



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: CE0103

ESSENTIAL OIL: CITRONELLA
BOTANICAL NAME: CYMBOPOGON WINTERIANUS
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CIRTONELLA OIL	%
CITRONELLAL	35.4
GERANIOL	20.3
CITRONELLOL	12.5
LIMONENE	3.9
CITRONELLYL ACETATE	3.1
GERANYL ACETATE	2.8
α -ELEMOL	2.5
δ -CADINENE	2.3
GERMACRENE D	2.3
β -ELEMENE	1.8
ISOPULEGOL	1.6
EUGENOL	1.2

Comments from Robert Tisserand: Intensely fresh, green odor quality. All fourteen key ISO constituents are within range.

Date : October 25, 2017

SAMPLE IDENTIFICATION

Internal code : 17J17-PTH2-1-CC

Customer identification : Citronella - India - CE010348R

Type : Essential oil

Source : *Cymbopogon winterianus*

Customer : Plant Therapy

ANALYSIS

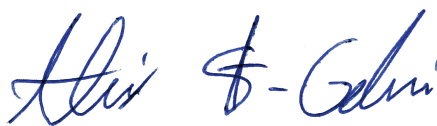
Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-10-25

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.	
Ethanol	0.35	632	0.22	0.23	786	0.69	Aliphatic alcohol
Dimethyl sulfide	0.52	654	0.01				Sulfide
<i>trans</i> -2-Hexenal	2.39	857	0.01	0.02	953	1.17*	Aliphatic aldehyde
α -Thujene	3.32	920	0.01	[0.02]	953	1.17*	Monoterpene
α -Pinene	3.42	927	0.03	[0.02]	953	1.17*	Monoterpene
Sabinene	4.14	969	0.02	0.01	1056	2.00	Monoterpene
Myrcene	4.49	989	0.05	0.03	1119	2.59*	Monoterpene
6-Methyl-5-hepten-2-one	4.56	994	0.09	0.09	1279	4.82	Aliphatic ketone
α -Phellandrene	4.76	1005	0.02	[0.03]	1119	2.59*	Monoterpene
Limonene	5.19*	1029	3.90	3.86	1144	2.93*	Monoterpene
<i>para</i> -Cymene	5.19*	1029	[3.90]	0.01	1212	3.83	Monoterpene
β -Phellandrene	5.22	1030	0.02	[3.86]	1144	2.93*	Monoterpene
1,8-Cineole	5.25	1032	0.01	[3.86]	1144	2.93*	Monoterp. ether
γ -Terpinene	5.75*	1059	0.08	0.02	1192	3.55	Monoterpene
Bergamal	5.75*	1059	[0.08]	0.08	1297	5.08*	Aliphatic aldehyde
Terpinolene	6.21	1084	0.07	0.06	1227	4.06	Monoterpene
Linalool	6.73	1107	0.91	2.48	1498	9.00*	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.82	1111	0.03	[0.08]	1297	5.08*	Monoterp. ether
<i>trans</i> -Rose oxide	7.18	1124	0.01	0.01	1309	5.27	Monoterp. ether
Isopulegol	7.89	1149	1.57	[2.48]	1498	9.00*	Monoterp. alcohol
Citronellal	8.16	1159	35.44	34.48	1425	7.28*	Monoterp. aldehyde
iso-Isopulegol	8.19	1160	0.30	0.49	1486	8.73	Monoterp. alcohol
(<i>Z</i>)-Isocitral	8.37	1167	0.02	0.03	1478	8.54	Monoterp. aldehyde
Rosefuran epoxide	8.48	1171	0.08	0.09	1542	10.56	Monoterp. ether
Borneol	8.71	1179	0.02	0.21	1615	13.40*	Monoterp. alcohol
α -Terpineol	9.53	1205	0.06	2.33	1624	13.90*	Monoterp. alcohol
Decanal	9.84	1211	0.11	0.09	1440	7.64	Aliphatic aldehyde
Nerol	10.64	1229	0.18	0.19	1731	19.72	Monoterp. alcohol
Citronellol	11.08	1239	12.52	13.03	1713	18.57	Monoterp. alcohol
Neral	11.24	1242	0.30	0.27	1600	12.71	Monoterp. aldehyde
Geraniol	12.25	1264	20.29	20.72	1787	23.45*	Monoterp. alcohol
Geranial	12.80	1276	0.45	1.02	1649	15.13*	Monoterp. aldehyde
Geranyl formate	14.13	1303	0.03	0.10	1637	14.53	Monoterp. ester
α -Cubebene	16.05	1332	0.02	[34.48]	1425	7.28*	Sesquiterpene
Citronellic acid	17.38*	1352	3.12	0.24	2180	42.01	Monoterp. acid
Citronellyl acetate	17.38*	1352	[3.12]	3.11	1609	13.08	Monoterp. ester
Eugenol	17.82	1359	1.23	1.20	2061	38.61	Phenylpropanoid
β -Bourbonene	18.21	1365	0.13	0.10	1456	8.02	Sesquiterpene
β -Elemene	19.06	1378	1.79	1.98	1527	10.00*	Sesquiterpene
Geranyl acetate	19.52	1385	2.84	2.85	1696	17.63	Monoterp. ester
β -Caryophyllene	20.70	1401	0.11	[1.98]	1527	10.00*	Sesquiterpene

α -Humulene	23.50	1435	0.11	0.23	1587	12.21	Sesquiterpene
γ -Muuroolene	25.17	1455	0.09	[0.21]	1615	13.40*	Sesquiterpene
Germacrene D	25.77	1462	2.29	[2.33]	1624	13.90*	Sesquiterpene
α -Muuroolene	27.80	1486	0.69	[1.02]	1649	15.13*	Sesquiterpene
<i>cis</i> - α -Bisabolene	27.92	1488	0.53	0.48	1666	16.08	Sesquiterpene
γ -Cadinene	28.84	1499	0.59	0.67	1672	16.37	Sesquiterpene
δ -Cadinene	29.54*	1508	2.28	2.29	1680	16.76	Sesquiterpene
Cubebol	29.54*	1508	[2.28]	0.05	1851	28.01	Sesquiterp. alcohol
Citronellyl butyrate	30.98	1529	0.13	[20.72]	1787	23.45*	Monoterp. ester
α -Elemol	32.85	1555	2.49	2.64	1996	36.32	Sesquiterp. alcohol
Germacrene D-4-ol	34.06	1572	0.56	0.68	1957	34.54	Sesquiterp. alcohol
γ -Eudesmol	37.05	1626	0.29	0.29	2069	38.86	Sesquiterp. alcohol
τ -Cadinol	37.63	1640	0.27	0.33	2073	39.00	Sesquiterp. alcohol
τ -Muurolol	37.75	1643	0.31	0.34	2088	39.48	Sesquiterp. alcohol
α -Muurolol	37.87	1646	0.09	0.06	2102	39.93	Sesquiterp. alcohol
β -Eudesmol	38.00	1649	0.52	0.58	2111	40.18	Sesquiterp. alcohol
α -Cadinol	38.20	1654	0.63	0.65	2126	40.62	Sesquiterp. alcohol
Intermedeol	38.68	1666	0.51	0.40	2158	41.42	Sesquiterp. alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	40.77	1723	0.05	0.07	2287	44.61	Sesquiterp. alcohol
Total identified			98.53%	99.19%			

*: 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

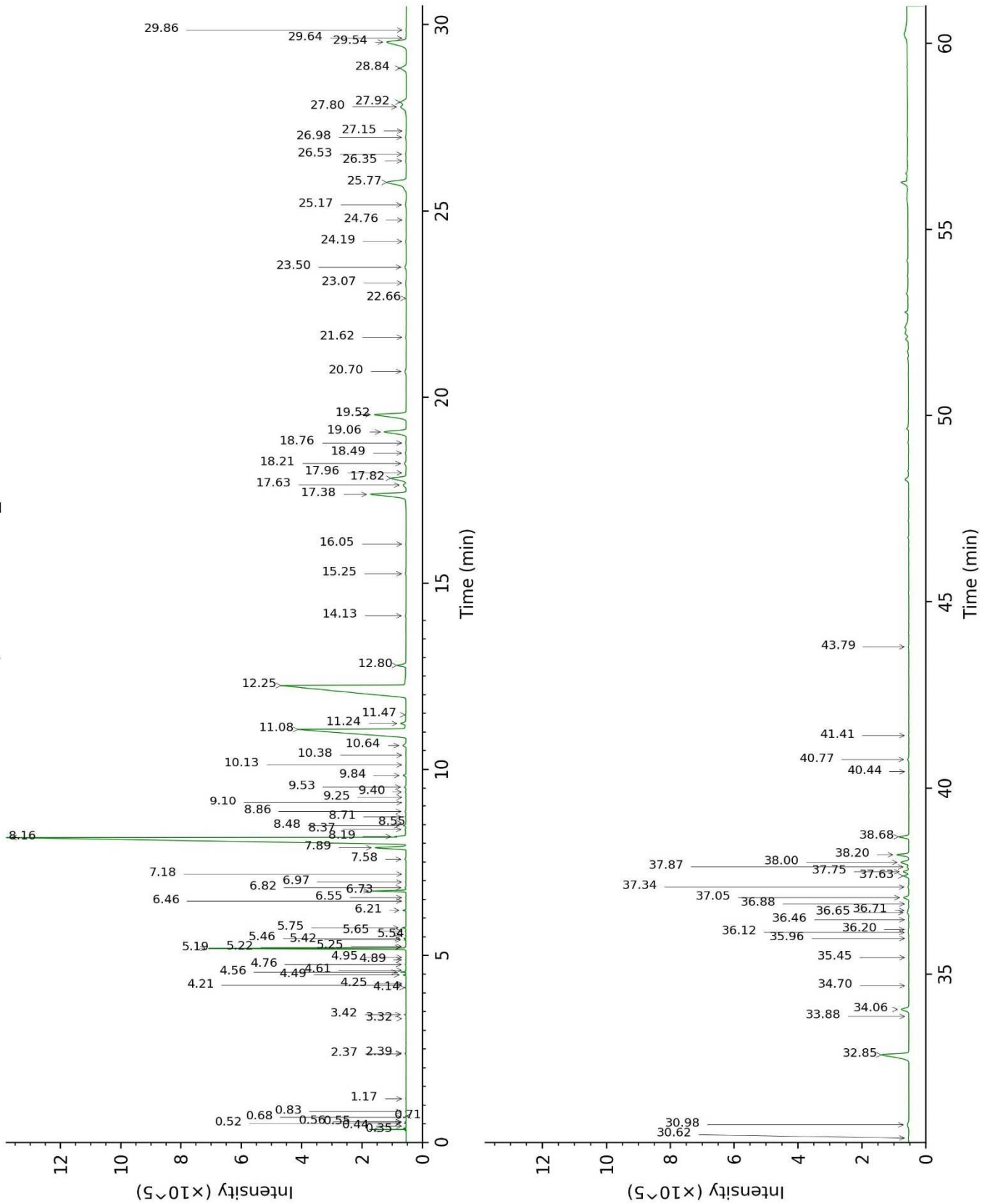
Physical aspect : Light yellow liquid

Refractive index : 1.4705 \pm 0.0003 (20 °C)

CONCLUSION

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

17J17-PTH2-1-CC_BP5



17J17-PTH2-1-CC_WAX

