



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: L90105

ESSENTIAL OIL: LEMONGRASS ORGANIC
BOTANICAL NAME: CYMBOPOGON FLEXOSUS
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LEMONGRASS ORGANIC OIL	%
GERANIAL	38.1
NERAL	30.4
GERANIOL	7.6
GERANYL ACETATE	4.2
β-CARYOPHYLLENE	2.6
6-METHYL-5-HEPTEN-2-ONE	1.4
γ-CADINENE	1.4
(E)-ISOCITRAL	1.3
LINALOOL	1.0

Comments from Robert Tisserand: Very clean, fresh odor. Six of seven constituents conform to the ISO standard, with limonene slightly low - not a concern.

Date : February 2, 2017

SAMPLE IDENTIFICATION

Internal code : 17A23-PTH12-1-DM

Customer identification : Organic Lemongrass - L90105610R

Type : Essential Oil

Source : *Cymbopogon flexuosus*

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 : 2017-01-30

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.	
2-Methyl-3-buten-2-ol	0.35	639	0.03	0.03	972	1.39	Aliphatic alcohol
Hexanal	1.67	806	tr	tr	1013	1.70	Aliphatic aldehyde
cis-Hex-3-en-1-ol	2.50	870	0.01	0.01	1334	5.89	Aliphatic alcohol
4-Heptanone	2.56	875	0.01	0.01	1072	2.15	Aliphatic ketone
Tricyclene	3.14	915	0.09	0.08	917	1.13	Monoterpene
α-Pinene	3.33	927	0.13	0.12	942	1.23	Monoterpene
Camphene	3.62*	945	0.73	0.66	992	1.55	Monoterpene
α-Fenchene	3.62*	945	[0.73]	0.08	996	1.58	Monoterpene
Sabinene	4.05	971	tr	tr	1065	2.10	Monoterpene
Myrcene	4.39*	993	0.08	0.05	1117	2.69	Monoterpene
Dehydro-1,8-cineole	4.39*	993	[0.08]	0.03	1133	2.90	Monoterp. ether
6-Methyl-5-hepten-2-one	4.47	998	1.40	1.47	1281	5.03	Aliphatic ketone
Octanal	4.79	1013	0.06	0.06	1234	4.32	Aliphatic aldehyde
Limonene	5.08	1028	0.19	0.18	1142	3.02	Monoterpene
1,8-Cineole	5.11	1030	0.03	0.02	1148	3.11	Monoterp. ether
cis-β-Ocimene	5.26	1038	0.23	0.23	1188	3.64*	Monoterpene
trans-β-Ocimene	5.44	1047	0.14	0.14	1203	3.86	Monoterpene
γ-Terpinene	5.63	1057	0.01	[0.23]	1188	3.64*	Monoterpene
Bergamal	5.66	1058	0.03	0.02	1295	5.25	Aliphatic aldehyde
cis-Linalool oxide (fur.)	5.93	1073	0.01	0.01	1381	6.62	Monoterp. alcohol
4-Nonanone	5.98	1075	0.67	0.68	1273	4.91	Aliphatic ketone
Terpinolene	6.10	1081	0.04	0.03	1225	4.18	Monoterpene
trans-Linalool oxide (fur.)	6.24	1089	0.02	0.02	1402	7.06	Monoterp. alcohol
Rose furan	6.33	1093	0.12	0.13	1345	6.04	Monoterp. ether
Perillene	6.44	1098	0.08	0.07	1344	6.03	Monoterp. ether
Linalool	6.64	1106	1.03	0.98	1498	9.46	Monoterp. alcohol
cis-Chrysanthemal?	6.69	1107	0.08				Monoterp. aldehyde
Unknown (m/z = 81, 70 (71), 67 (57), 109 (47), 41 (43), 82 (42)... 137 (8), 152 (0))	7.41	1134	0.15				Oxygenated monoterpene
exo-Isocitral	7.61	1142	0.10	0.09	1434	7.86	Monoterp. aldehyde
trans-Chrysanthemal	7.70	1145	0.31	0.27	1429	7.72	Monoterp. aldehyde
Citronellal	7.84	1150	0.29	0.38	1414	7.36*	Monoterp. aldehyde
(Z)-Isocitral	8.14	1161	0.81	0.72	1479	8.97	Monoterp. aldehyde
Rosefuran epoxide	8.37	1170	0.18	0.21	1531	10.74	Monoterp. ether
Borneol	8.56	1177	0.17	0.23	1618	14.44*	Monoterp. alcohol
Terpinen-4-ol	8.67	1181	0.04	0.03	1527	10.59	Monoterp. alcohol
(E)-Isocitral	8.75	1184	1.34	1.11	1505	9.75	Monoterp. aldehyde
α-Terpineol	9.36	1202	0.09	0.07	1620	14.59	Monoterp. alcohol
endo-Fenchyl acetate	9.63*	1208	0.14	0.13	1411	7.28	Monoterp. ester

Decanal	9.63*	1208	[0.14]	0.02	1446	8.16	Aliphatic aldehyde
Nerol	10.64	1231	0.21	0.14	1729	20.86	Monoterp. alcohol
Neral	11.24*	1244	29.82	30.39	1604	13.71	Monoterp. aldehyde
Citronellol	11.24*	1244	[29.82]	0.11	1707	19.36	Monoterp. alcohol
Piperitone	11.66	1254	0.07	0.11	1622	14.66	Monoterp. ketone
Geraniol	12.20	1266	7.57	7.63	1785	24.59	Monoterp. alcohol
Geranial	12.86	1281	38.14	38.94	1654	16.34*	Monoterp. aldehyde
Geranyl formate	13.69	1298	0.10	[38.94]	1654	16.34*	Monoterp. ester
α -Cubebene	15.68	1328	0.04	0.06	1418	7.47	Sesquiterpene
Cycloisositivene	16.66	1343	0.18	0.16	1406	7.15	Sesquiterpene
α -Ylangene	16.78	1345	0.15	[0.38]	1414	7.36*	Sesquiterpene
α -Copaene	17.59	1358	0.08	0.11	1450	8.23	Sesquiterpene
Neric acid	17.74	1360	0.06	0.06	2208	43.41	Monoterp. acid
β -Bourbonene	18.32	1368	0.13	0.13	1471	8.77	Sesquiterpene
β -Elemene	18.58	1372	0.16	0.24	1517	10.21	Sesquiterpene
Geranyl acetate	19.18	1381	4.24	4.14	1692	18.38	Monoterp. ester
Geranic acid	20.26*	1397	3.08	0.38	2257	44.54	Monoterp. acid
β -Caryophyllene	20.26*	1397	[3.08]	2.63	1515	10.15	Sesquiterpene
<i>cis</i> - β -Farnesene	22.50	1424	0.12	0.38	1579	12.56*	Sesquiterpene
α -Humulene	22.97	1429	0.30	[0.38]	1579	12.56*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.60	1449	0.04	[0.23]	1618	14.44*	Sesquiterpene
(<i>E</i>)-Isoeugenol	25.01	1454	0.44	0.42	2236	44.05	Phenylpropanoid
Germacrene D	25.16	1456	0.34	0.36	1614	14.27	Sesquiterpene
4- <i>epi</i> -Cubebol	27.13	1479	0.25	0.18	1798	25.55	Sesquiterp. alcohol
γ -Cadinene	28.25	1493	1.36	1.32	1664	16.89	Sesquiterpene
δ -Cadinene	28.87*	1501	0.96	0.47	1669	17.17	Sesquiterpene
Cubebol	28.87*	1501	[0.96]	0.47	1847	29.18	Sesquiterp. alcohol
<i>trans</i> - γ -Bisabolene	29.75	1513	0.08	0.08	1678	17.65	Sesquiterpene
10- <i>epi</i> -Cubebol	30.27	1520	0.03	0.02	1858	30.03	Sesquiterp. alcohol
α -Elemol	32.09	1545	0.01	0.03	1989	37.01	Sesquiterp. alcohol
Sesquirosefuran	32.37	1549	0.08	0.05	1824	27.46	Sesquiterp. ether
Geranyl butyrate	33.49*	1565	0.92	0.10	1837	28.47	Monoterp. ester
Caryophyllene oxide	33.49*	1565	[0.92]	0.63	1843	28.87	Sesquiterp. ether
Humulene epoxide II	35.20	1588	0.06	0.10	1893	32.63	Sesquiterp. ether
Total identified			97.71%	98.21%			

*: 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 : 1.4840 ± 0.0003 (20 °C)

CONCLUSION

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



