

**Date :** May 20, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16E11-MJO4-1-SM

**Customer identification :** Saje - Lavender Regular Grade - No Lot # - Untampered seal

**Type :** Essential oil

**Source :** *Lavandula angustifolia*

**Customer :** Miles Jordens

*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 :** 2016-05-20

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.	
Methyl hexyl ether	1.88	820	0.01	0.01	855	0.62	Aliphatic ether
<i>cis</i> -Hex-3-en-1-ol	2.39	860	0.04				Aliphatic alcohol
Hexanol	2.60	878	0.07	0.11	1304	4.45	Aliphatic alcohol
Tricyclene	3.14	917	0.01	0.01	929	0.82	Monoterpene
$\alpha$ -Thujene	3.23	922	0.08	0.09	957	0.93	Monoterpene
$\alpha$ -Pinene	3.33	928	0.32	0.28	949	0.90	Monoterpene
Camphene	3.61	945	0.14	0.14	1004	1.13	Monoterpene
Sabinene	4.04	971	0.06	0.06	1059	1.56	Monoterpene
$\beta$ -Pinene	4.10	975	0.22	0.20	1041	1.42	Monoterpene
Octen-3-ol	4.35	990	0.09	0.11	1404	5.90*	Aliphatic alcohol
Myrcene	4.38	991	0.41	0.36	1117	2.06	Monoterpene
Octan-3-one	4.41	993	0.79	0.72	1201	3.04	Aliphatic ketone
$\alpha$ -Phellandrene	4.65*	1007	0.07	0.03	1110	1.99	Monoterpene
$\Delta^3$ -Carene	4.65*	1007	[0.07]	0.03	1092	1.83	Monoterpene
$\alpha$ -Terpinene	4.83	1017	0.42	0.41	1124	2.14	Monoterpene
Hexyl acetate	4.91	1022	0.07	0.34	1226	3.37*	Aliphatic ester
<i>para</i> -Cymene	5.01	1027	0.18	0.18	1211	3.16	Monoterpene
Limonene	5.05	1030	0.44	0.38	1142	2.35	Monoterpene
$\beta$ -Phellandrene	5.08	1031	0.05	2.72	1148	2.42*	Monoterpene
1,8-Cineole	5.12	1034	2.66	[2.72]	1148	2.42*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.24	1040	0.52	1.39	1191	2.92*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.42	1050	0.18	0.19	1206	3.09	Monoterpene
$\gamma$ -Terpinene	5.60	1060	0.94	[1.39]	1191	2.92*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.87	1075	0.07	0.07	1382	5.59	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	5.90	1077	0.05	0.05	1412	6.03	Monoterp. alcohol
Terpinolene	6.07	1086	0.35	[0.34]	1226	3.37*	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.18	1092	0.09	0.05	1409	5.98	Monoterp. alcohol
Linalool	6.62	1112	36.16	35.71	1506	7.82	Monoterp. alcohol
Octen-3-yl acetate	6.68	1114	0.15	0.13	1334	4.89	Aliphatic ester
Octan-3-yl acetate	6.93	1123	0.02	0.02	1294	4.32	Aliphatic ester
<i>trans</i> -Pinocarveol	7.40	1141	0.01	0.02	1581	9.98	Monoterp. alcohol
Camphor	7.58	1148	3.73	3.76	1426	6.29	Monoterp. ketone
Lavandulol	8.10	1167	0.35	0.37	1618	11.12	Monoterp. alcohol
Borneol	8.32	1175	1.62	2.25	1623	11.35*	Monoterp. alcohol
Terpinen-4-ol	8.54	1184	3.52	3.58	1534	8.57	Monoterp. alcohol
Hexyl butyrate	8.98	1200	0.22	0.20	1374	5.47	Aliphatic ester
$\alpha$ -Terpineol	9.10	1204	0.61	0.82	1628	11.59	Monoterp. alcohol
Nerol	10.25	1229	0.08	0.06	1738	16.84	Monoterp. alcohol
Hexyl isovalerate	10.90	1244	0.15	0.13	1410	6.00	Aliphatic ester
Linalyl acetate	11.34	1254	39.11	40.16	1515	8.01	Monoterp. ester
Geraniol	11.44	1256	0.30	0.27	1783	49.48	Monoterp. alcohol

iso-Isopulegyl acetate	12.56	1282	0.03	0.03	1530	8.45	Monoterp. ester
Lavandulyl acetate	12.89	1289	1.15	1.19	1552	9.11	Monoterp. ester
$\alpha$ -Cubebene	15.54	1335	0.08	[0.11]	1404	5.90*	Sesquiterpene
Neryl acetate	17.38	1363	0.19	0.15	1671	13.51	Monoterp. ester
$\beta$ -Elemene	18.43	1379	0.05	0.83	1527	8.34*	Sesquiterpene
Geranyl acetate	18.84	1385	0.24	0.28	1692	14.46	Monoterp. ester
$\beta$ -Caryophyllene	20.04	1404	0.83	[0.83]	1527	8.34*	Sesquiterpene
$\alpha$ -Santalene	20.44	1409	0.11	0.04	1517	8.07	Sesquiterpene
Aromadendrene	21.39	1420	0.07	0.09	1541	8.79	Sesquiterpene
allo-Aromadendrene	22.71	1436	0.08	0.07	1561	9.40	Sesquiterpene
<i>trans</i> - $\beta$ -Farnesene	23.93	1451	0.57	[2.25]	1623	11.35*	Sesquiterpene
Germacrene D	24.91*	1463	0.41	0.24	1627	11.52	Sesquiterpene
$\gamma$ -Muurolene	24.91*	1463	[0.41]	0.09	1602	10.64	Sesquiterpene
$\beta$ -Bisabolene	27.91	1499	0.14	0.22	1661	13.05	Sesquiterpene
$\delta$ -Cadinene	28.14	1502	0.06	0.08	1677	13.77	Sesquiterpene
$\tau$ -Cadinol	36.94	1636	0.08	0.07	2072	36.67	Sesquiterp. alcohol
$\alpha$ -Bisabolol	38.95	1685	0.17	0.18	2131	38.73	Sesquiterp. alcohol
<b>Total identified</b>			<b>98.62%</b>	<b>98.97%</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:** 1.4580  $\pm$  0.0003 (20 °C)

#### CONCLUSION

The camphor content of this oil indicates that it contains at least in part lavandin oil (*Lavandula angustifolia* x *spicata*, many cultivars possible). Genuine lavender oils usually contain less than 1.5% camphor.

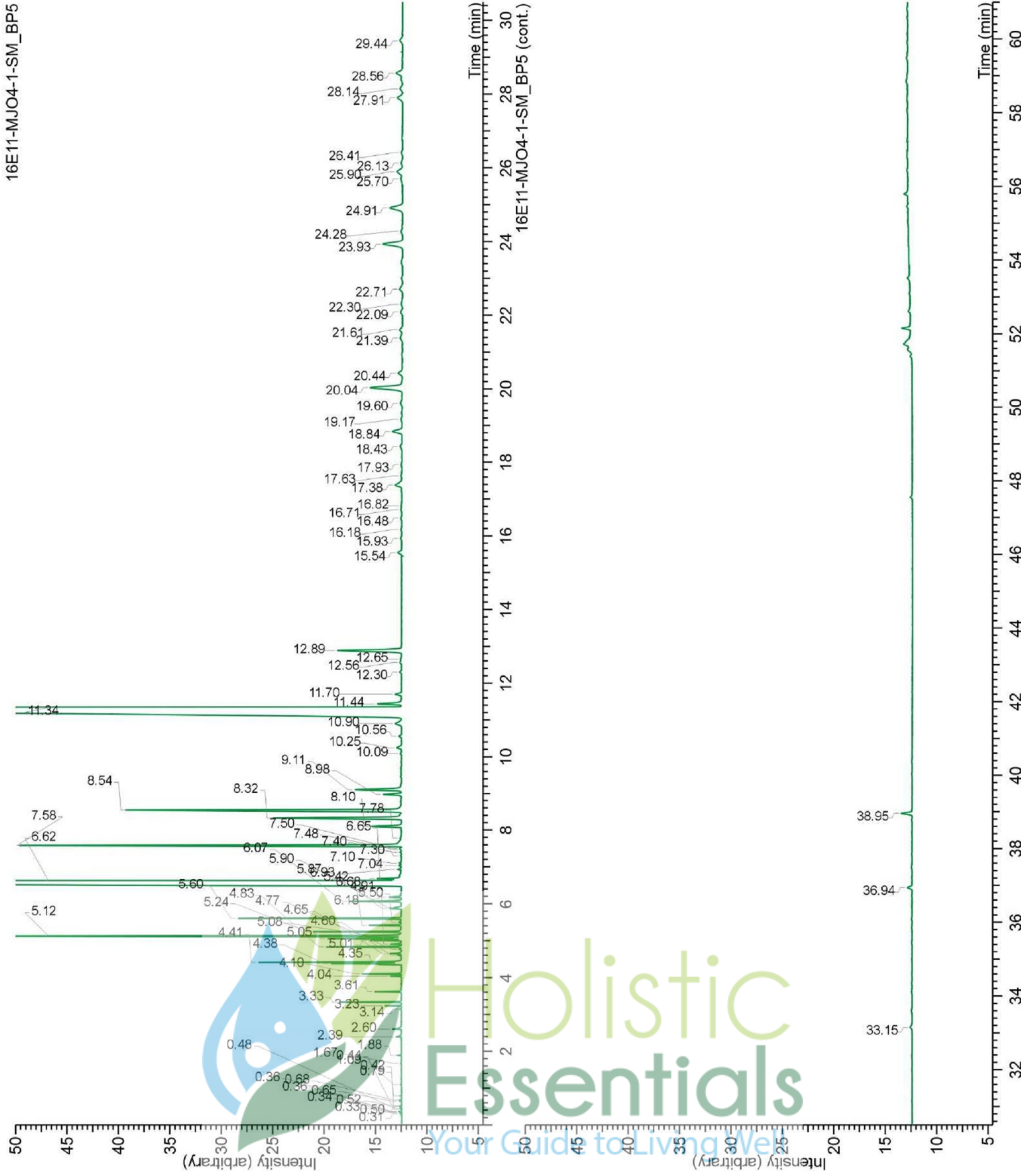


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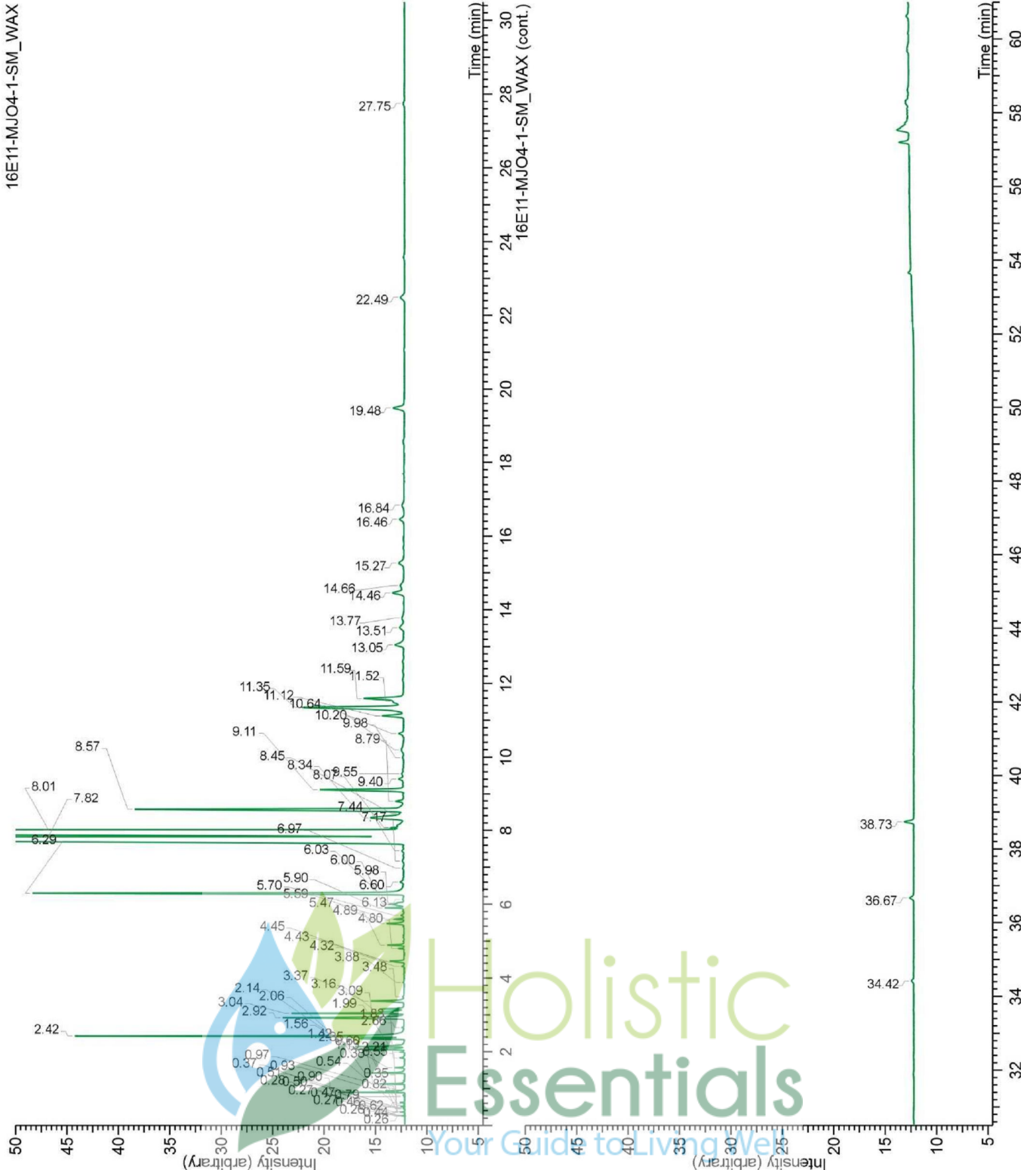


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