



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: GI0101

ESSENTIAL OIL: GERANIUM EGYPTAIN ORGANIC
BOTANICAL NAME: PELARGONIUM GRAVEOLENS
ORIGIN: EGYPT

KEY CONSTITUENTS PRESENT IN THIS BATCH OF GERANIUM EGYPTAIN ORGANIC OIL	%
CITRONELLOL	32.7
GERANIOL	13.9
CITRONELLYL FORMATE	7.3
ISOMENTHONE	5.2
10-EPI- Γ -EUDESMOL	5.0
LINALOOL	4.8
GERANYL FORMATE	2.7
MENTHONE	2.0
GERANYL BUTYRATE	1.1
GERMACRENE D + γ -MUUROLENE	1.3
β -CARYOPHYLLENE	1.3
GERANYL TIGLATE	1.2
β -BOURBONENE	1.1
cis-ROSE OXIDE	1.1

Comments from Robert Tisserand: Beautiful rose-lemon odor quality. All 15 key ISO constituents are within range.

Date : May 30, 2017

SAMPLE IDENTIFICATION

Internal code : 17E23-PTH5-1-DM

Customer identification : Organic Geranium Egyptian - Egypt - GI010166R

Type : Essential oil

Source : *Pelargonium graveolens*

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

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
3-Methylpentanol	2.35	856	0.05	0.05	1274	4.54	Aliphatic alcohol
<i>cis</i> -Hex-3-en-1-ol	2.48	866	0.02	0.02	1321	5.22	Aliphatic alcohol
<i>trans</i> -Hex-2-en-1-ol	2.65	878	0.01	0.02	1355	5.76	Aliphatic alcohol
Heptanal	3.04	906	0.01	0.01	1130	2.58	Aliphatic aldehyde
α -Pinene	3.41	929	0.57	0.54	942	1.07	Monoterpene
Geranic oxide	4.09	969	0.06	0.06	1052	1.76	Monoterp. ether
Sabinene	4.13	971	0.01	0.01	1058	1.83	Monoterpene
β -Pinene	4.20	975	0.02	0.01	1043	1.67	Monoterpene
Myrcene	4.47*	991	0.14	0.07	1114	2.37	Monoterpene
<i>trans</i> -Dehydroxylinalool oxide	4.47*	991	[0.14]	0.04	1151	2.85	Monoterp. ether
6-Methyl-5-hepten-2-one	4.54	996	0.05	0.04	1269	4.46	Aliphatic ketone
α -Phellandrene	4.74*	1007	0.06	0.05	1107	2.29	Monoterpene
Δ^3 -Carene	4.74*	1007	[0.06]	0.03	1088	2.11	Monoterpene
α -Terpinene	4.93	1017	0.02	0.01	1121	2.46	Monoterpene
<i>para</i> -Cymene	5.11	1027	0.08	0.11	1205	3.55	Monoterpene
Limonene	5.15	1030	0.18	0.16	1138	2.69	Monoterpene
β -Phellandrene	5.18	1031	0.04	0.05	1144	2.76*	Monoterpene
1,8-Cineole	5.23	1034	0.01	[0.05]	1144	2.76*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.34	1040	0.08	0.13	1183	3.26*	Monoterpene
<i>trans</i> - β -Ocimene	5.52	1049	0.11	0.09	1199	3.47	Monoterpene
γ -Terpinene	5.71	1060	0.03	[0.13]	1183	3.26*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.98	1075	0.24	0.20	1374	6.04	Monoterp. alcohol
Terpinolene	6.18	1086	0.05	0.03	1221	3.76	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.30	1092	0.12	0.12	1403	6.50	Monoterp. alcohol
<i>para</i> -Cymenene	6.40	1098	0.03	0.03	1365	5.90	Monoterpene
6,7-Epoxygeranylmyrcene	6.51	1102	0.02	0.03	1360	5.83	Monoterp. ether
Linalool	6.68	1109	4.82	4.79	1492	8.44	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.79	1113	1.06	1.04	1293	4.80	Monoterp. ether
<i>trans</i> -Rose oxide	7.14	1125	0.45	0.42	1304	4.97	Monoterp. ether
Citronellal	7.78	1149	0.11	0.12	1416	6.70	Monoterp. aldehyde
Menthone	7.99	1157	2.02	1.86	1386	6.23	Monoterp. ketone
Isomenthone	8.27	1167	5.17	5.06	1413	6.66	Monoterp. ketone
Terpinen-4-ol	8.73	1184	0.10	0.10	1531	9.45*	Monoterp. alcohol
Menthol	9.03	1195	0.15	0.41	1580	11.22*	Monoterp. alcohol
α -Terpineol	9.37	1204	0.38	1.76	1624	12.82*	Monoterp. alcohol
Nerol	10.50	1229	0.30	32.46	1716	17.46*	Monoterp. alcohol
Citronellol	11.06	1242	32.74	[32.46]	1716	17.46*	Monoterp. alcohol
Neral	11.14	1244	0.50	0.52	1598	11.86	Monoterp. aldehyde
Geraniol	12.06	1264	13.90	13.74	1786	21.81	Monoterp. alcohol
Citronellyl formate	12.76*	1280	7.83	7.33	1558	10.43*	Monoterp. ester

Geranial	12.76*	1280	[7.83]	0.73	1650	14.09	Monoterp. aldehyde
Neryl formate	12.82	1281	0.06				Monoterp. ester
Geranyl formate	14.04	1305	2.69	2.80	1637	13.46	Monoterp. ester
α -Cubebene	15.93	1334	0.16	0.16	1406	6.55	Sesquiterpene
Citronellyl acetate	17.19	1353	0.40	0.33	1601	12.00	Monoterp. ester
α -Copaene	17.64	1360	0.52	0.53	1432	7.04	Sesquiterpene
β -Bourbonene	18.07	1367	1.07	1.07	1451	7.49	Sesquiterpene
β -Cubebene	18.17	1368	0.06	0.07	1479	8.14	Sesquiterpene
β -Elemene	18.82	1378	0.05	1.31	1521	9.13*	Sesquiterpene
Geranyl acetate	19.28*	1385	0.40	0.52	1691	16.16*	Monoterp. ester
Geranic acid	19.28*	1385	[0.40]	0.17	2253	43.07	Monoterp. acid
β -Caryophyllene	20.51	1403	1.26	[1.31]	1521	9.13*	Sesquiterpene
β -Copaene	21.41	1414	0.13	0.16	1501	8.67	Sesquiterpene
Aromadendrene	21.86	1419	0.04	[0.10]	1531	9.45*	Sesquiterpene
6,9-Guaiadiene	22.47	1427	0.39	0.28	1537	9.69	Sesquiterpene
Seychellene	22.95	1432	0.44	0.40	1547	10.02	Sesquiterpene
α -Humulene	23.26	1436	0.25	[0.41]	1580	11.22*	Sesquiterpene
allo-Aromadendrene	23.52	1439	0.20	[7.33]	1558	10.43*	Sesquiterpene
Citronellyl propionate	23.92	1444	0.38				Monoterp. ester
Neryl propionate	24.94	1456	0.27	0.27	1737	18.66	Monoterp. ester
Germacrene D	25.48*	1463	1.29	[1.76]	1624	12.82*	Sesquiterpene
γ -Muuroolene	25.48*	1463	[1.29]	0.19	1608	12.27	Sesquiterpene
β -Selinene	25.71	1465	0.15	[1.76]	1624	12.82*	Sesquiterpene
Viridiflorene	26.07	1470	0.12	0.14	1604	12.10-	Sesquiterpene
Geranyl propionate	26.54	1475	0.65	0.76	1757	19.94	Monoterp. ester
Bicyclogermacrene	26.71*	1477	0.42	0.36	1643	13.72	Sesquiterpene
α -Selinene	26.71*	1477	[0.42]	0.22	1628	13.00	Sesquiterpene
α -Muuroolene	27.13	1482	0.12	0.16	1648	13.95	Sesquiterpene
β -Dihydroagarofuran	27.49	1487	0.24				Sesquiterp. ether
γ -Cadinene	28.51	1499	0.26	0.75	1669	15.04*	Sesquiterpene
(<i>E,E</i>)- α -Farnesene	28.99	1506	0.10	0.15	1682	15.73	Sesquiterpene
δ -Cadinene	29.19	1508	0.90	0.93	1675	15.37	Sesquiterpene
Zonarene	29.38	1511	0.13	[0.75]	1669	15.04*	Sesquiterpene
<i>trans</i> -Calamenene	29.53	1513	0.31	0.32	1732	18.34	Sesquiterpene
Geranyl isobutyrate	29.79	1517	0.08	0.06	1803	22.94	Monoterp. ester
<i>trans</i> - γ -Bisabolene	30.11	1521	0.11	[0.75]	1669	15.04*	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	30.28	1523	0.11	[0.52]	1691	16.16*	Sesquiterpene
α -Agarofuran	31.02	1534	0.31	0.28	1767	20.53	Sesquiterp. ether
Citronellyl butyrate	31.34	1538	0.51	0.57	1745	19.14	Monoterp. ester
Neryl butyrate	31.91	1546	0.08				Monoterp. ester
α -Elemol	32.58	1556	0.03	0.04	1998	35.15	Sesquiterp. alcohol
Geranyl butyrate	33.69*	1571	1.43	1.07	1832	24.82	Monoterp. ester
Spathulenol	33.69*	1571	[1.43]	0.11	2030	36.56	Sesquiterp. alcohol
Caryophyllene oxide	33.69*	1571	[1.43]	0.17	1839	25.25	Sesquiterp. ether

Europelargone B	34.15	1577	0.11	5.20	1985	34.58*	Sesquiterp. ketone
Viridiflorol	34.64	1584	0.05	[5.20]	1985	34.58*	Sesquiterp. alcohol
Phenylethyl tiglate	35.10	1591	0.86	0.93	2078	38.23	Phenolic ester
Geranyl isovalerate	35.82	1601	0.13	0.12	1850	26.02	Monoterp. ester
10-epi-γ-Eudesmol	36.06	1607	5.00	[5.20]	1985	34.58*	Sesquiterp. alcohol
1,10-diepi-Cubenol	36.50	1618	0.12	0.13	1955	33.25	Sesquiterp. alcohol
Hinesol	36.78	1625	0.10	0.11	2094	38.72	Sesquiterp. alcohol
Cubenol	36.92	1628	0.35	0.34	1939	32.36	Sesquiterp. alcohol
τ-Cadinol	37.36	1639	0.26	0.22	2072	38.04	Sesquiterp. alcohol
τ-Muurolol	37.47	1642	0.06	0.07	2089	38.55	Sesquiterp. alcohol
α-Eudesmol	37.69*	1647	0.72	0.11	2124	39.64	Sesquiterp. alcohol
α-Muurolol	37.69*	1647	[0.72]	0.23	2102	38.97	Sesquiterp. alcohol
β-Eudesmol	37.69*	1647	[0.72]	0.41	2107	39.14	Sesquiterp. alcohol
Geranyl valerate	38.32	1663	0.14	0.14	1930	31.80	Monoterp. ester
Citronellyl tiglate	38.62	1670	0.27	0.22	1951	33.07	Monoterp. ester
Geranyl tiglate	39.96	1703	1.22	1.39	2038	36.86*	Monoterp. ester
Geranyl caproate isomer	40.52	1721	0.18	0.24	2023	36.24	Monoterp. ester
Geranyl caproate	41.67	1757	0.10	[1.39]	2038	36.86*	Monoterp. ester
Geranyl heptanoate	44.50	1854	0.11				Monoterp. ester
Total identified			97.44%	96.46%			

*: 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 : 1.4670 ± 0.0003 (20 °C)

CONCLUSION

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

