GC-MS Profiling Analysis
Prepared for Jade Bloom, Inc

Date: October 22, 2018
Sample: Blood Orange
Type: Essential Oil
Source: *Citrus sinensis cv. Sanguinelli*
Batch: 69541

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Toluene	0.01	0.01*	Simple phenolic
Heptanal	0.01		Aliphatic aldehyde
α-Thujene	0.01	[0.01]*	Monoterpene
α-Pinene	0.53	0.52	Monoterpene
β-Pinene	0.45*	0.06	Monoterpene
Sabinene	[0.45]*	0.39	Monoterpene
Myrcene	1.86	1.84	Monoterpene
Octanal	0.22*	0.20	Aliphatic aldehyde
α-Phellandrene	[0.22]*	0.03	Monoterpene
Δ3-Carene	0.18	0.17	Monoterpene
Limonene	93.55*	92.52*	Monoterpene
(*Z*)-β-Ocimene	[93.55]*	0.02*	Monoterpene
1,8-Cineole	[93.55]*	[92.52]*	Monoterpenic ether
para-Cymene	[93.55]*	0.04	Monoterpene
(*E*)-β-Ocimene	0.01	0.02	Monoterpene
γ-Terpinene	0.02	[0.02]*	Monoterpene
cis-Sabinene hydrate	0.01	0.01	Monoterpenic alcohol
Isoterpinolene	0.01*	0.01	Monoterpene
Octanol	[0.01]*	0.02	Aliphatic alcohol
Terpinolene	0.02	0.03	Monoterpene
Linalool	0.37*	0.34	Monoterpenic alcohol
Nonanal	[0.37]*	0.04	Aliphatic aldehyde
trans-para-Mentha-2,8-dien-1-ol	0.03	0.04	Monoterpenic alcohol
cis-Limonene oxide	0.05	0.05	Monoterpenic ether
cis-para-Mentha-2,8-dien-1-ol	0.02	0.01	Monoterpenic alcohol
trans-Limonene oxide	0.04	0.03	Monoterpenic ether
Citronellal	0.05	0.04	Monoterpenic aldehyde
Terpinen-4-ol	0.01	0.01	Monoterpenic alcohol
α-Terpineol	0.06	0.05	Monoterpenic alcohol
Decanal	0.21	0.20	Aliphatic aldehyde
Octyl acetate	0.01	tr	Aliphatic ester
trans-Carveol	0.01	0.04	Monoterpenic alcohol
Nerol	0.01	0.01	Monoterpenic alcohol
Neral	0.08	0.07	Monoterpenic aldehyde
Perillaldehyde	0.01	0.01	Monoterpenic aldehyde
Geranial	0.08	0.07*	Monoterpenic aldehyde
Limonen-10-ol	0.02	0.02	Monoterpenic alcohol
Undecanal	0.01	0.01	Aliphatic aldehyde
Neryl acetate	0.02	0.01	Monoterpenic ester
α-Copaene	0.03	0.02	Sesquiterpene
Geranyl acetate	0.03	0.03	Monoterpenic ester
β-Elemene	0.02	0.01	Sesquiterpene
Dodecanal	0.06	0.06	Aliphatic aldehyde
β-Caryophyllene	0.04	0.03	Sesquiterpene
β-Copaene	0.03	0.03	Sesquiterpene
α-Humulene	0.01	0.01	Sesquiterpene
(*E*)-β-Farnesene	0.01	0.01	Sesquiterpene
Germacrene D	0.02	0.02	Sesquiterpene

Valencene	0.14	0.13	Sesquiterpene
α-Muurolene	0.02	[0.07]*	Sesquiterpene
γ-Cadinene	0.02	0.02	Sesquiterpene
δ-Cadinene	0.03	0.04	Sesquiterpene
Caryophyllene oxide	0.01	0.01	Sesquiterpenic ether
Intermedeol?	0.01	0.03*	Sesquiterpenic alcohol
β-Sinensal	0.03	[0.03]*	Sesquiterpenic aldehyde
α-Sinensal	0.01	0.02	Sesquiterpenic aldehyde
Tangeretin	0.16		Flavonoid
3,3',4',5,6,7,8-Heptamethoxyflavone	0.09		Flavonoid
Nobiletin	0.06		Flavonoid
Myristic acid		0.02	Aliphatic acid
Palmitic acid		0.18	Aliphatic acid
Stearic acid		0.05	Aliphatic acid
cis-Vaccenic acid?		0.04	Aliphatic acid
Linoleic acid		0.05	Aliphatic acid
Oleic acid		0.05	Aliphatic acid
Total identified	**98.83%**	**97.77%**	

*: 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: Bright yellow liquid
Refractive index: 1.4725 ± 0.0003 (20 °C)

ISO 3140:2011 - OIL OF SWEET ORANGE, OBTAINED BY PHYSICAL EXTRACTION OF THE PEEL

Compound	Min. %	Max. %	Observed %	Complies?
β-Sinensal	0.01	0.06	0.03	Yes
Geranial	0.05	0.20	0.08	Yes
Valencene	0.01	0.40	0.14	Yes
Neral	0.03	0.10	0.08	Yes
Linalool	0.15	0.70	0.34	Yes
Decanal	0.1	0.7	0.2	Yes
Nonanal	0.01	0.06	0.04	Yes
Octanal	0.1	0.4	0.2	Yes
Limonene	93.0	96.0	93.5	Yes
Myrcene	1.5	3.5	1.9	Yes
Sabinene	0.2	0.8	0.4	Yes
β-Pinene	0.02	0.15	0.06	Yes
α-Pinene	0.4	0.8	0.5	Yes
Refractive index	1.4700	1.4760	1.4725	Yes

CONCLUSION

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