

GC/MS BATCH NUMBER: L40104

ESSENTIAL OIL: LAVENDER
BOTANICAL NAME: LAVANDULA ANGUSTIFOLIA
ORIGIN: BULGARIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LAVENDER OIL	%
LINALOOL	35.6
LINALYL ACETATE	34.2
cis- β -OCIMENE	3.5
β -CARYOPHYLLENE	3.3
LAVANDULYL ACETATE	3.2
trans- β -FARNESENE	3.0
trans- β -OCIMENE	2.8
3-OCTANONE	2.7
TERPINEN-4-OL	2.3
α -TERPINEOL	0.8
β -PHELLANDRENE	0.4
1,8-CINEOLE	0.3
LIMONENE	0.3
CAMPHOR	0.2
LAVANDULOL	0.07

Comments from Robert Tisserand: A very good quality Bulgarian Lavender oil. Apart from one constituent (3-Octanone) that is slightly high, all 13 key constituents conform to the ISO standard.

Date : March 11, 2016

SAMPLE IDENTIFICATION

Internal code : 16C09-PTH3-1-LC

Customer identification : Lavender - Bulgaria - L4010458R

Type : Essential oil

Source : *Lavandula angustifolia*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Alexis St-Gelais, M. Sc., chimiste

Analysis date : 2016-03-10

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.	
Isovaleral	0.51	561	0.03	0.03	760	0.53	Aliphatic aldehyde
2-Methylbutyral	0.53	569	0.01	0.01	750	0.52	Aliphatic aldehyde
Hexan-2-ol	1.42	813	0.03				Aliphatic alcohol
Methyl hexyl ether	1.48	819	0.11	0.07	848	0.64	Aliphatic ether
Tricyclene	2.60*	911	0.02	0.02	915	0.83*	Monoterpene
α -Thujene	2.70	917	0.06	0.06	951	0.95	Monoterpene
α -Pinene	2.78	922	0.14	0.14	939	0.91	Monoterpene
Camphene	3.05*	939	0.14	0.13	1010	1.15	Monoterpene
α -Fenchene	3.05*	939	[0.14]	tr	1003	1.10	Monoterpene
Thuja-2,4(10)-diene	3.18	947	tr	0.03	1064	1.59*	Monoterpene
Sabinene	3.46	965	0.03	[0.03]	1064	1.59*	Monoterpene
β -Pinene	3.51	968	0.04	0.04	1046	1.44	Monoterpene
Myrcene	3.82*	988	0.83	0.65	1118	2.10	Monoterpene
Octen-3-ol	3.82*	988	[0.83]	0.17	1406	6.03	Aliphatic alcohol
Octan-3-one	3.89	992	2.73	4.39	1207	3.16*	Aliphatic ketone
Butyl butyrate	4.02	1000	0.13				Aliphatic ester
Δ 3-Carene	4.05*	1002	0.11	0.07	1096	1.85	Monoterpene
α -Phellandrene	4.05*	1002	[0.11]	0.02	1110	2.01	Monoterpene
Isobutyl 2-methylbutyrate	4.10	1005	0.02	0.28	1141	2.37*	Aliphatic ester
Octan-3-ol	4.18	1010	0.05	0.34	1354	5.26	Aliphatic alcohol
α -Terpinene	4.24	1013	0.05	0.04	1123	2.16	Monoterpene
Hexyl acetate	4.33	1018	0.67	0.62	1225	3.42*	Aliphatic ester
β -Phellandrene	4.46*	1025	0.44	0.75	1149	2.46*	Monoterpene
para-Cymene	4.46*	1025	[0.44]	0.16	1211	3.22	Monoterpene
Limonene	4.46*	1025	[0.44]	[0.28]	1141	2.37*	Monoterpene
1,8-Cineole	4.50	1027	0.79	[0.75]	1149	2.46*	Monoterp. ether
<i>cis</i> - β -Ocimene	4.69	1038	3.54	3.37	1192	2.96*	Monoterpene
<i>trans</i> - β -Ocimene	4.85	1048	2.77	[4.39]	1207	3.16*	Monoterpene
γ -Terpinene	5.00	1056	0.14	[3.37]	1192	2.96*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.29	1073	0.12	0.16	1385	5.71	Monoterp. alcohol
Terpinolene	5.45	1082	0.10	[0.62]	1225	3.42*	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	5.59	1090	0.08	0.13	1410	6.12	Monoterp. alcohol
Linalool	6.15*	1116	35.58	68.99	1517	8.26*	Monoterp. alcohol
Octen-3-yl acetate	6.15*	1116	[35.58]	0.94	1335	4.98	Aliphatic ester
Octan-3-yl acetate	6.22	1119	0.48	0.30	1294	4.39	Aliphatic ester
<i>cis</i> -para-Menth-2-en-1-ol	6.41	1128	0.04	[68.99]	1517	8.26*	Monoterp. alcohol
Camphor	6.75	1143	0.22	0.19	1424	6.39	Monoterp. ketone
Lavandulol	7.36	1171	0.07	0.42	1624	11.73*?	Monoterp. alcohol
Terpinen-4-ol	7.64	1184	2.33	2.38	1535	8.82*	Monoterp. alcohol
Hexyl butyrate	7.88*	1194	0.59	0.34	1371	5.52	Aliphatic ester
Cryptone	7.88*	1194	[0.59]	0.15	1570	9.84	Monoterp. ketone

α -Terpineol	8.27	1206	0.78	0.87	1630	11.97	Monoterp. alcohol
<i>trans</i> -Piperitol	8.49	1212	0.02	0.01	1680	14.24	Monoterp. alcohol
Linalyl acetate	9.98	1252	34.20	[68.99]	1517	8.26*	Monoterp. ester
Bornyl acetate	10.87	1276	0.13	[68.99]	1517	8.26*	Monoterp. ester
Lavandulyl acetate	11.27	1286	3.15	3.06	1553	9.35	Monoterp. ester
Neryl acetate	15.15	1357	0.32	0.23	1660	13.33	Monoterp. ester
β -Elemene	16.47*	1380	0.52	0.10	1527	8.57	Sesquiterpene
Geranyl acetate	16.47*	1380	[0.52]	0.42	1693	14.78	Monoterp. ester
β -Caryophyllene	17.37	1395	3.32	3.34	1526	8.53	Sesquiterpene
α -Santalene	17.67	1399	0.32	0.40	1519	8.31	Sesquiterpene
Aromadendrene	18.72	1413	0.09	[2.38]	1535	8.82*	Sesquiterpene
<i>cis</i> - β -Farnesene	19.62	1425	0.05	0.02	1594	10.58	Sesquiterpene
α -Humulene	19.78	1427	0.10	0.11	1579	10.13	Sesquiterpene
allo-Aromadendrene	20.47	1436	0.02	0.03	1562	9.61	Sesquiterpene
<i>trans</i> - β -Farnesene	21.07	1444	2.95	2.92	1617	11.44	Sesquiterpene
Germacrene D	21.74	1453	0.04	1.05	1619	11.54	Sesquiterpene
Caryophyllene oxide	30.20	1556	0.03	0.09	1844	23.86	Sesquiterp. ether
Total identified			98.53%	98.04%			

*: 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 : Clear liquid

Refractive index : 1.4595 \pm 0.0003 (20 °C)

CONCLUSION

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



