terpinen-4-ol	8.65	1181	0.64	0.74	1531	10.11	Monoterp. alcohol
Dimethyl octanedione isomer	8.76	1185	0.45	0.33	1538	10.38	β -diketone
4,6-Dimethyl-3,5-octanedione	8.81	1187	0.47	0.39	1526	9.95	β -diketone
α -Terpineol	9.25	1202	0.64	11.81	1629	14.05*	Monoterp. alcohol
Nerol	10.40	1227	2.67	2.68	1735	19.96	Monoterp. alcohol
Neral	11.26	1246	0.13	0.21	1589	12.28*	Monoterp. aldehyde
Isoitalicene	17.50*	1358	0.61	[0.64]	1432	7.46*	Sesquiterpene
α -Copaene	17.50*	1358	[0.61]	0.03	1426	7.30	Sesquiterpene
Neryl acetate	18.05	1366	32.92	33.43	1671	16.21*	Monoterp. ester
Italicene	19.48	1388	2.33	[2.43]	1473	8.43*	Sesquiterpene
Hexyl hexanoate	19.74	1392	0.24	0.26	1595	12.48	Aliphatic ester
β -Caryophyllene	20.38	1401	0.12	0.15	1520	9.72	Sesquiterpene
<i>cis</i> - α -Bergamotene	20.50	1403	0.43	0.37	1511	9.41	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.96	1420	0.26	0.23	1536	10.31	Sesquiterpene
α -Humulene	23.01*	1433	4.48	[0.21]	1589	12.28*	Sesquiterpene
Italidione I	23.01*	1433	[4.48]	10.48	1803	24.44*	β -diketone
Neryl propionate	24.66	1453	4.60	4.67	1730	19.60	Monoterp. ester
γ -Curcumene	25.99*	1469	10.94	[11.81]	1629	14.05*	Sesquiterpene
Italidione isomer	25.99*	1469	[10.94]	[10.48]	1803	24.44*	β -diketone
α -Curcumene	26.20	1471	2.03	2.37	1699	17.75*	Sesquiterpene
α -Selinene	26.37	1473	2.27	[11.81]	1629	14.05*	Sesquiterpene
Italidione II	26.68	1477	2.68	[10.48]	1803	24.44*	β -diketone
γ -Cadinene	27.98	1493	0.07	[33.43]	1671	16.21*	Sesquiterpene
β -Bisabolene	28.62	1500	1.09	[33.43]	1671	16.21*	Sesquiterpene
Italidione II isomer	28.71	1502	0.19	[10.48]	1803	24.44*	
<i>trans</i> - γ -Bisabolene	29.76	1516	0.13	0.38	1673	16.35	Sesquiterpene
β -Sesquiphellandrene	30.22	1523	0.20	[2.37]	1699	17.75*	Sesquiterpene
Italicene ether	31.57	1541	0.08				Sesquiterp. ether
Italidione III	33.56	1569	0.76	[10.48]	1803	24.44*	β -diketone
Italidione III isomer	33.84	1573	0.35				β -diketone
Italidione III isomer II	33.92	1574	0.26				β -diketone
Italidione III isomer III	34.29	1579	0.33				β -diketone
Guaiol	35.01	1590	0.81	0.88	2007	36.62	Sesquiterp. alcohol
Rosifoliol analog?	35.54	1597	1.47	1.54	2018	37.15	Sesquiterp. alcohol
10-epi- γ -Eudesmol	35.81	1601	0.09	0.08	1991	35.95	Sesquiterp. alcohol
Neryl angelate?	36.60	1620	0.28				Monoterp. ester
γ -Eudesmol	36.78	1625	0.78	0.70	2068	38.73	Sesquiterp. alcohol
β -Eudesmol	37.53*	1643	0.81	0.53	2114	40.15	Sesquiterp. alcohol

α -Eudesmol	37.53*	1643	[0.81]	0.52	2117	40.26	Sesquiterp. alcohol
Bulnesol	38.05	1656	0.17	0.15	2109	40.03	Sesquiterp. alcohol
Total identified	94.53%		92.57%				

*: 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 : 1.4680 ± 0.0003 (20 °C)

CONCLUSION

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



