

GC-MS Profiling Analysis Prepared for Jade Bloom, Inc

Date: November 21, 2018

Sample: Cinnamon Leaf

Type: Essential Oil

Source: *Cinnamomum zeylanicum*

Batch: 134630

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Acetic acid	tr		Aliphatic acid
Isovaleral	tr	tr	Aliphatic aldehyde
2-Methylbutyral	tr	tr	Aliphatic aldehyde
Toluene	tr	tr	Simple phenolic
Hexanal	tr	tr	Aliphatic aldehyde
Ethyl 2-methylbutyrate	tr*	tr	Aliphatic ester
(2E)-Hexenal	[tr]*	tr	Aliphatic aldehyde
Hexanol	tr	tr	Aliphatic alcohol
Styrene	0.02	0.02	Simple phenolic
Tricyclene	0.01	0.01	Monoterpene
α -Thujene	0.10	0.10	Monoterpene
α -Pinene	0.75	0.74	Monoterpene
Camphene	0.27*	0.25	Monoterpene
α -Fenchene	[0.27]*	0.01	Monoterpene
Thuja-2,4(10)-diene	tr	0.01*	Monoterpene
Benzaldehyde	0.17	0.17	Simple phenolic
β -Pinene	0.26*	0.25	Monoterpene
Sabinene	[0.26]*	[0.01]*	Monoterpene
6-Methyl-5-hepten-2-one	0.01	0.01	Aliphatic ketone
Myrcene	0.11	0.11	Monoterpene
α -Phellandrene	0.94*	0.92	Monoterpene
Pseudolimonene	[0.94]*	tr	Monoterpene
Δ^3 -Carene	0.07	0.07	Monoterpene
α -Terpinene	0.10	0.10	Monoterpene
ortho-Cymene	0.02	0.68*	Simple phenolic
para-Cymene	0.67	[0.68]*	Monoterpene
Limonene	0.75*	0.28	Monoterpene
β -Phellandrene	[0.75]*	0.39	Monoterpene
1,8-Cineole	[0.75]*	0.08	Monoterpenic ether
Benzyl alcohol	0.06	0.05*	Simple phenolic
(Z)- β -Ocimene	0.02	0.03	Monoterpene
(E)- β -Ocimene	0.04	0.05	Monoterpene
γ -Terpinene	0.03	0.03	Monoterpene
cis-Sabinene hydrate	0.01	0.01	Monoterpenic alcohol
cis-Linalool oxide (fur.)	0.02	0.02	Monoterpenic alcohol
Isoterpinolene	0.01	0.01	Monoterpene
Terpinolene	0.13*	0.09	Monoterpene
para-Cymenene	[0.13]*	0.01	Monoterpene
trans-Linalool oxide (fur.)	[0.13]*	0.03	Monoterpenic alcohol
Linalool	2.14	2.15	Monoterpenic alcohol
Phenylethyl alcohol	0.02	0.03*	Simple phenolic
cis-para-Menth-2-en-1-ol	0.01	0.01	Monoterpenic alcohol
Camphor	0.02	0.01	Monoterpenic ketone
Hydrocinnamal	0.05	0.05	Phenylpropanoid
Borneol	0.08*	0.31*	Monoterpenic alcohol
Benzyl acetate	[0.08]*	0.06	Phenolic ester
Terpinen-4-ol	0.09	0.11	Monoterpenic alcohol
para-Cymen-8-ol	0.03	0.03	Monoterpenic alcohol

α -Terpineol	0.25	[0.31]*	Monoterpenic alcohol
α -Phellandrene epoxide	0.04	0.04	Monoterpenic ether
(Z)-Cinnamal	0.01	[0.05]*	Phenylpropanoid
Hydrocinnamyl alcohol	0.10	0.10	Phenylpropanoid
ortho-Anisaldehyde	0.02	0.03	Simple phenolic
Chavicol	1.15	0.12	Phenylpropanoid
(E)-Cinnamal	[1.15]	1.18*	Phenylpropanoid
Safrole	0.89	0.90	Phenylpropanoid
Carvacrol	0.03	0.03	Monoterpenic alcohol
(E)-Cinnamyl alcohol	0.12	0.14	Phenylpropanoid
α -Cubebene	0.02	0.01	Sesquiterpene
α -Copaene	76.78*	0.49	Sesquiterpene
Eugenol	[76.78]*	76.22*	Phenylpropanoid
cis- β -Elemene	0.01	0.01	Sesquiterpene
β -Cubebene	tr	tr	Sesquiterpene
β -Elemene	0.02	3.04*	Sesquiterpene
α -Gurjunene	0.01	0.01	Sesquiterpene
Methyleugenol	0.05	[1.18]*	Phenylpropanoid
β -Caryophyllene	3.00	[3.04]*	Sesquiterpene
Caryophylla-4(12),8(13)-diene	tr	0.01	Sesquiterpene
(E)-Cinnamyl acetate	1.47	1.46	Phenylpropanoid ester
α -Humulene	0.53*	0.51	Sesquiterpene
(E)-Isoeugenol	[0.53]*	0.02	Phenylpropanoid
allo-Aromadendrene	0.02	0.02	Sesquiterpene
γ -Gurjunene	0.01	0.01	Sesquiterpene
trans-Cadina-1(6),4-diene	0.01	0.02	Sesquiterpene
γ -Muurolene	0.02*	0.03	Sesquiterpene
Germacrene D	[0.02]*	0.01	Sesquiterpene
Unknown	0.02	0.02	Sesquiterpene
Bicyclogermacrene	0.14*	0.07*	Sesquiterpene
Viridiflorene	[0.14]*	0.06	Sesquiterpene
α -Muurolene	0.03	[0.07]*	Sesquiterpene
2,3-Epoxy-cinnamyl acetate I?	0.01	tr	Phenylpropanoid ester
γ -Cadinene	0.06*	0.06	Sesquiterpene
Cubebol	[0.06]*	0.01	Sesquiterpenic alcohol
δ -Cadinene	0.17*	0.15	Sesquiterpene
trans-Calamenene	[0.17]*	0.02	Sesquiterpene
trans-Cadina-1,4-diene	2.36*	tr	Sesquiterpene
Eugenyl acetate	[2.36]*	2.35	Phenylpropanoid ester
(E)-ortho-Methoxycinnamal	tr	tr	Phenylpropanoid
α -Calacorene	0.01	0.01	Sesquiterpene
Isocaryophyllene epoxide B	0.01	[0.03]*	Sesquiterpenic ether
Unknown	0.02	0.01	Phenylpropanoid
Caryophyllenyl alcohol	0.01	0.01	Sesquiterpenic alcohol
Spathulenol	0.01	tr	Sesquiterpenic alcohol
Caryophyllene oxide	0.43*	0.37	Sesquiterpenic ether
Caryophyllene oxide isomer	[0.43]*	0.04	Sesquiterpenic ether
Humulene epoxide II	0.08	0.06	Sesquiterpenic ether
1,10-diepi-Cubenol	0.02	[1.18]*	Sesquiterpenic alcohol
τ -Cadinol	0.04*	[76.22]*	Sesquiterpenic alcohol
τ -Muurolol	[0.04]*	0.04	Sesquiterpenic alcohol
Unknown	0.01	0.01	Sesquiterpenic alcohol

PHYSICOCHEMICAL DATA

Physical aspect: Light yellow liquid

Refractive index: 1.5318 ± 0.0003 (20 °C)

ISO 3524:2004 - OIL OF CINNAMON LEAF, SRI LANKA TYPE

Compound	Min. %	Max. %	Observed %	Complies?
Benzyl benzoate	2.0	4.0	3.2	Yes
Eugenyl acetate	1.3	3.0	2.4	Yes
(E)-Cinnamyl acetate	1.1	1.8	1.5	Yes
Eugenol	70.0	83.0	76.3	Yes
(E)-Cinnamal	0.8	1.5	1.0	Yes
Refractive index	1.5270	1.5400	1.5318	Yes

CONCLUSION

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

