



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: CD0102

ESSENTIAL OIL: CITRONELLA ORGANIC
BOTANICAL NAME: CYMBOPOGON WINTERIANUS
ORIGIN: INDONESIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CITRONELLA ORGANIC OIL	%
CITRONELLAL	36.1
GERANIOL	22.8
CITRONELLOL	10.2
GERANYL ACETATE	3.4
LIMONENE	3.1
CITRONELLYL ACETATE	2.3
GERMACRENE D + METHYL (Z)-ISOEUGENOL	2.2
α -ELEMOL	1.7
δ -CADINENE	1.4
GERMACRENE D-4-OL	1.1

Comments from Robert Tisserand: Intensely green, watery-grassy odor profile. All 14 key ISO constituents are within range.

Date : May 24, 2017

SAMPLE IDENTIFICATION

Internal code : 17E23-PTH6-1-DM

Customer identification : Organic Citronella - Indonesia - CD010272R

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 : 2017-05-24

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.	
Tricyclene	3.22	917	0.02	0.02	912	0.98	Monoterpene
α -Pinene	3.41	928	0.09	0.09	937	1.07	Monoterpene
Camphene	3.70	946	0.06	0.06	995	1.34	Monoterpene
Sabinene	4.13	971	0.02	0.01	1050	1.83	Monoterpene
Myrcene	4.47	991	0.08	0.07	1111	2.38	Monoterpene
6-Methyl-5-hepten-2-one	4.53	995	0.07	0.07	1270	4.55	Aliphatic ketone
α -Phellandrene	4.74	1007	0.02	0.01	1090	2.30	Monoterpene
Octanal	4.86	1013	0.01	0.01	1227	3.92	Aliphatic aldehyde
para-Cymene	5.11	1027	tr	0.01	1202	3.56	Monoterpene
Limonene	5.16	1030	3.06	2.96	1136	2.71	Monoterpene
β -Phellandrene	5.19	1031	0.04	0.07	1141	2.77*	Monoterpene
1,8-Cineole	5.22	1033	tr	[0.07]	1141	2.77*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.33	1039	0.67	0.65	1180	3.28*	Monoterpene
<i>trans</i> - β -Ocimene	5.51	1049	0.30	0.30	1196	3.48	Monoterpene
Bergamal	5.71*	1060	0.11	0.10	1287	4.79*	Aliphatic aldehyde
γ -Terpinene	5.71*	1060	[0.11]	[0.65]	1180	3.28*	Monoterpene
Terpinolene	6.17	1085	0.07	0.06	1218	3.77	Monoterpene
Rose furan	6.39	1097	0.01	0.01	1337	5.56	Monoterp. ether
Linalool	6.62	1107	0.68	1.45	1485	8.45*	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.76	1112	0.03	[0.10]	1287	4.79*	Monoterp. ether
<i>trans</i> -Rose oxide	7.12	1125	0.01	0.01	1314	5.18	Monoterp. ether
Isopulegol	7.74	1148	0.75	[1.45]	1485	8.45*	Monoterp. alcohol
Citronellal	8.08*	1160	37.06	36.07	1420	6.89	Monoterp. aldehyde
iso-Isopulegol	8.08*	1160	[37.06]	0.24	1475	8.18	Monoterp. alcohol
(<i>Z</i>)-Isocitral	8.08*	1160	[37.06]	0.06	1465	7.97	Monoterp. aldehyde
Rosefuran epoxide	8.36	1170	0.04	0.04	1536	9.85	Monoterp. ether
Borneol	8.52	1176	0.02	2.32	1615	12.81*	Monoterp. alcohol
(<i>E</i>)-Isocitral	8.71	1183	0.02	0.04	1507	8.95	Monoterp. aldehyde
α -Terpineol	9.31	1203	0.09	[2.32]	1615	12.81*	Monoterp. alcohol
Decanal	9.73	1212	0.12	0.13	1433	7.20	Aliphatic aldehyde
Nerol	10.42	1228	0.19	0.18	1725	18.37	Monoterp. alcohol
Citronellol	10.81	1236	10.15	10.35	1704	17.30	Monoterp. alcohol
Neral	11.06	1242	0.48	0.46	1590	11.90	Monoterp. aldehyde
Geraniol	12.00	1263	22.82	23.09	1780	22.01	Monoterp. alcohol
Geranial	12.58	1276	0.71	0.69	1643	14.14	Monoterp. aldehyde
Geranyl formate	13.95	1304	0.02	0.02	1628	13.31	Monoterp. ester
Citronellic acid	16.15	1338	0.12	0.16	2166	41.17	Monoterp. acid
Para-Menthane-3,8-diol isomer	16.94	1349	0.23				Monoterp. alcohol
Citronellyl acetate	17.18	1353	2.32	2.49	1597	12.09	Monoterp. ester
Eugenol	17.33	1355	0.70	0.70	2049	37.68	Phenylpropanoid

Neryl acetate	17.59	1359	0.03	0.03	1652	14.61	Monoterp. ester
β-Bourbonene	18.01	1366	0.06	0.06	1445	7.47	Sesquiterpene
β-Elemene	18.81	1378	0.94	1.01	1519	9.25	Sesquiterpene
Geranyl acetate	19.30	1385	3.39	3.58	1684	16.31*	Monoterp. ester
β-Caryophyllene	20.45	1402	0.49	0.49	1513	9.10	Sesquiterpene
Methyleugenol	21.30	1412	0.11	0.08	1924	32.07	Phenylpropanoid
<i>trans</i> -α-Bergamotene	22.03	1421	0.13	0.12	1520	9.30	Sesquiterpene
α-Humulene	23.20	1435	0.12	0.17	1572	11.20	Sesquiterpene
Germacrene D	25.45*	1462	2.24	[2.32]	1615	12.81*	Sesquiterpene
Methyl (<i>Z</i>)-isoeugenol	25.45*	1462	[2.24]	0.10	1998	35.63	Phenylpropanoid
4-epi-Cubebol	27.15	1483	0.19	0.13	1796	23.05	Sesquiterp. alcohol
α-Murolene	27.45	1486	0.33	0.33	1639	13.93	Sesquiterpene
<i>cis</i> -α-Bisabolene	27.57	1488	0.77	0.83	1657	14.82	Sesquiterpene
Germacrene A	27.85	1491	0.51	[3.58]	1684	16.31*	Sesquiterpene
γ-Cadinene	28.45	1498	0.38	0.41	1661	15.03	Sesquiterpene
Cubebol	28.86	1504	0.27	0.21	1846	26.40	Sesquiterp. alcohol
δ-Cadinene	29.15	1508	1.42	2.03	1667	15.35	Sesquiterpene
Methyl (<i>E</i>)-isoeugenol	29.44	1512	0.48	0.46	2086	38.84	Phenylpropanoid
Citronellyl butyrate	30.56	1527	0.08	0.09	1737	19.15	Monoterp. ester
α-Elemol	32.30	1552	1.73	1.82	1990	35.26	Sesquiterp. alcohol
Germacrene D-4-ol	33.64*	1570	1.45	1.08	1945	33.22	Sesquiterp. alcohol
Geranyl butyrate	33.64*	1570	[1.45]	0.34	1823	24.83	Monoterp. ester
γ-Eudesmol	36.69	1623	0.17	0.16	2057	37.93	Sesquiterp. alcohol
τ-Cadinol	37.28	1637	0.20	0.21	2061	38.07	Sesquiterp. alcohol
τ-Murolol	37.40	1640	0.23-	0.23	2078	38.58	Sesquiterp. alcohol
α-Murolol	37.53	1643	0.06	0.05	2092	39.04	Sesquiterp. alcohol
β-Eudesmol	37.63	1646	0.30	0.15	2100	39.27	Sesquiterp. alcohol
α-Cadinol	37.84	1651	0.52	0.52	2116	39.78	Sesquiterp. alcohol
Intermedeol	38.34	1663	1.05	0.91	2145	40.62	Sesquiterp. alcohol
Total identified			98.84%	98.60%			

*: 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

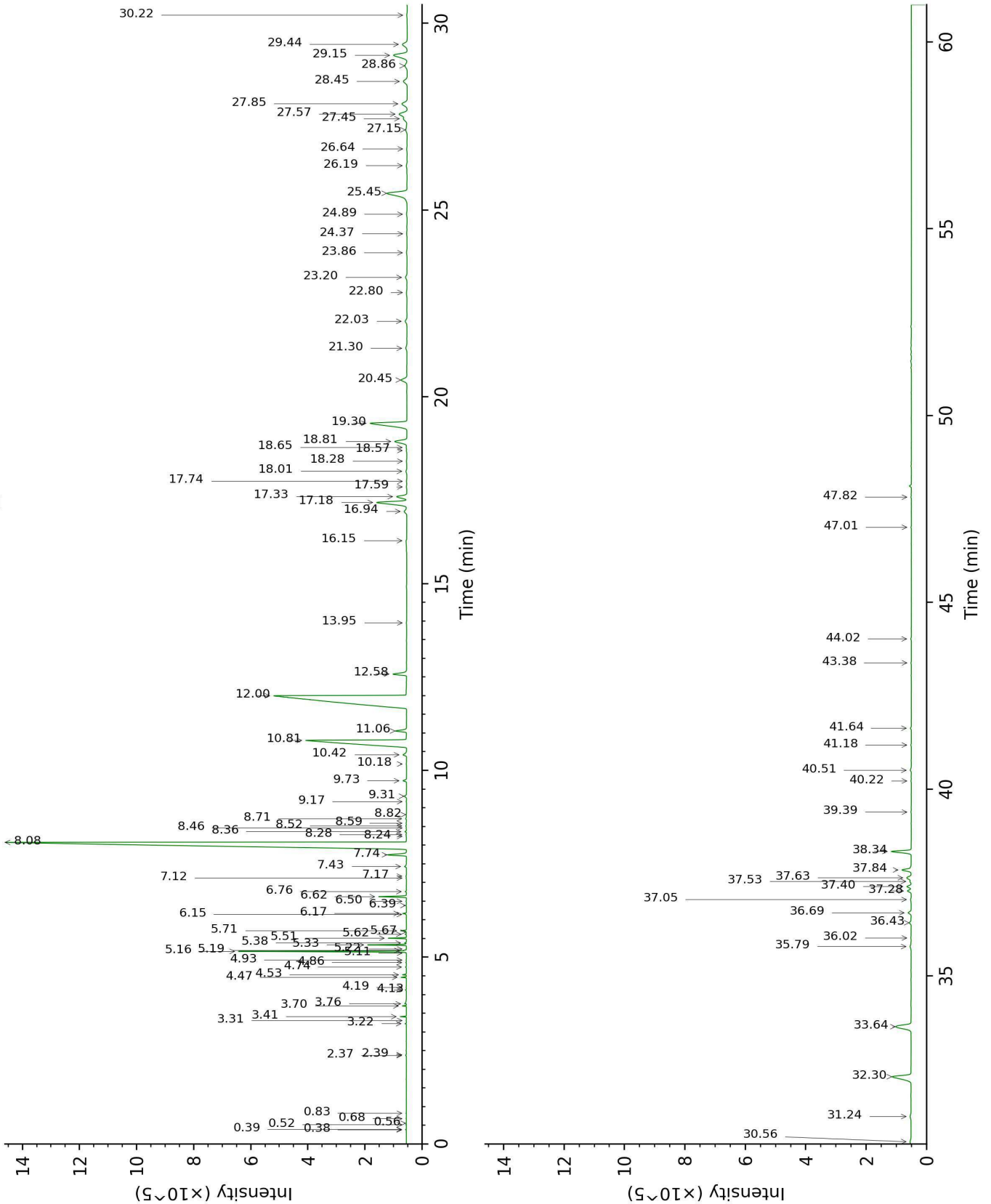
Physical aspect : Faintly yellow liquid

Refractive index : 1.4685 ± 0.0003 (20 °C)

CONCLUSION

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

17E23-PTH6-1-DM_BP5



17E23-PTH6-1-DM_WAX

