

## GC/MS BATCH NUMBER: L50108

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LAVENDER ORGANIC OIL	%
LINALOOL	31.5
LINALYL ACETATE	30.8
$\beta$ -CARYOPHYLLENE	3.8
trans- $\beta$ -FARNESENE	3.7
LAVANDULYL ACETATE	3.4
cis- $\beta$ -OCIMENE	3.2
trans- $\beta$ -OCIMENE	3.1
TERPINEN-4-OL	2.4
OCTAN-3-ONE	1.6
$\alpha$ -TERPINEOL	1.2
LAVANDULOL	1.0

Comments from Robert Tisserand: Beautiful sweet, powdery-floral odor profile. Twelve of thirteen key ISO constituents are within range for Bulgarian Lavender oil. Octanone is slightly high – not a major concern.

**Date :** September 20, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17114-PTH1-1-DM

**Customer identification :** Lavender Organic - Bulgaria - L5010868R

**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).

Identifications double-checked by GC-MS

**Analyst :** Sylvain Mercier, M. Sc., chimiste

**Analysis date :** 2017-09-20

Checked and approved by :

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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	0.67	674	0.03	0.03	761	0.65	Aliphatic aldehyde
Hexan-2-ol	1.85	815	0.04				Aliphatic alcohol
Methyl hexyl ether	1.92	821	0.13	0.12	842	0.81	Aliphatic ether
cis-Hex-3-en-1-ol	2.49	864	0.04	0.06	1321	5.59	Aliphatic alcohol
Hexanol	2.70	880	0.13	0.21	1297	5.21*	Aliphatic alcohol
Tricyclene	3.22	915	0.02	0.02	911	1.08	Monoterpene
$\alpha$ -Thujene	3.31	920	0.07	0.11	949	1.23	Monoterpene
$\alpha$ -Pinene	3.41	926	0.16	0.11	938	1.19	Monoterpene
Camphene	3.70*	943	0.18	0.05	999	1.57	Monoterpene
$\alpha$ -Fenchene	3.70*	943	[0.18]	0.14	989	1.49	Monoterpene
Sabinene	4.13	969	0.04	0.04	1056	2.03	Monoterpene
$\beta$ -Pinene	4.20	972	0.04	0.03	1034	1.85	Monoterpene
Myrcene	4.47	989	0.73	0.75	1112	2.63*	Monoterpene
Octan-3-one	4.52*	992	2.45	1.55	1199	3.74	Aliphatic ketone
Octen-3-ol	4.52*	992	[2.45]	0.23	1396	6.81	Aliphatic alcohol
Butyl butyrate	4.68	1001	0.14				Aliphatic ester
$\Delta$ 3-Carene	4.75*	1005	0.13	0.09	1090	2.35	Monoterpene
$\alpha$ -Phellandrene	4.75*	1005	[0.13]	[0.75]	1112	2.63*	Monoterpene
Octan-3-ol	4.79	1007	0.39	0.48	1342	5.92	Aliphatic alcohol
$\alpha$ -Terpinene	4.94	1015	0.04	[0.75]	1112	2.63*	Monoterpene
Hexyl acetate	4.99	1018	0.74	0.87	1221	4.08*	Aliphatic ester
para-Cymene	5.13	1025	0.13	3.89	1203	3.80*	Monoterpene
Limonene	5.17	1027	0.46	1.53	1142	3.02*	Monoterpene
$\beta$ -Phellandrene	5.20	1029	0.34	[1.53]	1142	3.02*	Monoterpene
1,8-Cineole	5.22	1030	0.78	[1.53]	1142	3.02*	Monoterp. ether
cis- $\beta$ -Ocimene	5.36	1037	3.15	3.09	1182	3.59*	Monoterpene
trans- $\beta$ -Ocimene	5.54	1047	3.06	[3.89]	1203	3.80*	Monoterpene
$\gamma$ -Terpinene	5.72	1057	0.13	[3.09]	1182	3.59*	Monoterpene
cis-Linalool oxide (fur.)	5.99	1072	0.11	0.13	1374	6.43	Monoterp. alcohol
cis-Sabinene hydrate	6.05	1075	0.03	0.13	1401	6.94*	Monoterp. alcohol
Terpinolene	6.19	1083	0.12	[0.87]	1221	4.08*	Monoterpene
trans-Linalool oxide (fur.)	6.31	1089	0.08	[0.13]	1401	6.94*	Monoterp. alcohol
para-Cymenene	6.41	1095	0.02	0.47	1365	6.28*	Monoterpene
Linalool	6.82*	1111	32.97	31.46	1497	9.27*	Monoterp. alcohol
Octen-3-yl acetate	6.82*	1111	[32.97]	0.95	1329	5.71	Aliphatic ester
Octan-3-yl acetate	7.04	1119	0.29	[0.21]	1297	5.21*	Aliphatic ester
cis-para-Menth-2-en-1-ol	7.23	1125	0.07	[31.46]	1497	9.27*	Monoterp. alcohol
Camphor	7.78	1145	0.32	0.25	1420	7.37*	Monoterp. ketone
Lavandulol	8.36	1167	1.03	5.94	1614	13.86*	Monoterp. alcohol
Borneol	8.65	1177	0.69	1.59	1617	14.04*	Monoterp. alcohol
Terpinen-4-ol	8.83	1184	2.42	2.99	1525	10.27*	Monoterp. alcohol

Hexyl butyrate	9.18*	1196	0.74	[0.47]	1365	6.28*	Aliphatic ester
Cryptone	9.18*	1196	[0.74]	0.39	1558	11.52	Monoterp. ketone
α-Terpineol	9.48	1204	1.19	[1.59]	1617	14.04*	Monoterp. alcohol
Nerol	10.65	1229	0.21	0.24	1723	20.04	Monoterp. alcohol
Linalyl acetate	11.61	1250	30.84	31.59	1506	9.59	Monoterp. ester
Geraniol	11.87	1256	0.52	0.56	1775	23.52	Monoterp. alcohol
Bornyl acetate	12.92	1279	0.15	0.44	1512	9.80*	Monoterp. ester
Lavandulyl acetate	13.26	1287	3.39	3.49	1546	11.09	Monoterp. ester
Cuminol	14.23	1305	0.04	0.04	1993	36.83	Monoterp. alcohol
α-Cubebene	15.98	1331	0.04	[0.25]	1420	7.37*	Sesquiterpene
Neryl acetate	17.85	1359	0.35	0.43	1655	16.09*	Monoterp. ester
β-Elemene	18.89	1375	0.09	[2.99]	1525	10.27*	Sesquiterpene
Geranyl acetate	19.35	1382	0.60	0.67	1688	17.81*	Monoterp. ester
Hexyl hexanoate	19.82	1389	0.09	0.14	1579	12.31	Aliphatic ester
β-Caryophyllene	20.65	1401	3.84	3.41	1520	10.10	Sesquiterpene
α-Santalene	20.97	1405	0.35	[0.44]	1512	9.80*	Sesquiterpene
<i>trans</i> -α-Bergamotene	22.14	1419	0.10	[2.99]	1525	10.27*	Sesquiterpene
α-Humulene	23.38	1433	0.10	0.08	1594	12.90	Sesquiterpene
<i>trans</i> -β-Farnesene	24.58	1448	3.69	[5.94]	1614	13.86*	Sesquiterpene
Germacrene D	25.62	1460	0.70	[5.94]	1614	13.86*	Sesquiterpene
γ-Cadinene	28.66	1496	0.10	[0.43]	1655	16.09*	Sesquiterpene
β-Bisabolene	28.81	1498	0.04	[0.43]	1655	16.09*	Sesquiterpene
<i>trans</i> -γ-Bisabolene	30.19	1517	0.03	[0.67]	1688	17.81*	Sesquiterpene
Caryophyllene oxide	33.78	1568	0.23	0.22	1839	28.08	Sesquiterp. ether
τ-Cadinol	37.50	1637	0.06	0.05	2063	39.16	Sesquiterp. alcohol
<b>Total identified</b>			<b>99.19%</b>	<b>99.06%</b>			

\*: 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 ± 0.0003 (20 °C)

#### CONCLUSION

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

17114-PTH1-1-DM\_BP5



