

GC-MS Profiling Analysis Prepared for Jade Bloom, Inc

Date: April 19, 2018

Sample: Lavandin Oil grosso

Type: Essential Oil

Source: *Lavandula x hybrida cv. Grosso*

Batch: 041889487

Identification	DB-5 (%)	DB-WAX (%)	Classe
Ethanol	0.09	0.08	Aliphatic alcohol
Methacrolein	tr	tr	Aliphatic aldehyde
Isovaleral	0.01	tr	Aliphatic aldehyde
Toluene	tr	tr	Simple phenolic
Methyl hexyl ether	0.04	0.04	Aliphatic ether
(2E)-Hexenal	0.01	0.02	Aliphatic aldehyde
(3Z)-Hexenol	0.03	0.28*	Aliphatic alcohol
Hexanol	0.14	0.16*	Aliphatic alcohol
Hashishene	tr	0.50*	Monoterpene
Tricyclene	0.02	0.02	Monoterpene
α -Thujene	0.10	0.10	Monoterpene
α -Pinene	0.49	[0.50]*	Monoterpene
Camphene	0.34*	0.33	Monoterpene
α -Fenchene	[0.34]*	tr	Monoterpene
Thuja-2,4(10)-diene	tr	0.15*	Monoterpene
Butyl isobutyrate	tr	tr	Aliphatic ester
β -Pinene	0.55*	0.41	Monoterpene
Sabinene	[0.55]*	[0.15]*	Monoterpene
Octen-3-ol	0.22	0.23	Aliphatic alcohol
Octan-3-one	0.07*	0.35*	Aliphatic ketone
6-Methyl-5-hepten-2-one	[0.07]*	0.01	Aliphatic ketone
Myrcene	0.53	0.53	Monoterpene
Pseudolimonene	0.05*	0.01	Monoterpene
α -Phellandrene	[0.05]*	0.03	Monoterpene
Δ 3-Carene	0.06	0.05	Monoterpene
α -Terpinene	0.05	0.05	Monoterpene
Hexyl acetate	0.16	0.44*	Aliphatic ester
ortho-Cymene	0.01	0.11*	Simple phenolic
para-Cymene	0.09	[0.11]*	Monoterpene
Limonene	6.21*	0.78	Monoterpene
1,8-Cineole	[6.21]*	5.40*	Monoterpenic ether
β -Phellandrene	[6.21]*	[5.40]*	Monoterpene
Lavender lactone	0.02	0.07	Aliphatic lactone
(Z)- β -Ocimene	0.78	0.79	Monoterpene
(E)- β -Ocimene	0.32	[0.35]*	Monoterpene
γ -Terpinene	0.15	0.15	Monoterpene
cis-Sabinene hydrate	0.14	0.23*	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.12	0.13	Monoterpenic alcohol
Octanol	0.03	36.33*	Aliphatic alcohol
α -Pinene oxide analog	0.07	[0.16]*	Monoterpenic ether
Terpinolene	0.39*	[0.44]*	Monoterpene
trans-Linalool oxide (fur.)	[0.39]*	[0.23]*	Monoterpenic alcohol
trans-Sabinene hydrate	0.02	0.01	Monoterpenic alcohol
Linalool	35.20	[36.33]*	Monoterpenic alcohol
6-Methyl-3,5-heptadien-2-one	0.07	0.09	Aliphatic ketone
Octen-3-yl acetate	0.26	[0.28]*	Aliphatic ester
Unknown	0.02	0.01	Unknown
α -Campholenal	0.04	0.03	Monoterpenic aldehyde

allo-Ocimene	0.04*	0.01	Monoterpene
Octan-3-yl acetate	[0.04]*	0.05	Aliphatic ester
Camphor	7.43	7.35	Monoterpenic ketone
Camphene hydrate	0.06	1.44*	Monoterpenic alcohol
Hexyl isobutyrate	0.18	[0.16]*	Aliphatic ester
Nerol oxide	0.01	0.02	Aliphatic ether
Borneol	2.67	3.23*	Monoterpenic alcohol
δ -Terpineol	0.08	0.08*	Monoterpenic alcohol
Lavandulol	0.68	0.69	Monoterpenic alcohol
(3E,5E)-Undeca-1,3,5-triene	3.39*	0.01	Alkene
Terpinen-4-ol	[3.39]*	3.38	Monoterpenic alcohol
meta-Cymen-8-ol	0.02	0.02	Monoterpenic alcohol
Cryptone	0.03	0.07*	Normonoterpenic ketone
para-Cymen-8-ol	0.04	0.04	Monoterpenic alcohol
α -Terpineol	0.59	[3.23]*	Monoterpenic alcohol
Hexyl butyrate	0.44*	0.42	Aliphatic ester
Hodiendiol	[0.44]*	0.09*	Monoterpenic alcohol
Verbenone	0.04	[1.33]*	Monoterpenic ketone
Octyl acetate	0.03	0.02	Aliphatic ester
Bornyl formate	tr		Monoterpenic ester
Nerol	0.07	0.10*	Monoterpenic alcohol
Hexyl 2-methylbutyrate	0.01	0.07	Aliphatic ester
Neral	0.08	[0.08]*	Monoterpenic aldehyde
Hexyl isovalerate	0.15	0.15	Aliphatic ester
Linalyl acetate	26.62*	25.71*	Monoterpenic ester
Geraniol	[26.62]*	0.20	Monoterpenic alcohol
<i>trans</i> -Ascaridole glycol	0.01	0.01*	Monoterpenic alcohol
Geranial	0.01	0.12*	Monoterpenic aldehyde
Cuminol	0.01	[0.01]*	Monoterpenic alcohol
Lavandulyl acetate	2.20	2.22	Monoterpenic ester
Hexyl tiglate	0.17	0.16	Aliphatic ester
Hodiendiol derivative	0.04	0.03	Oxygenated monoterpene
Unknown	0.02	[0.10]*	Oxygenated monoterpene
Unknown	0.07	[0.10]*	Oxygenated monoterpene
Neryl acetate	0.13	0.14	Monoterpenic ester
α -Copaene	0.01	0.01	Sesquiterpene
β -Bourbonene	0.06	0.05	Sesquiterpene
Daucene	0.06	0.06	Sesquiterpene
Geranyl acetate	0.27*	0.23	Monoterpenic ester
Hexyl hexanoate	[0.27]*	0.04	Aliphatic ester
α -Funebrene	0.12*	0.08*	Sesquiterpene
7- <i>epi</i> -Sesquithujene	[0.12]*	[0.08]*	Sesquiterpene
Isocaryophyllene	0.13*	[36.33]*	Sesquiterpene
Sesquithujene	[0.13]*	0.01	Sesquiterpene
<i>cis</i> - α -Bergamotene	1.47*	[25.71]*	Sesquiterpene
β -Caryophyllene	[1.47]*	[1.44]*	Sesquiterpene
α -Santalene	0.16	0.20	Sesquiterpene
Lavandulyl isobutyrate	0.06	0.06	Monoterpenic ester
Coumarin	0.01	0.06	Coumarin
<i>trans</i> - α -Bergamotene	0.06	[1.44]*	Sesquiterpene
Isogermacrene D	0.12	0.04	Sesquiterpene
Sesquisabinene A	0.12*	[0.07]*	Sesquiterpene

<i>cis</i> -β-Bergamotene?	[0.12]*		Sesquiterpene
α-Humulene	0.06	0.06	Sesquiterpene
Lavandulyl butyrate?	0.07	0.18	Monoterpenic ester
(<i>E</i>)-β-Farnesene	1.32	1.33	Sesquiterpene
Dauca-5,8-diene?	0.06	0.01	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.10	0.05	Sesquiterpene
Germacrene D	0.62	0.59	Sesquiterpene
<i>trans</i> -β-Bergamotene	0.05	[1.33]*	Sesquiterpene
Isodaucene	0.08	0.05	Sesquiterpene
α-Muurolene	0.01	0.02	Sesquiterpene
Hodiendiol derivative II	0.06		Oxygenated monoterpene
β-Bisabolene	0.47*	[0.12]*	Sesquiterpene
Lavandulyl isovalerate	[0.47]*	0.32	Monoterpenic ester
γ-Cadinene	0.32	0.27	Sesquiterpene
δ-Cadinene	0.02	0.02	Sesquiterpene
β-Sesquiphellandrene	0.13	0.11	Sesquiterpene
Isocaryophyllene epoxide B	0.03	tr	Sesquiterpenic ether
Caryophyllene oxide	0.10*	[0.09]*	Sesquiterpenic ether
Caryophyllene oxide isomer	[0.10]*	0.01	Sesquiterpenic ether
τ-Cadinol	0.22	0.22	Sesquiterpenic alcohol
(3 <i>Z</i>)-Caryophylla-3,8(13)-dien-5β-ol	0.03	tr	Sesquiterpenic alcohol
α-Bisabolol	0.46	0.47	Sesquiterpenic alcohol
Total identified	98.96%	98.31%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied

PHYSICOCHEMICAL DATA

Physical aspect: Faintly yellow liquid

Refractive index: 1.4603 ± 0.0003 (20 °C)

18D17-HBN6-1-CC

COMPLIANCE WITH ISO 8902:2009 (LAVANDIN "GROSSO")

Compound	Min. Content	Max. Content	Observed Content	Complies?
Myrcene	0.3	1	0.5	Yes
Limonene	0.5	1.5	0.8	Yes
1,8-Cineole	4.0	8.0	5.4	Yes
<i>cis</i> -β-Ocimene	0.5	1.5	0.8	Yes
<i>trans</i> -β-Ocimene		1.0	0.3	Yes
Linalool	24	37	35	Yes
Camphor	6.0	8.5	7.4	Yes
Borneol	1.5	3.5	2.7	Yes
Lavandulol	0.2	1.0	0.7	Yes
Terpinen-4-ol	1.5	5.0	3.4	Yes
α-Terpineol	0.3	1.3	0.6	Yes
Hexyl butyrate	0.3	0.5	0.4	Yes
Linalyl acetate	25	38	26.6	Yes
Lavandulyl acetate	1.5	3.5	2.2	Yes
Refractive index	1.4580	1.4620	1.4603	Yes

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method. The oil complies with the ISO standard for lavandin Grosso oil.