

Date : August 15, 2017

SAMPLE IDENTIFICATION

Internal code : 17H08-NGA1-1-DM

Customer identification : Helichrysum Serotinum Corsica - Batch #FR-58617

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).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-08-15

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.	
3-Pentanone	0.84	696	0.05				Aliphatic ketone
2-Methyl-3-pentanone	1.19	742	0.14	0.14	898	1.03	Aliphatic ketone
2-Methyl-2-heptene	1.58	794	0.16				Alkene
4-Methyl-3-hexanone	2.13	837	0.33	0.33	1005	1.61	Aliphatic ketone
cis-Hex-3-en-1-ol	2.48	863	0.01	0.01	1330	5.72	Aliphatic alcohol
Bornylene	2.95	899	0.04	0.04	886	0.97	Monoterpene
α-Pinene	3.42	927	2.62	2.55	949	1.24	Monoterpene
α-Fenchene	3.68	942	0.48	0.47	988	1.48	Monoterpene
Camphene	3.71	943	0.21	0.22	996	1.54	Monoterpene
Sabinene	4.14	969	0.01	0.01	1062	2.09	Monoterpene
β-Pinene	4.20	973	0.81	0.76	1042	1.92	Monoterpene
Myrcene	4.48	989	0.08	0.08	1116	2.68	Monoterpene
trans-Dehydroxylinalool oxide	4.50	990	0.08	0.09	1156	3.20	Monoterp. ether
6-Methyl-5-hepten-2-one	4.55	993	0.02	0.02	1282	4.97	Aliphatic ketone
α-Phellandrene	4.75*	1005	0.08	0.03	1109	2.59	Monoterpene
6-Methyl-5-hepten-2-ol	4.75*	1005	[0.08]	0.02	1416	7.30	Aliphatic alcohol
cis-Dehydroxylinalool oxide	4.87	1011	0.03				Monoterp. ether
α-Terpinene	4.94	1015	0.24	0.24	1124	2.78	Monoterpene
para-Cymene	5.14	1026	0.22	0.33	1213	3.95	Monoterpene
Limonene	5.19	1028	5.71	5.34	1143	3.04	Monoterpene
β-Phellandrene	5.21	1029	0.03	0.37	1146	3.08*	Monoterpene
1,8-Cineole	5.23	1031	0.33	[0.37]	1146	3.08*	Monoterp. ether
cis-β-Ocimene	5.35	1037	0.02	0.98	1194	3.67*	Monoterpene
trans-β-Ocimene	5.53	1047	0.20	0.19	1206	3.85	Monoterpene
Isobutyl angelate	5.65	1053	0.14	0.13	1241	4.35	Aliphatic ester
γ-Terpinene	5.72	1057	0.96	[0.98]	1194	3.67*	Monoterpene
Terpinolene	6.20	1083	0.24	0.23	1228	4.17	Monoterpene
Fenchone	6.35	1091	0.02	0.02	1323	5.62	Monoterp. ketone
2-Nonanone	6.47	1098	0.25	0.25	1334	5.78	Aliphatic ketone
2,4-Dimethyl-heptane-3,5-dione	6.54	1101	0.22	2.83	1475	8.70*	Aliphatic ketone
Linalool	6.69	1106	1.09	1.08	1499	9.34	Monoterp. alcohol
2-Methylbutyl 2-methylbutyrate	6.78	1109	0.14	0.09	1237	4.30	Aliphatic ester
endo-Fenchol	7.13	1122	0.06	0.50	1519	10.04*	Monoterp. alcohol
2-Methylbutyl angelate	7.86*	1149	0.58	0.43	1343	5.93	Aliphatic ester
Nerol oxide	7.86*	1149	[0.58]				Monoterp. ether
Borneol	8.61	1176	0.08	11.70	1627	14.55*	Monoterp. alcohol
Terpinen-4-ol	8.78	1182	0.68	1.03	1529	10.43*	Monoterp. alcohol

Dimethyl octanedione isomer	8.86	1185	0.38	0.64	1526	10.32	β-diketone
4,6-Dimethyl-3,5-octanedione	8.91	1187	0.40	[1.03]	1529	10.43*	β-diketone
α-Terpineol	9.44	1203	0.55	[11.70]	1627	14.55*	Monoterp. alcohol
Unknown (m/z = 81, 168 (53), 67 (49), 140 (47), 41 (44))	10.40	1224	0.30				
Nerol	10.59	1228	2.74	2.77	1732	20.63	Monoterp. alcohol
Neral	11.33	1244	0.12	0.30	1595	12.91	Monoterp. aldehyde
2-Undecanone	13.81	1298	0.13	0.16	1535	10.65	Aliphatic ketone
Isoitalicene	17.66	1357	0.71	0.73	1434	7.70	Sesquiterpene
Neryl acetate	18.21	1365	33.90	33.70	1668	16.76*	Monoterp. ester
Geranyl acetate	19.47	1384	0.10	2.40	1699	18.38*	Monoterp. ester
Italicene	19.70	1387	2.77	[2.83]	1475	8.70*	Sesquiterpene
cis-α-Bergamotene	20.68*	1401	0.47	0.36	1511	9.75	Sesquiterpene
β-Caryophyllene	20.68*	1401	[0.47]	[0.50]	1519	10.04*	Sesquiterpene
trans-α-Bergamotene	22.15	1419	0.24	[1.03]	1529	10.43*	Sesquiterpene
α-Humulene	23.30*	1432	4.79	0.07	1582	12.45	Sesquiterpene
Italidione I	23.30*	1432	[4.79]	11.18	1800	25.18*	β-diketone
α-Acoradiene	24.17	1443	0.25	0.23	1589	12.71	Sesquiterpene
trans-β-Farnesene	24.51	1447	0.41	[11.70]	1627	14.55*	Sesquiterpene
γ-Selinene	24.86*	1451	4.96	0.03	1601	13.16	Sesquiterpene
Neryl propionate	24.86*	1451	[4.96]	4.95	1726	20.24	Monoterp. ester
γ-Curcumene	26.24	1468	11.05	[11.70]	1627	14.55*	Sesquiterpene
Italidione isomer	26.49	1470	2.17	[11.18]	1800	25.18*	β-diketone
ar-Curcumene	26.67	1473	2.30	[2.40]	1699	18.38*	Sesquiterpene
Italidione II	26.98*	1476	3.15	[11.18]	1800	25.18*	β-diketone
α-Selinene	26.98*	1476	[3.15]	[11.70]	1627	14.55*	Sesquiterpene
β-Bisabolene	28.89	1499	1.27	[33.70]	1668	16.76*	Sesquiterpene
β-Curcumene	29.01	1501	0.31	0.35	1672	16.96	Sesquiterpene
trans-Cadina-1,4-diene	30.10	1516	0.18	[2.40]	1699	18.38*	Sesquiterpene
β-Sesquiphellandrene	30.53	1522	0.09	0.08	1695	18.13	Sesquiterpene
α-Cadinene	30.80	1526	0.07	0.06	1706	18.88	Sesquiterpene
Italicene ether	31.84	1541	0.07				Sesquiterp. ether
Italidione III	33.80	1568	0.89	[11.18]	1800	25.18*	β-diketone
Italidione III isomer	34.08	1572	0.36				β-diketone
Italidione III isomer II	34.16	1573	0.39				β-diketone
Italidione III isomer III	34.39	1577	0.48				β-diketone
Italidione isomer IV	34.97	1585	0.25				β-diketone
Humulene epoxide II	35.19	1588	0.16	0.20	1910	33.02	Sesquiterp. ether
Guaiol	35.34	1590	0.82	0.92	1997	37.03	Sesquiterp. alcohol
Eudesm-5-en-11-ol?	35.87	1597	1.47	1.42	2011	37.53	Sesquiterp. alcohol
10-epi-γ-Eudesmol	36.08	1602	0.08	0.08	1983	36.39	Sesquiterp. alcohol

γ -Eudesmol	36.94	1623	0.46	0.44	2065	39.23	Sesquiterp. alcohol
Neryl angelate?	37.07	1626	0.60				Monoterp. ester
β -Eudesmol	37.86*	1646	0.90	0.69	2104	40.46	Sesquiterp. alcohol
α -Eudesmol	37.86*	1646	[0.90]	0.61	2109	40.59*	Sesquiterp. alcohol
Bulnesol	38.34	1657	0.18	[0.61]	2109	40.59*	Sesquiterp. alcohol
α -Bisabolol	39.52	1686	0.02	0.03	2132	41.21	Sesquiterp. alcohol
Total identified			97.00%	92.91%			

*: 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

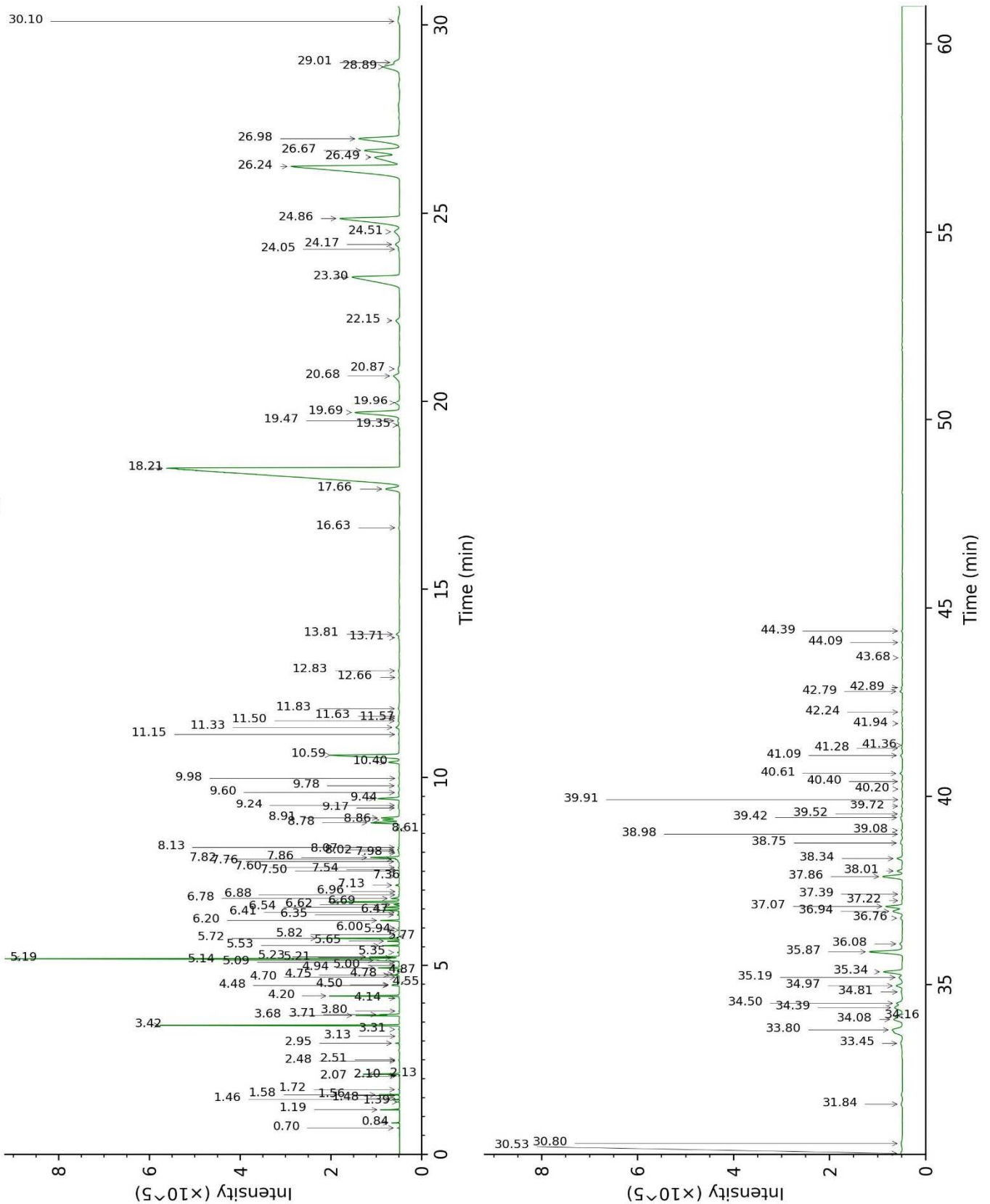
Physical aspect : Yellow liquid

Refractive index : 1.4690 ± 0.0003 (20 °C)

CONCLUSION

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

17H08-NGA1-1-DM_BP5



17H08-NGA1-1-DM_WAX

