GC-MS Profiling Analysis
Prepared for Jade Bloom, Inc

Date: February 23, 2018
Sample: Sweet Fennel
Type: Essential Oil
Source: *Foeniculum vulgare*
Batch: 1005814

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Isovaleral	tr	tr	Aliphatic aldehyde
2-Methylbutyral	tr	tr	Aliphatic aldehyde
Toluene	tr	tr	Simple phenolic
Tricyclene	0.02	0.02	Monoterpene
α-Thujene	0.03	0.03	Monoterpene
α-Pinene	6.27	6.28	Monoterpene
Camphene	0.16*	0.14	Monoterpene
α-Fenchene	[0.16]*	0.02	Monoterpene
β-Pinene	0.53*	0.45	Monoterpene
Sabinene	[0.53]*	0.09	Monoterpene
Myrcene	1.00	0.99	Monoterpene
α-Phellandrene	2.16	2.16	Monoterpene
Δ3-Carene	0.05	0.03	Monoterpene
α-Terpinene	0.04	0.04	Monoterpene
para-Cymene	0.23	0.24	Monoterpene
Limonene	5.05*	4.68	Monoterpene
1,8-Cineole	[5.05]*	0.06	Monoterpenic ether
β-Phellandrene	[5.05]*	0.36	Monoterpene
(*Z*)-β-Ocimene	0.17	0.17	Monoterpene
(*E*)-β-Ocimene	0.02	0.02	Monoterpene
γ-Terpinene	0.26	0.26	Monoterpene
cis-Sabinene hydrate	0.02	0.02	Monoterpenic alcohol
Fenchone	11.85	11.74	Aliphatic alcohol
Terpinolene	[11.85]*	0.07	Monoterpene
para-Cymenene	[11.85]*	tr	Monoterpene
Linalool	0.02	0.02	Monoterpenic alcohol
endo-Fenchol	0.01	0.01	Monoterpenic alcohol
allo-Ocimene	0.01	tr	Monoterpene
Camphor	0.22	0.22	Monoterpenic ketone
Terpinen-4-ol	0.03	0.04	Monoterpenic alcohol
α-Terpineol	0.02	0.01	Monoterpenic alcohol
Methylchavicol	2.34	2.35*	Phenylpropanoid
α-Phellandrene epoxide	0.03	0.01	Monoterpenic ether
para-Propylanisole	0.02	0.01	Phenylpropanoid
(*Z*)-Anethole	0.21*	0.12	Phenylpropanoid
para-Anisaldehyde	[0.21]*	0.10	Simple phenolic
(*E*)-Anethole	68.86	68.65	Phenylpropanoid
Unknown	0.01		Unknown
Unknown	0.01		Phenylpropanoid
para-Acetonylanisole	0.03	0.03	Phenylpropanoid
Unknown	0.01		Unknown
β-Caryophyllene	0.02	0.03	Sesquiterpene
α-Humulene	0.01	[2.35]*	Sesquiterpene
Total identified	**99.67%**	**99.50%**	

*: 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: Clear liquid
Refractive index: 1.5313 ± 0.0003 (20 °C)

COMPLIANCE WITH NF T 75-257:2004 (SWEET FENNEL)

Compound	Min. %	Max. %	Observed %	Complies?
α-Pinene	1	8	6.3	Yes
β-Pinene		1	0.5	Yes
Myrcene		1.5	1.0	Yes
α-Phellandrene	0.2	5	2.2	Yes
Limonene	1	8	4.7	Yes
γ-Terpinene		1.5	0.3	Yes
Fenchone	8	20	11.7	Yes
Methylchavicol	2	6	2.3	Yes
cis-Anethole		0.5	0.1	Yes
trans-Anethole	60	80	68.7	Yes
para-Anisaldehyde		2	0.1	Yes
Refractive index	1.520	1.553	1.5313	Yes

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method. The oil complies with the AFNOR standard for sweet fennel oil.