

Date : May 29, 2017

SAMPLE IDENTIFICATION

Internal code : 17E23-PTH4-1-DM

Customer identification : Organic German Chamomile - Egypt - CC110066R

Type : Essential oil

Source : *Matricaria recutita*

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 : 2017-05-29

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Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.	
Isovaleral	0.67	674	0.04	0.04	741	0.61	Aliphatic aldehyde
2-Methylbutyral	0.70	678	0.04	0.03	732	0.60	Aliphatic aldehyde
Hexanal	1.72	807	0.02	0.02	1013	1.39	Aliphatic aldehyde
Ethyl 2-methylbutyrate	2.26	848	0.21	0.20	984	1.26	Aliphatic ester
Ethyl isovalerate	2.35	855	0.02	0.02	1007	1.34	Aliphatic ester
Heptanal	2.95	901	0.01	0.02	1126	2.53	Aliphatic aldehyde
α -Thujene	3.31	922	0.01	0.01	965	1.18	Monoterpene
α -Pinene	3.42	929	0.03	0.02	941	1.07	Monoterpene
Propyl 2-methylbutyrate	3.76	949	0.08	0.08	1084	2.07	Aliphatic ester
Sabinene	4.14	972	0.03	0.03	1058	1.83	Monoterpene
β -Pinene	4.20	975	0.01	tr	1042	1.67	Monoterpene
Myrcene	4.48	992	0.03	0.02	1114	2.38	Monoterpene
2-Pentylfuran	4.52	994	0.05	0.04	1173	3.14	Furan
6-Methyl-5-hepten-2-one	4.55	996	0.07	0.05	1274	4.53	Aliphatic ketone
Yomogi alcohol	4.69	1004	0.05	0.05	1352	5.71	Monoterp. alcohol
Octanal	4.86	1014	0.09	0.07	1230	3.90	Aliphatic aldehyde
α -Terpinene	4.94	1018	0.01	0.01	1121	2.46	Monoterpene
para-Cymene	5.12	1028	0.11	0.10	1205	3.55	Monoterpene
Limonene	5.16	1030	0.03	0.03	1138	2.69	Monoterpene
1,8-Cineole	5.23	1034	0.02	0.02	1143	2.75	Monoterp. ether
<i>cis</i> - β -Ocimene	5.34	1040	0.08	0.26	1185	3.29*	Monoterpene
<i>trans</i> - β -Ocimene	5.53	1050	0.46	0.41	1199	3.47	Monoterpene
γ -Terpinene	5.71	1060	0.20	[0.26]	1185	3.29*	Monoterpene
Artemisia ketone	5.78	1064	0.47	0.44	1286	4.72	Monoterp. ketone
Artemisia alcohol	6.19	1086	0.16	0.17	1446	7.37	Monoterp. alcohol
Linalool	6.65	1108	0.01	0.01	1490	8.38	Monoterp. alcohol
Isoamyl isovalerate	6.73	1110	0.01	0.01	1248	4.15	Aliphatic ester
Nonanal	6.76	1112	0.09	0.08	1335	5.44	Aliphatic aldehyde
Artemisyl acetate	8.15	1163	0.03	0.03	1366	5.92	Monoterp. ester
Borneol	8.54	1177	0.11	19.32	1624	12.84*	Monoterp. alcohol
α -Terpineol	9.41	1205	0.09	[19.32]	1624	12.84*	Monoterp. alcohol
Hexyl isovalerate	10.83	1237	0.04	0.03	1405	6.54	Aliphatic ester
(<i>E</i>)-Hex-2-en-1-yl isovalerate	11.30	1247	0.04	0.04	1457	7.64*	Aliphatic ester
Pelargonic acid	13.85	1302	0.07	0.04	2110	39.22	Fatty acid
Bicycloelemene	14.45	1312	0.06	0.07	1432	7.04	Sesquiterpene
Modheph-2-ene	17.64	1360	0.04	[0.04]	1457	7.64*	Sesquiterpene
α -Isocomene	18.23	1369	0.04	[0.04]	1457	7.64*	Sesquiterpene
β -Elemene	18.84	1378	0.09	0.13	1525	9.23*	Sesquiterpene
β -Caryophyllene	21.08*	1410	0.77	[0.13]	1525	9.23*	Sesquiterpene
Capric acid	21.08*	1410	[0.77]	0.88	2203	41.80	Fatty acid

Aromadendrene	21.89	1420	0.07	0.07	1531	9.44	Sesquiterpene
allo-Aromadendrene	23.54	1439	0.10	0.11	1559	10.48	Sesquiterpene
<i>trans</i> - β -Farnesene	24.74	1454	17.97	[19.32]	1624	12.84*	Sesquiterpene
γ -Muuroleone	25.24	1460	0.16	0.13	1609	12.29	Sesquiterpene
Germacrene D	25.58	1464	1.49	[19.32]	1624	12.84*	Sesquiterpene
β -Selinene	25.98	1469	0.08	[19.32]	1624	12.84*	Sesquiterpene
Dehydrosesquicineole	26.14	1471	0.13	0.21	1647	13.91	Sesquiterp. ether
<i>ar</i> -Curcumene	26.35	1473	0.12	0.85	1692	16.24*	Sesquiterpene
Bicyclogermacrene	26.78*	1478	0.99	0.89	1645	13.79	Sesquiterpene
α -Selinene	26.78*	1478	[0.99]	0.07	1631	13.10	Sesquiterpene
α -Muuroleone	27.51	1487	0.07	0.06	1654	14.28	Sesquiterpene
(<i>Z,E</i>)- α -Farnesene	27.67	1489	0.14	0.32	1673	15.27*	Sesquiterpene
γ -Cadinene	28.55	1499	0.17	0.15	1668	15.01	Sesquiterpene
β -Bisabolene	28.74	1502	0.08	0.08	1658	14.53	Sesquiterpene
1,9-Dihydrochamazulene	29.01*	1506	1.84	0.94	1805	23.07	Azulene
(<i>E,E</i>)- α -Farnesene	29.01*	1506	[1.84]	[0.85]	1692	16.24*	Sesquiterpene
δ -Cadinene	29.23	1509	0.25	[0.32]	1673	15.27*	Sesquiterpene
(<i>E</i>)-Nerolidol	33.74*	1572	0.56	0.11	1995	34.96	Sesquiterp. alcohol
Spathulenol	33.74*	1572	[0.56]	5.77	2025	36.30*	Sesquiterp. alcohol
Dendrolasin	33.94*	1575	0.17	0.11	1860	26.81	Sesquiterp. ether
Globulol	33.94*	1575	[0.17]	0.04	1979	34.32	Sesquiterp. alcohol
4,10-Dihydrochamazulene	35.97	1605	0.36	0.33	2013	35.74	Azulene
5,6-Dihydrochamazulene	36.42	1616	0.21	0.26	1970	33.90	Azulene
Isospathulenol	36.69	1623	0.08	0.14	2157	40.64	Sesquiterp. alcohol
Bisabolol oxide isomer I	36.78	1625	0.36				Sesquiterp. alcohol
τ -Cadinol	37.43	1641	0.70	0.59	2072	38.04	Sesquiterp. alcohol
7,8-Dihydrochamazulene	37.55	1644	0.22	0.12	2008	35.58	Azulene
α -Bisabolol oxide B	37.84	1651	5.69	[5.77]	2025	36.30*	Sesquiterp. alcohol
α -Cadinol	37.94	1653	0.22	0.27	2127	39.73	Sesquiterp. alcohol
Bisabolol oxide isomer II	38.05	1656	0.48				Sesquiterp. alcohol
α -Bisabolone oxide	38.92	1677	4.61	4.82	2047	37.28	Sesquiterp. alcohol
α -Bisabolol	39.36	1688	1.67	1.57	2134	39.95	Sesquiterp. alcohol
Chamazulene	40.50	1720	2.97	3.02	2234	42.59	Azulene
α -Bisabolol oxide A	41.62	1756	43.46	43.98	2312	44.40*	Sesquiterp. alcohol
Myristic acid	42.78	1792	0.12	0.12	2630	50.86	Fatty acid
Phytone	44.36	1849	0.26	0.23	2081	38.35	Aliphatic ketone
<i>cis</i> -Spiroether	45.57	1893	4.52	4.20	2747	52.98	Polyene
<i>trans</i> -Spiroether	46.14	1915	0.60				Polyene
(<i>Z</i>)-Tibetin spiroether	47.22	1958	0.12				Polyene
Phytol	51.16	2127	0.16	0.15	2567	49.68	Diterp. alcohol
Linoleic acid	51.77	2155	0.18	0.36	3124	59.31	Fatty acid
Oleic acid	51.91	2161	0.16	0.15	3164	59.92	Fatty acid
Tricosane	54.95	2305	0.24	[43.98]	2312	44.40*	Alkane

Pentacosane	58.89	2507	0.70	0.79	2521	48.78	Alkane
Total identified	96.30%		93.79%				

*: 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

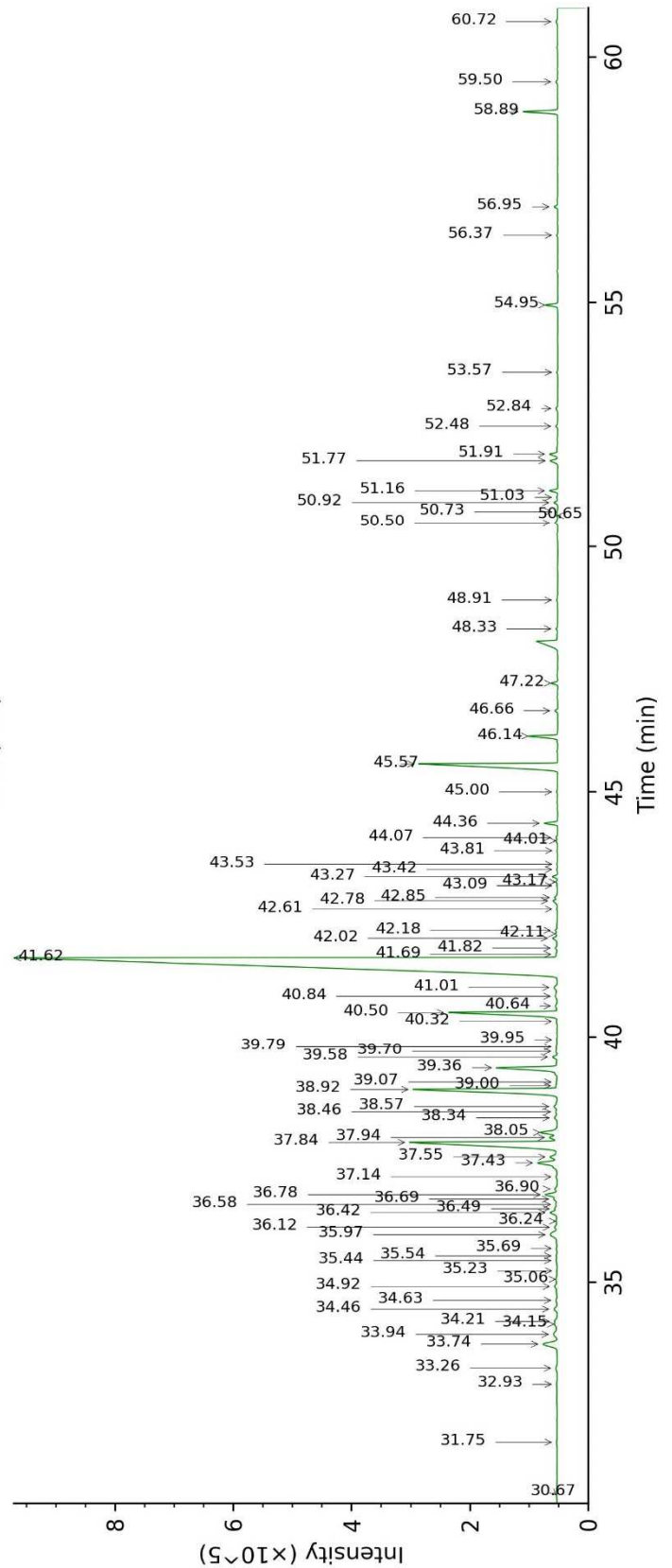
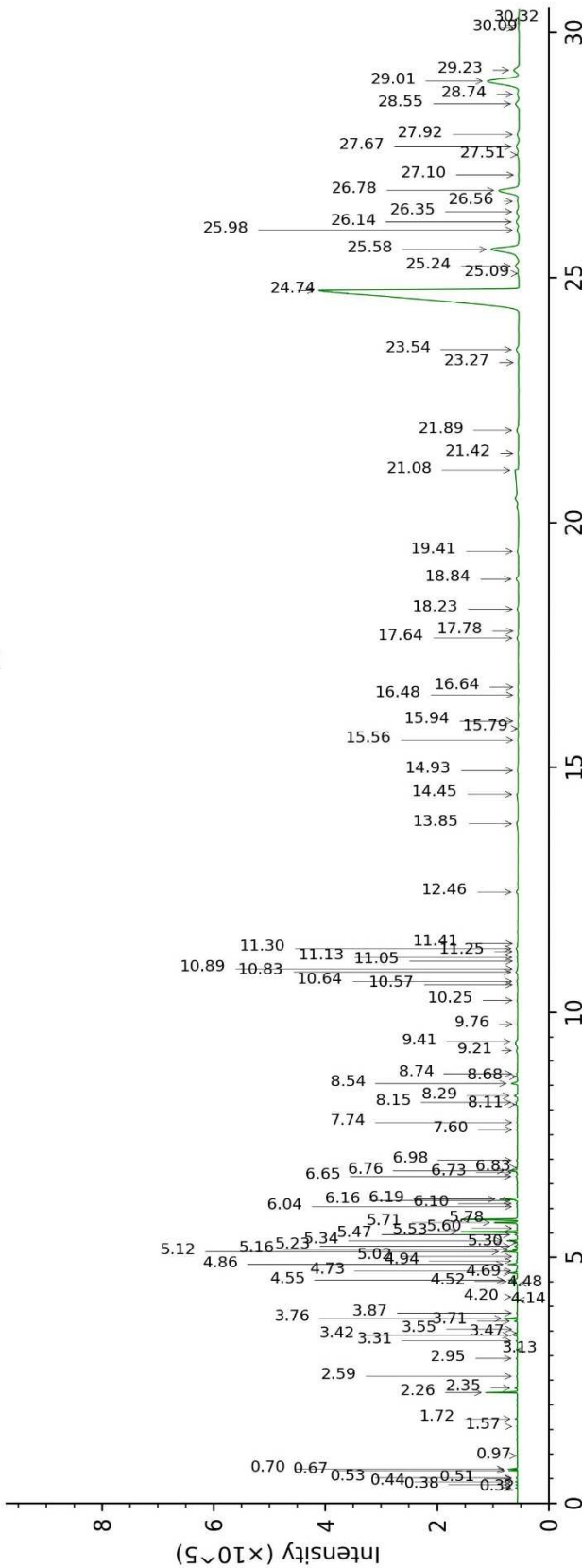
Physical aspect : Dark blue liquid

Refractive index : N/A (too dark)

CONCLUSION

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

17E23-PTH4-1-DM_BP5



17E23-PTH4-1-DM_WAX

