

GC/MS BATCH NUMBER: L50109

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF LAVENDER ORGANIC OIL	%
LINALOOL	33.7
LINALYL ACETATE	27.0
cis- β -OCIMENE	4.7
TERPINEN-4-ol	4.6
β -CARYOPHYLLENE	3.4
TRANS- β -FARNESENE	3.2
TRANS- β -OCIMENE	3.1
LAVANDULYL ACETATE	3.0
OCTAN-3-ONE	1.5
α -TERPINEOL	1.2
LAVANDULOL	1.1

Comments from Robert Tisserand: Beautiful, sweet, green-herbaceous odor quality. Twelve of thirteen key ISO constituents are within range for Bulgarian Lavender. with linalyl acetate slightly high - not a concern here.

Date : November 24, 2017

SAMPLE IDENTIFICATION

Internal code : 17K24-PTH3-1-CC

Customer identification : Lavender Organic - Bulgaria - L5010977R

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 : 2017-11-24

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	0.67	675	0.03	0.03	740	0.63	Aliphatic aldehyde
Toluene	1.32	759	0.01	0.19	949	1.14*	Simple phenolic
Hexan-2-ol	1.85	816	0.02				Aliphatic alcohol
Methyl hexyl ether	1.92	821	0.16	0.15	850	0.78	Aliphatic ether
Hexanol	2.72	881	0.11	0.10	1293	4.96	Aliphatic alcohol
Tricyclene	3.23	915	0.02	0.02	921	1.03	Monoterpene
α -Thujene	3.31	920	0.13	0.20	959	1.18	Monoterpene
α -Pinene	3.42	926	0.27	[0.19]	949	1.14*	Monoterpene
Camphene	3.71	944	0.19	0.18	1002	1.41	Monoterpene
Sabinene	4.14	969	0.05	0.04	1056	1.94	Monoterpene
β -Pinene	4.20	973	0.07	0.05	1041	1.77	Monoterpene
Myrcene	4.48	989	0.75	0.78	1118	2.52*	Monoterpene
Octan-3-one	4.53*	992	2.07	1.47	1199	3.59	Aliphatic ketone
Octen-3-ol	4.53*	992	[2.07]	0.24	1397	6.58	Aliphatic alcohol
Butyl butyrate	4.69	1001	0.12				Aliphatic ester
α -Phellandrene	4.76*	1005	0.24	0.03	1112	2.43	Monoterpene
Δ 3-Carene	4.76*	1005	[0.24]	0.17	1080	2.24	Monoterpene
Octan-3-ol	4.81	1008	0.37	0.43	1344	5.76	Aliphatic alcohol
α -Terpinene	4.94	1015	0.06	[0.78]	1118	2.52*	Monoterpene
Hexyl acetate	5.00	1018	0.63	0.80	1223	3.92*	Aliphatic ester
para-Cymene	5.14	1026	0.16	3.93	1205	3.66*	Monoterpene
Limonene	5.17	1027	0.40	1.64	1146	2.89*	Monoterpene
β -Phellandrene	5.20	1029	0.27	[1.64]	1146	2.89*	Monoterpene
1,8-Cineole	5.23	1030	0.99	[1.64]	1146	2.89*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.37	1038	4.74	4.48	1190	3.46*	Monoterpene
<i>trans</i> - β -Ocimene	5.55	1048	3.11	[3.93]	1205	3.66*	Monoterpene
γ -Terpinene	5.72	1057	0.20	[4.48]	1190	3.46*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	6.00	1072	0.16	0.14	1374	6.22	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.07	1076	0.07	0.21	1405	6.71*	Monoterp. alcohol
Terpinolene	6.20	1083	0.11	[0.80]	1223	3.92*	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.32	1090	0.10	[0.21]	1405	6.71*	Monoterp. alcohol
para-Cymenene	6.42	1095	0.02	0.44	1369	6.13*	Monoterpene
Linalool	6.85*	1112	34.58	33.73	1499	8.92*	Monoterp. alcohol
Octen-3-yl acetate	6.85*	1112	[34.58]	0.89	1331	5.55	Aliphatic ester
Octan-3-yl acetate	7.04	1119	0.16	0.26	1297	5.02	Aliphatic ester
<i>cis</i> -para-Menth-2-en-1-ol	7.23	1126	0.03	[33.73]	1499	8.92*	Monoterp. alcohol
Camphor	7.79	1146	0.25	0.24	1422	7.10	Monoterp. ketone
Lavandulol	8.40	1168	1.14	1.18	1613	13.00	Monoterp. alcohol
Borneol	8.71	1179	0.70	5.62	1620	13.42*	Monoterp. alcohol
Terpinen-4-ol	8.88	1185	4.57	8.13	1528	9.87*	Monoterp. alcohol
Hexyl butyrate	9.20*	1197	0.68	[0.44]	1369	6.13*	Aliphatic ester

Cryptone	9.20*	1197	[0.68]	0.29	1560	11.05	Monoterp. ketone
α-Terpineol	9.54	1205	1.19	[5.62]	1620	13.42*	Monoterp. alcohol
Bornyl formate	10.38	1223	0.05				Monoterp. ester
Nerol	10.69	1230	0.17	0.21	1726	19.14	Monoterp. alcohol
Linalyl acetate	11.61	1250	27.02	27.60	1511	9.23	Monoterp. ester
Geraniol	11.92	1257	0.46	0.46	1778	22.51	Monoterp. alcohol
Bornyl acetate	12.94	1280	0.13	0.42	1517	9.47*	Monoterp. ester
Lavandulyl acetate	13.28	1287	3.02	3.12	1550	10.67	Monoterp. ester
Cuminol	14.34	1307	0.02	0.03	1996	36.10	Monoterp. alcohol
α-Cubebene	16.01	1332	0.05	[0.21]	1405	6.71*	Sesquiterpene
Neryl acetate	17.88	1360	0.31	0.37	1659	15.44*	Monoterp. ester
β-Elemene	18.91	1375	0.07	[8.13]	1528	9.87*	Sesquiterpene
Geranyl acetate	19.38	1382	0.52	0.61	1692	17.12*	Monoterp. ester
Hexyl hexanoate	19.84	1389	0.10	0.10	1599	12.47	Aliphatic ester
β-Caryophyllene	20.68	1401	3.44	[8.13]	1528	9.87*	Sesquiterpene
α-Santalene	20.99	1405	0.35	[0.42]	1517	9.47*	Sesquiterpene
<i>trans</i> -α-Bergamotene	22.17	1419	0.10	[8.13]	1528	9.87*	Sesquiterpene
α-Humulene	23.43	1434	0.09	0.11	1583	11.90	Sesquiterpene
9-epi-β-Caryophyllene	24.10	1442	0.11	0.20	1668	15.92*	Sesquiterpene
<i>trans</i> -β-Farnesene	24.62	1448	3.23	[5.62]	1620	13.42*	Sesquiterpene
Germacrene D	25.67	1461	0.39	[5.62]	1620	13.42*	Sesquiterpene
γ-Cadinene	28.74	1497	0.13	[0.20]	1668	15.92*	Sesquiterpene
β-Bisabolene	28.88	1499	0.03	[0.37]	1659	15.44*	Sesquiterpene
<i>trans</i> -γ-Bisabolene	30.25	1518	0.03	[0.61]	1692	17.12*	Sesquiterpene
Caryophyllene oxide	33.85	1569	0.22	0.24	1845	27.19	Sesquiterp. ether
τ-Cadinol	37.57	1639	0.06	0.06	2068	38.69	Sesquiterp. alcohol
Total identified			99.03%	99.59%			

*: 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 : 1.4615 ± 0.0003 (20 °C)

CONCLUSION

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

17K24-PTH3-1-CC_BP5



