

GC/MS BATCH NUMBER: L50104

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LAVENDER ORGANIC OIL	%
LINALYL ACETATE	31.9
LINALOOL	31.6
cis- β -OCIMENE	4.4
TERPINEN-4-OL	3.9
β -CARYOPHYLLENE	3.5
LAVANDULYL ACETATE	3.1
trans- β -FARNESENE	3.1
trans- β -OCIMENE	2.7
OCTAN-3-ONE	1.8
α -TERPINEOL	1.1
Lavandulol	0.9
1,8-Cineole	0.6
Limonene	0.4
β -Phellandrene	0.2

Comments from Robert Tisserand: The familiar sweet odor develops very nicely. The constituents conform to the ISO standard for Bulgarian Lavender oil except that 3-octanone is very slightly high - not a concern.

Date : September 28, 2016

SAMPLE IDENTIFICATION

Internal code : 16I16-PTH13-1-DM

Customer identification : Organic Lavender - L5010457R

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 : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2016-09-27

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	0.42	529	tr	tr	983	1.02	Aliphatic alcohol
Isovaleral	0.53	567	0.01	0.02	776	0.49	Aliphatic aldehyde
2-Methylbutyral	0.57	581	tr	tr	791	0.51	Aliphatic aldehyde
Hexan-2-ol	1.81	811	0.03				Aliphatic alcohol
Methyl hexyl ether	1.87	816	0.14	0.14	845	0.60	Aliphatic ether
<i>cis</i> -Hex-3-en-1-ol	2.50	865	0.02	0.02	1338	4.87	Aliphatic alcohol
Hexanol	2.71	881	0.11	0.12	1296	4.26	Aliphatic alcohol
Tricyclene	3.16	913	0.02	0.02	925	0.78	Monoterpene
α -Thujene	3.25	918	0.11	0.13	951	0.88	Monoterpene
α -Pinene	3.35	924	0.20	0.18	943	0.85	Monoterpene
Camphene	3.64	941	0.14	0.12	995	1.07	Monoterpene
Sabinene	4.07	967	0.04	0.03	1054	1.48	Monoterpene
β -Pinene	4.13	971	0.03	0.03	1037	1.35	Monoterpene
Myrcene	4.41	988	0.71	0.66	1114	1.96	Monoterpene
Octan-3-one	4.46	992	1.84	1.67	1196	2.92	Aliphatic ketone
Octen-3-ol	4.51	994	0.29	0.28	1396	5.70	Aliphatic alcohol
Butyl butyrate	4.63	1001	0.14				Aliphatic ester
Δ 3-Carene	4.68*	1004	0.13	0.02	1091	1.77	Monoterpene
α -Phellandrene	4.68*	1004	[0.13]	0.03	1105	1.89	Monoterpene
Octan-3-ol	4.77	1009	0.31	0.36	1346	4.97	Aliphatic alcohol
α -Terpinene	4.87	1014	0.05	0.07	1120	2.04	Monoterpene
Hexyl acetate	4.94	1018	0.68	0.81	1220	3.22*	Aliphatic ester
<i>para</i> -Cymene	5.06	1025	0.16	0.35	1205	3.03	Monoterpene
Limonene	5.09	1027	0.35	0.27	1137	2.24	Monoterpene
β -Phellandrene	5.13	1029	0.20	0.88	1142	2.30*	Monoterpene
1,8-Cineole	5.16	1030	0.63	[0.88]	1142	2.30*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.30	1038	4.40	4.52	1185	2.80*	Monoterpene
<i>trans</i> - β -Ocimene	5.47	1048	2.73	2.84	1200	2.98	Monoterpene
γ -Terpinene	5.65	1057	0.16	[4.52]	1185	2.80*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.94	1073	0.15	0.16	1375	5.40	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.01	1077	0.07	0.09	1403	5.80	Monoterp. alcohol
Terpinolene	6.12	1083	0.10	[0.81]	1220	3.22*	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.26	1090	0.12	0.10	1405	5.83	Monoterp. alcohol
<i>para</i> -Cymenene	6.34	1095	0.03	0.02	1367	5.28	Monoterpene
Linalool	6.78*	1112	32.35	31.61	1497	7.50	Monoterp. alcohol
Octen-3-yl acetate	6.78*	1112	[32.35]	0.97	1330	4.74	Aliphatic ester
Octan-3-yl acetate	6.97	1119	0.20	0.19	1291	4.20	Aliphatic ester
Camphor	7.67	1145	0.28	0.21	1422	6.08	Monoterp. ketone
Isoborneol	8.11	1161	0.01	0.02	1591	10.01	Monoterp. alcohol
Lavandulol	8.34	1170	0.91	0.90	1610	10.58	Monoterp. alcohol
Borneol	8.62	1180	0.51	0.52	1616	10.78	Monoterp. alcohol

Terpinen-4-ol	8.74	1185	3.93	5.11	1531	8.23*	Monoterp. alcohol
Hexyl butyrate	9.06*	1197	0.55	0.36	1370	5.32	Aliphatic ester
Cryptone	9.06*	1197	[0.55]	0.24	1563	9.19	Monoterp. ketone
α-Terpineol	9.39	1204	1.09	4.57	1624	11.01*	Monoterp. alcohol
Nerol	10.64	1232	0.21	0.18	1729	15.62	Monoterp. alcohol
Linalyl acetate	11.47*	1251	31.75	31.90	1507	7.68	Monoterp. ester
Neral	11.47*	1251	[31.75]	0.11	1599	10.26	Monoterp. aldehyde
Geraniol	11.86	1260	0.44	0.42	1780	18.53	Monoterp. alcohol
Bornyl acetate	12.74	1279	0.12	0.25	1509	7.72	Monoterp. ester
Lavandulyl acetate	13.10	1287	3.10	3.12	1550	8.80	Monoterp. ester
α-Copaene	17.38	1355	0.02	0.01	1427	6.17	Sesquiterpene
Neryl acetate	17.65	1359	0.32	0.33	1660	12.52	Monoterp. ester
β-Elemene	18.61	1374	0.08	[5.11]	1531	8.23*	Sesquiterpene
Geranyl acetate	19.15	1382	0.54	0.53	1690	13.88	Monoterp. ester
β-Caryophyllene	20.31	1399	3.45	2.36	1527	8.13	Sesquiterpene
α-Santalene	20.63	1403	0.37	0.46	1519	7.90	Sesquiterpene
Aromadendrene	21.81	1417	0.11	[5.11]	1531	8.23*	Sesquiterpene
α-Humulene	23.01	1432	0.09	0.12	1585	9.84	Sesquiterpene
<i>trans</i> -β-Farnesene	24.25	1447	3.07	[4.57]	1624	11.01*	Sesquiterpene
Germacrene D	25.22	1458	0.40	[4.57]	1624	11.01*	Sesquiterpene
γ-Cadinene	28.25	1494	0.07	0.07	1670	12.99	Sesquiterpene
Caryophyllene oxide	33.50	1566	0.27	0.25	1852	22.86	Sesquiterp. ether
τ-Cadinol	37.33	1637	0.05	0.06	2076	36.12	Sesquiterp. alcohol
Total identified			98.39%	98.81%			

*: 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 ± 0.0003 (20 °C)

CONCLUSION

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



