

GC-MS Profiling Analysis Prepared for Jade Bloom, Inc

Date: November 15, 2018

Sample: White Spruce

Type: Essential Oil

Source: *Picea glauca*

Batch: 180969321

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Isovaleral	tr	tr	Aliphatic aldehyde
2-Ethylfuran	0.01	0.01	Furan
Toluene	tr	0.01	Simple phenolic
Hexanal	0.01	0.01	Aliphatic aldehyde
Octane	tr	tr	Alkane
(2E)-Hexenal	0.01	0.01	Aliphatic aldehyde
(3Z)-Hexenol	0.16	0.17	Aliphatic alcohol
Hexanol	0.07	0.09*	Aliphatic alcohol
Santene	0.13	0.13	Monoterpene
Styrene	0.01	0.01	Simple phenolic
2-Heptanone	0.01	0.01*	Aliphatic ketone
Heptanal	0.01	[0.01]*	Aliphatic aldehyde
Tricyclene	0.48	0.50	Monoterpene
α -Thujene	0.09	0.11	Monoterpene
α -Pinene	18.44	18.32	Monoterpene
Camphene	6.95*	6.92	Monoterpene
α -Fenchene	[6.95]*	0.05	Monoterpene
Thuja-2,4(10)-diene	0.02	0.27*	Monoterpene
meta-Cymene	0.02	0.01	Monoterpene
Sabinene	25.90*	[0.27]*	Monoterpene
β -Pinene	[25.90]*	25.44	Monoterpene
6-Methyl-5-hepten-2-one	0.02	0.01*	Aliphatic ketone
Myrcene	4.66	4.63	Monoterpene
α -Phellandrene	0.31	0.29	Monoterpene
Δ^3 -Carene	3.04	3.02	Monoterpene
α -Terpinene	0.15	0.14	Monoterpene
para-Cymene	0.25	0.24	Monoterpene
Limonene	12.50*	8.07	Monoterpene
1,8-Cineole	[12.50]*	4.37*	Monoterpenic ether
β -Phellandrene	[12.50]*	[4.37]*	Monoterpene
(Z)- β -Ocimene	0.01	0.01	Monoterpene
(E)- β -Ocimene	0.01	0.01	Monoterpene
γ -Terpinene	0.24	0.23	Monoterpene
Unknown	0.01	0.01*	Oxygenated monoterpene
Unknown	0.01		Unknown
meta-Cymenene	0.05	0.02	Monoterpene
γ -Campholenal	0.01	[0.01]*	Aliphatic alcohol
Terpinolene	0.76*	0.67	Monoterpene
para-Cymenene	[0.76]*	0.07	Monoterpene
α -Pinene oxide	0.03*	[0.09]*	Monoterpenic ether
2-Nonanone	[0.03]*	0.02*	Aliphatic ketone
Perillene	0.18*	0.01	Monoterpenic ether
Linalool	[0.18]*	0.17	Monoterpenic alcohol
Nonanal	0.01	[0.02]*	Aliphatic aldehyde
Isoamyl isovalerate	0.01	[0.01]*	Aliphatic ester
endo-Fenchol	0.07	8.04*	Monoterpenic alcohol
3-Methyl-3-butenyl isovalerate	0.01	0.01	Aliphatic ester
cis-para-Menth-2-en-1-ol	0.05	0.02	Monoterpenic alcohol

α -Campholenal	0.03	0.03	Monoterpenic aldehyde
<i>trans</i> -Pinocarveol	0.02	0.03	Monoterpenic alcohol
Camphor	9.40	9.56*	Monoterpenic ketone
Camphene hydrate	0.42	0.47*	Monoterpenic alcohol
Pinocamphone	0.02	[9.56]*	Monoterpenic ketone
Isoborneol	0.05	0.05	Monoterpenic alcohol
Pinocarvone	0.03	0.03	Monoterpenic ketone
Borneol	1.79	2.55*	Monoterpenic alcohol
Unknown	0.02	0.02	Unknown
Isopinocamphone	0.04	0.04	Monoterpenic ketone
Terpinen-4-ol	0.34	0.33	Monoterpenic alcohol
Cryptone	0.04	0.12*	Normonoterpenic ketone
<i>para</i> -Cymen-8-ol	0.04	0.04	Monoterpenic alcohol
α -Terpineol	0.74	[2.55]*	Monoterpenic alcohol
Myrtenal	0.06	0.06	Monoterpenic aldehyde
Myrtenol	0.02	0.05*	Monoterpenic alcohol
Methylchavicol	0.01	0.04	Phenylpropanoid
Unknown	0.06	[0.05]*	Unknown
<i>trans</i> -Carveol	0.05*	0.02	Monoterpenic alcohol
<i>endo</i> -Fenchyl acetate	[0.05]*	0.06*	Monoterpenic ester
3-Methyl-3-butenyl 4-methylvalerate	0.02		Aliphatic ester
Citronellol	0.24	0.28*	Monoterpenic alcohol
Thymol methyl ether	0.08	[0.47]*	Monoterpenic ether
Piperitone	0.55	0.59*	Monoterpenic ketone
Geraniol	0.02	0.04	Monoterpenic alcohol
3-Methyl-3-butenyl hexanoate	0.01	0.01	Aliphatic ester
Unknown	0.03		Unknown
Bornyl acetate	7.75*	[8.04]*	Monoterpenic ester
Isobornyl acetate	[7.75]*	0.04	Monoterpenic ester
<i>trans</i> -Pinocarvyl acetate	0.01	0.01	Monoterpenic ester
3-Methyl-3-butenyl 5-methylhexanoate?	0.02		Aliphatic ester
α -Longipinene	0.05	[0.06]*	Sesquiterpene
Citronellyl acetate	0.03	0.04	Monoterpenic ester
Longicyclene	0.02	0.02	Sesquiterpene
α -Copaene	0.03	0.02	Sesquiterpene
Geranyl acetate	0.03	0.03	Monoterpenic ester
β -Elemene	0.06	0.06*	Sesquiterpene
Longifolene	0.18	0.19	Sesquiterpene
Methyleugenol	0.02	0.02	Phenylpropanoid
β -Caryophyllene	0.15	0.20*	Sesquiterpene
β -Copaene	0.01	[0.06]*	Sesquiterpene
<i>trans</i> - α -Bergamotene	0.02	[0.20]*	Sesquiterpene
Sesquisabinene A	0.02	[0.12]*	Sesquiterpene
3-Methyl-3-butenyl benzoate	0.02		Phenolic ester
α -Humulene	0.11	0.12	Sesquiterpene
(<i>E</i>)- β -Farnesene	0.08	0.06	Sesquiterpene
Ethyl (<i>E</i>)-cinnamate	0.01	0.01	Phenylpropanoid ester
<i>trans</i> -Cadina-1(6),4-diene	0.04	0.04	Sesquiterpene
γ -Muurolene	0.07	0.10	Sesquiterpene
Germacrene D	0.04	[2.55]*	Sesquiterpene
β -Selinene	0.02	0.03	Sesquiterpene

<i>trans</i> -Muurolo-4(15),5-diene	0.04	[0.59]*	Sesquiterpene
α -Selinene	0.03	0.15*	Sesquiterpene
α -Muurolole	0.16	[0.15]*	Sesquiterpene
γ -Cadinene	0.25*	0.24*	Sesquiterpene
β -Bisabolene	[0.25]*	0.06	Sesquiterpene
endo-1-Bourbonanol	0.02		Sesquiterpenic alcohol
<i>trans</i> -Calamenene	0.62*	0.02	Sesquiterpene
δ -Cadinene	[0.62]*	0.64	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.02	0.02	Sesquiterpene
(<i>E</i>)- γ -Bisabolene	0.03	[0.24]*	Sesquiterpene
α -Cadinene	0.04	0.04	Sesquiterpene
α -Calacorene	0.01	0.02	Sesquiterpene
(<i>E</i>)- α -Bisabolene	0.02	[0.28]*	Sesquiterpene
Germacrene B	0.01	0.02	Sesquiterpene
(<i>E</i>)-Nerolidol	0.01	0.01	Sesquiterpenic alcohol
Germacrene D-4-ol	0.01	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	0.01	0.01	Sesquiterpenic ether
Unknown	0.01	0.02*	Oxygenated sesquiterpene
10-epi-Cubenol	0.01		Sesquiterpenic alcohol
1-epi-Cubenol	0.01	[0.02]*	Sesquiterpenic alcohol
τ -Cadinol	0.07*	0.04	Sesquiterpenic alcohol
τ -Muurolole	[0.07]*	0.03	Sesquiterpenic alcohol
α -Muurolole	0.02	0.02	Sesquiterpenic alcohol
α -Cadinol	0.06	0.06	Sesquiterpenic alcohol
α -Bisabolol	0.01	0.01	Sesquiterpenic alcohol
Oplopanone	0.01		Sesquiterpenic alcohol
(3 <i>E</i>)-Cembrene A	0.02		Diterpene
Unknown	0.03		Norditerpene
Manoyl oxide	0.02*		Diterpenic ether
Unknown	[0.02]*	0.01	Oxygenated diterpene
Unknown	0.02	0.02	Diterpene
Manool	0.02	0.02	Diterpenic alcohol
7,13-Abietadiene	0.01	0.01	Diterpene
(<i>Z</i>)-Abienol	0.04	0.03	Diterpenic alcohol
Isopimaral	0.01		Diterpenic aldehyde
Palustral	0.02		Diterpenic aldehyde
Levopimaral	0.01		Diterpenic aldehyde
Abietal	0.01		Diterpenic aldehyde
Methyl dehydroabietate	0.01		Diterpenic ester
Unknown		0.01	Oxygenated monoterpene
Total identified	99.16%	99.01%	

*: 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: 1.4723 \pm 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.