

GC/MS BATCH NUMBER: L40103

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LAVENDER OIL	%
LINALOOL	36.6
LINALYL ACETATE	28.3
Trans- β -FARNESENE	4.1
β -CARYOPHYLLENE	3.5
LAVANDULYL ACETATE	3.0
Cis- β -OCIMENE	2.9
TERPINEN-4-OL	2.7
3-OCTANONE	2.6
Trans- β -OCIMENE	2.6
α -TERPINEOL	1.2
LAVANDULOL	1.1

Comments from Robert Tisserand: A delightful Bulgarian lavender oil. The linalool is slightly high, and the linalyl acetate slightly low compared to the ISO standard for Bulgarian lavender oil, but it is a genuine oil with no sign of adulteration.

Date : September 18, 2015

SAMPLE IDENTIFICATION

Internal code : 15111-PTH5-1-HM

Customer identification : Lavender - Bulgaria - L4010357

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.

Analysis date : 2015-09-11

IDENTIFIED COMPOUNDS

Identification	Colonne: BP5			Colonne: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Ethanol	0.28	477	tr	tr	897	0.66	Aliphatic alcohol
Acetone	0.30	484	0.02	0.02	717	0.41	Aliphatic ketone
2-Methyl-3-buten-2-ol	0.42	532	0.01	0.01	1010	1.22*	Aliphatic alcohol
Isovaleral	0.54	576	0.01	0.01	841	0.55*	Aliphatic aldehyde
2-Methylbutyral	0.55	581	0.02	[0.01]	841	0.55*	Aliphatic aldehyde
Hexan-2-ol?	1.44	816	0.04				Aliphatic alcohol
Methyl hexyl ether	1.50	821	0.18	0.18	913	0.73	Aliphatic ether
Hexanol	2.18	881	0.13	0.14	1322	5.05	Aliphatic alcohol
Tricyclene	2.62	914	0.02	0.02	963	0.96	Monoterpene
α -Thujene	2.72	920	0.08	0.08	995	1.11	Monoterpene
α -Pinene	2.80	926	0.13	0.13	984	1.06	Monoterpene
Camphene	3.06*	942	0.12	0.12	1024	1.34	Monoterpene
α -Fenchene	3.06*	942	[0.12]	[0.01]	1010	1.22*	Monoterpene
Sabinene	3.48	969	0.03	0.04	1082	1.86	Monoterpene
β -Pinene	3.52	971	0.03	0.03	1063	1.69	Monoterpene
Myrcene	3.83	991	0.70	0.70	1135	2.45	Monoterpene
Octan-3-one	3.88	994	2.61	2.29	1220	3.55	Aliphatic ketone
Octen-3-ol	4.03	1004	0.14	0.13	1424	6.72*	Aliphatic alcohol
Δ 3-Carene	4.06*	1005	0.10	0.07	1110	2.15	Monoterpene
α -Phellandrene	4.06*	1005	[0.10]	0.03	1125	2.34	Monoterpene
Octan-3-ol	4.14	1010	0.42	0.46	1367	5.73	Aliphatic alcohol
α -Terpinene	4.25	1016	0.04	0.05	1139	2.51	Monoterpene
Hexyl acetate	4.34	1021	0.89	0.87	1243	3.89	Aliphatic ester
Limonene	4.46*	1028	0.46	0.36	1157	2.73	Monoterpene
para-Cymene	4.46*	1028	[0.46]	0.15	1228	3.68	Monoterpene
β -Phellandrene	4.49	1029	0.26	0.97	1163	2.80*	Monoterpene
1,8-Cineole	4.51	1031	0.73	[0.97]	1163	2.80*	Monoterp. ether
cis- β -Ocimene	4.68	1040	2.93	3.05	1207	3.38*	Monoterpene
trans- β -Ocimene	4.85	1050	2.56	2.53	1222	3.59	Monoterpene
γ -Terpinene	5.00	1059	0.14	[3.05]	1207	3.38*	Monoterpene
cis-Linalool oxide (fur.)	5.28	1075	0.10	0.15	1401	6.24	Monoterp. alcohol
Terpinolene	5.45	1084	0.10	0.09	1240	3.85	Monoterpene
trans-Linalool oxide (fur.)	5.58	1092	0.08	[0.13]	1424	6.72*	Monoterp. alcohol
Linalool	6.07*	1116	36.96	36.64	1522	9.01	Monoterp. alcohol
Octen-3-yl acetate	6.07*	1116	[36.96]	0.88	1353	5.51	Aliphatic ester
Octan-3-yl acetate	6.22	1123	0.23	0.25	1311	4.88	Aliphatic ester
Camphor	6.72	1146	0.26	0.23	1442	7.08	Monoterp. ketone
Lavandulol	7.24	1170	1.09	1.19	1634	13.18	Monoterp. alcohol
Borneol	7.42	1177	0.47	0.47	1637	13.32	Monoterp. alcohol
Terpinen-4-ol	7.58	1185	2.69	2.66	1548	9.87	Monoterp. alcohol
Cryptone	7.82	1196	0.18	0.22	1586	11.11	Monoterp. ketone

Hexyl butyrate	7.89	1199	0.57	0.44	1386	6.02	Aliphatic ester
α -Terpineol	8.10	1205	1.22	1.18	1642	13.56	Monoterp. alcohol
γ -Terpineol	8.38	1213	0.01	0.02	1649	13.87	Monoterp. alcohol
Nerol	9.04	1231	0.17	0.21	1750	19.38	Monoterp. alcohol
Neral	9.59	1245	0.07	0.04	1619	12.48	Monoterp. aldehyde
Linalyl acetate	9.90	1254	28.25	28.32	1528	9.20	Monoterp. ester
Geraniol	10.08	1259	0.48	0.52	1804	22.79	Monoterp. alcohol
Geranial	10.70	1275	0.02	0.03	1669	14.84	Monoterp. aldehyde
Lavandulyl acetate	11.24	1290	3.02	2.97	1572	10.64	Monoterp. ester
Neryl acetate	15.13	1362	0.38	0.43	1680	15.36	Monoterp. ester
β -Elemene	15.91	1375	0.09	0.10	1538	9.52*	Sesquiterpene
Geranyl acetate	16.45	1385	0.60	0.59	1711	17.02	Monoterp. ester
Hexyl hexanoate	16.80	1391	0.11	0.12	1597	11.46*	Aliphatic ester
β -Caryophyllene	17.34	1400	3.48	3.42	1536	9.46	Sesquiterpene
Aromadendrene	18.73	1419	0.09	[0.10]	1538	9.52*	Sesquiterpene
α -Humulene	19.74	1432	0.07	[0.12]	1597	11.46*	Sesquiterpene
<i>trans</i> - β -Farnesene	21.07	1449	4.14	4.57	1631	13.04*	Sesquiterpene
Germacrene D	21.79	1459	0.53	[4.57]	1631	13.04*	Sesquiterpene
Caryophyllene oxide	29.89	1559	0.17	0.16	1858	26.74	Sesquiterp. ether
Total identified			98.43%	98.34%			

*: 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 : 1.4590 \pm 0.0003 (20 °C)

CONCLUSION

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

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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