



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: CE0102

ESSENTIAL OIL: CITRONELLA

BOTANICAL NAME: CYMBOPOGON WINTERIANUS

ORIGIN: CHINA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CITRONELLA OIL	%
CITRONELLAL	34.6
GERANIOL	22.6
CITRONELLOL	10.2
GERANYL ACETATE	3.6
CITRONELLYL ACETATE	2.8
LIMONENE	2.8
GERMACRENE D	2.0
α -ELEMOL	1.8
δ -CADINENE	1.5
GERMACRENE D-4-ol	1.1

Comments from Robert Tisserand: Excellent green, juicy, persistent odor profile. All fourteen key ISO constituents are within range.

Date : March 24, 2017

SAMPLE IDENTIFICATION

Internal code : 17C01-PTH17-1-DM

Customer identification : Citronella - CE010271R

Type : Essential oil

Source : *Cymbopogon winterianus*

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 : 2017-03-20

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.	
<i>cis</i> -Hex-3-en-1-ol	2.50	866	tr	0.01	1338	5.74	Aliphatic alcohol
Tricyclene	3.21	917	0.02	0.02	924	1.08	Monoterpene
α -Thujene	3.30	922	tr				Monoterpene
α -Pinene	3.40	928	0.09	0.09	949	1.18	Monoterpene
Camphene	3.68	945	0.08	0.08	1000	1.48	Monoterpene
Sabinene	4.11	970	0.02	0.01	1060	2.01	Monoterpene
β -Pinene	4.18	974	0.01				Monoterpene
Myrcene	4.45	990	0.07	0.07	1118	2.59	Monoterpene
6-Methyl-5-hepten-2-one	4.52	994	0.06	0.06	1280	4.86	Aliphatic ketone
α -Phellandrene	4.72	1006	0.01	0.01	1111	2.50	Monoterpene
Octanal	4.84	1013	0.01	0.01	1235	4.18	Aliphatic aldehyde
α -Terpinene	4.91	1016	tr				Monoterpene
para-Cymene	5.08	1026	0.01	0.01	1210	3.83	Monoterpene
Limonene	5.13	1028	2.75	2.73	1144	2.93	Monoterpene
1,8-Cineole	5.16	1030	0.03	0.04	1149	3.00	Monoterp. ether
<i>cis</i> - β -Ocimene	5.31	1038	0.61	0.59	1189	3.52*	Monoterpene
<i>trans</i> - β -Ocimene	5.49	1048	0.28	0.27	1204	3.73	Monoterpene
γ -Terpinene	5.69*	1059	0.14	[0.59]	1189	3.52*	Monoterpene
Bergamal	5.69*	1059	[0.14]	0.15	1297	5.09*	Aliphatic aldehyde
Terpinolene	6.15	1084	0.06	0.06	1226	4.05	Monoterpene
Rose furan	6.36	1095	0.01	0.01	1347	5.88	Monoterp. ether
Linalool	6.58	1105	0.69	1.40	1500	9.07*	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.74	1111	0.03	[0.15]	1297	5.09*	Monoterp. ether
<i>trans</i> -Rose oxide	7.10	1124	0.01	0.01	1321	5.47	Monoterp. ether
Isopulegol	7.70	1146	0.68	[1.40]	1500	9.07*	Monoterp. alcohol
Citronellal	8.04*	1158	35.74	34.59	1426	7.30*	Monoterp. aldehyde
iso-Isopulegol	8.04*	1158	[35.74]	0.27	1488	8.78*	Monoterp. alcohol
(<i>Z</i>)-Isocitral	8.25	1166	0.01	[0.27]	1488	8.78*	Monoterp. aldehyde
Rosefuran epoxide	8.32	1168	0.04	0.05	1545	10.67	Monoterp. ether
Borneol	8.44	1173	0.04	1.98	1623	13.74*	Monoterp. alcohol
(<i>E</i>)-Isocitral	8.65	1181	0.02	0.03	1509	9.32	Monoterp. aldehyde
α -Terpineol	9.24	1201	0.10	[1.98]	1623	13.74*	Monoterp. alcohol
Decanal	9.68	1211	0.14	0.13	1440	7.63	Aliphatic aldehyde
Nerol	10.34	1226	0.20	0.19	1735	19.94	Monoterp. alcohol
Citronellol	10.71	1234	10.24	10.43	1717	18.74	Monoterp. alcohol
Neral	11.00	1240	0.51	0.62	1604	12.84	Monoterp. aldehyde
Geraniol	11.89	1260	22.58	22.80	1793	23.76*	Monoterp. alcohol
Geranial	12.50	1274	0.78	0.75	1652	15.27	Monoterp. aldehyde
Geranyl formate	13.87	1303	0.03	0.04	1639	14.58	Monoterp. ester
Citronellic acid	16.01	1335	0.34	0.34	2186	42.08	Monoterp. acid
α -Ylangene	16.69	1346	0.20	[34.59]	1426	7.30*	Sesquiterpene

Citronellyl acetate	17.12*	1352	2.82	2.30	1609	13.02	Monoterp. ester
Eugenol	17.12*	1352	[2.82]	0.64	2070	38.79*	Phenylpropanoid
α -Copaene	17.50	1358	0.03	0.04	1432	7.46	Sesquiterpene
Neryl acetate	17.66	1360	0.02	0.87	1665	15.92	Monoterp. ester
β -Bourbonene	17.91	1364	0.08	0.08	1452	7.92	Sesquiterpene
β -Cubebene	18.44	1372	0.11	0.06	1475	8.48	Sesquiterpene
β -Elemene	18.69	1376	0.87	0.91	1524	9.87	Sesquiterpene
Geranyl acetate	19.22	1384	3.64	3.83	1697	17.63	Monoterp. ester
β -Caryophyllene	20.34	1401	0.68	0.66	1521	9.74	Sesquiterpene
Methyleugenol	21.13	1410	0.14	0.12	1941	33.70*	Phenylpropanoid
<i>trans</i> - α -Bergamotene	21.92	1420	0.15	0.17	1526	9.94	Sesquiterpene
α -Humulene	23.05	1433	0.15	0.18	1582	12.03	Sesquiterpene
Germacrene D	25.28	1460	1.95	[1.98]	1623	13.74*	Sesquiterpene
α -Amorphene	25.53	1463	0.03	0.03	1617	13.45	Sesquiterpene
Methyl (<i>Z</i>)-isoeugenol	25.84	1467	0.02	0.02	2032	37.62	Phenylpropanoid
α -Muurolene	27.27	1484	0.32	0.34	1646	14.95	Sesquiterpene
4-epi-Cubebol	27.40	1486	0.84	[22.80]	1793	23.76*	Sesquiterp. alcohol
γ -Cadinene	28.26	1496	0.48	0.52	1670	16.15	Sesquiterpene
Cubebol	28.65	1501	0.28	0.22	1856	28.14	Sesquiterp. alcohol
δ -Cadinene	28.97	1505	1.45	2.06	1676	16.49	Sesquiterpene
Methyl (<i>E</i>)-isoeugenol	29.17	1508	0.60	0.53	2101	39.77	Phenylpropanoid
Citronellyl butyrate	30.37	1525	0.09	0.10	1744	20.48	Monoterp. ester
α -Elemol	32.07	1549	1.77	1.85	2000	36.37	Sesquiterp. alcohol
Geranyl butyrate	33.47*	1568	1.49	0.50	1834	26.55	Monoterp. ester
Germacrene D-4-ol	33.47*	1568	[1.49]	1.07	1959	34.54*	Sesquiterp. alcohol
Caryophyllene oxide	33.47*	1568	[1.49]	0.04	1852	27.83	Sesquiterp. ether
Cubenol	36.34	1614	0.12	[0.12]	1941	33.70*	Sesquiterp. alcohol
γ -Eudesmol	36.54	1619	0.19	[0.64]	2070	38.79*	Sesquiterp. alcohol
τ -Cadinol	37.12	1633	0.22	0.20	2073	38.89	Sesquiterp. alcohol
τ -Muurolol	37.25	1636	0.24	0.24	2077	39.01	Sesquiterp. alcohol
α -Muurolol	37.41	1640	0.06	0.07	2107	39.95	Sesquiterp. alcohol
β -Eudesmol	37.48	1642	0.37	0.29	2117	40.26	Sesquiterp. alcohol
α -Cadinol	37.69	1647	0.55	0.56	2131	40.67	Sesquiterp. alcohol
Intermedeol	38.18*	1659	0.98	0.78	2164	41.49	Sesquiterp. alcohol
Total identified			97.38%	97.13%			

*: 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 : Faintly yellow liquid

Refractive index : 1.4690 \pm 0.0003 (20 °C)

CONCLUSION

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

