

GC/MS BATCH NUMBER: CA0101

ESSENTIAL OIL: CINNAMON CASSIA
BOTANICAL NAME: CINNAMOMUM CASSIA
ORIGIN: CHINA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CINNAMON OIL	%
(E)-CINNAMALDEHYDE	79.1
(E)-O-METHOXYCINNAMALDEHYDE	8.8
(E)-CINNAMYL ACETATE	3.3
COUMARIN	2.0
BENZALDEHYDE	0.9
PHENYLETHYL ALCOHOL	0.5
(E)-O-METHOXYCINNAMYL ACETATE	0.5
(Z)-CINNAMALDEHYDE	0.4
SALICYLALDEHYDE	0.3
STYRENE	0.1
EUGENOL	0.04
LIMONENE	0.03
ACETOPHENONE	0.03

Comments from Robert Tisserand: This smells like a typical genuine Cassia oil, and it conforms to all 12 key constituents of the ISO standard.

Date : February 26, 2016

SAMPLE IDENTIFICATION

Internal code : 16B22-PTH4-1-LC

Customer identification : Cinnamon Cassia - China - CA010157R

Type : Essential oil

Source : *Cinnamomum cassia*

Customer : Plant Therapy

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Analyst : Alexis St-Gelais, M. Sc., chimiste

Analysis date : 2016-02-26

Checked and approved by :

Alexis St-Gelais, M. Sc., chimiste 2013-174

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Hexanal	1.33	805	0.01	0.01	1028	1.30	Aliphatic aldehyde
<i>cis</i> -Hex-3-en-1-ol	1.97	861	tr	0.01	1342	5.08	Aliphatic alcohol
Styrene	2.38	897	0.11	0.11	1197	3.03	Phenylpropanoid
α -Thujene	2.72	918	0.27	0.27	957	0.97	Monoterpene
α -Pinene	2.81	924	0.08	0.08	946	0.93	Monoterpene
Camphene	3.07	940	0.04	0.04	1012	1.17	Monoterpene
Sabinene	3.49	967	0.02	0.02	1067	1.62	Monoterpene
β -Pinene	3.53	970	0.02	0.02	1049	1.47	Monoterpene
Benzaldehyde	3.61	974	0.89	0.91	1441	6.69	Simple phenolic
Δ 3-Carene	4.07*	1003	0.02	0.01	1100	1.88	Monoterpene
α -Phellandrene	4.07*	1003	[0.02]	tr	1120	2.12	Monoterpene
<i>para</i> -Cymene	4.47*	1026	0.06	0.04	1213	3.25	Monoterpene
Limonene	4.47*	1026	[0.06]	0.03	1144	2.41	Monoterpene
1,8-Cineole	4.52	1029	0.01	0.01	1151	2.49	Monoterp. ether
Salicylaldehyde	5.03*	1058	0.27	0.29	1585	10.30	Simple phenolic
γ -Terpinene	5.03*	1058	[0.27]	tr	1192	2.97	Monoterpene
Benzyl alcohol	5.12	1063	0.04	0.05	1792	20.42	Simple phenolic
Acetophenone	5.42	1080	0.03	0.11	1560	9.55*	Simple phenolic
Linalool	6.00	1109	0.01	0.02	1513	8.13	Monoterp. alcohol
Phenylethyl alcohol	6.40	1127	0.54	0.58	1822	22.29	Simple phenolic
2-Methylbenzofuran	6.63	1138	0.03				Phenylpropanoid
Camphor	6.73	1142	0.03	0.01	1423	6.37	Monoterp. ketone
Hydrocinnamaldehyde	7.40	1173	0.54				Phenylpropanoid
Borneol	7.52*	1178	0.19	0.08	1627	11.83	Monoterp. alcohol
3-Methylbenzofuran	7.52*	1178	[0.19]				Phenylpropanoid
α -Terpineol	8.21	1204	0.02	0.05	1632	12.07	Monoterp. alcohol
(<i>Z</i>)-Cinnamaldehyde	9.05	1227	0.41	0.34	1780	19.71	Phenylpropanoid
Hydrocinnamyl alcohol	9.76	1246	0.02	0.03	1974	32.50	Phenylpropanoid
<i>o</i> -Anisaldehyde	9.82	1247	0.37	0.33	1840	23.59	Simple phenolic
Phenylethyl acetate	10.23	1258	0.07	0.07	1727	16.62	Phenolic ester
(<i>E</i>)-Cinnamaldehyde	12.20	1305	79.05	78.76	1930	29.71	Phenylpropanoid
(<i>E</i>)-Cinnamyl alcohol	13.57	1329	0.16	0.27	2185	40.43	Phenylpropanoid
α -Terpinyl acetate	14.31	1342	0.02	0.01	1617	11.43	Monoterp. ester
α -Ylangene	14.53	1346	0.01	0.01	1418	6.26	Sesquiterpene
α -Copaene	14.93	1353	0.26	0.26	1430	6.51	Sesquiterpene
Eugenol	15.32	1360	0.04	0.04	2072	36.99	Phenylpropanoid
Unknown (m/z = 91, 121 (75), 108 (64), 164 (43))	16.28*	1376	0.17	0.13	1994	33.65*	Phenylpropanoid
β -Elemene	16.28*	1376	[0.17]	0.03	1527	8.55	Sesquiterpene
β -Caryophyllene	17.42	1396	0.10	0.08	1520	8.35	Sesquiterpene
<i>trans</i> - α -Bergamotene	18.86	1415	0.04	0.03	1529	8.62	Sesquiterpene

α -Humulene	19.94	1429	0.01	0.02	1582	10.22	Sesquiterpene
allo-Aromadendrene	20.13	1432	0.04	[0.11]	1560	9.55*	Sesquiterpene
Coumarine	21.02	1443	2.04	2.13	2283	42.87	Coumarin
(E)-Cinnamyl acetate	22.04*	1456	3.30	3.21	2051	36.20	Phenylpropanoid ester
γ -Muuroleone	22.04*	1456	[3.30]	0.09	1611	11.17	Sesquiterpene
Ethyl (E)-cinnamate	23.07	1470	0.04	0.09	2022	35.21*	Phenylpropanoid ester
α -Muuroleone	23.90	1481	0.04	0.04	1645	12.63	Sesquiterpene
γ -Cadinene	25.06	1495	0.06	0.04	1667	13.64	Sesquiterpene
δ -Cadinene	25.48	1500	0.12	0.09	1673	13.93	Sesquiterpene
(E)-Cinnamic acid	25.91	1505	0.22				Phenylpropanoid
trans-Calamenene	26.31	1510	0.05	0.02	1734	16.99	Sesquiterpene
trans- α -Bisabolene	27.93	1529	0.02	0.03	1708	15.45	Sesquiterpene
(E)-o-Methoxycinnamaldehyde	29.49	1548	8.77	8.79	2315	43.62	Phenylpropanoid
Caryophyllene oxide	30.29	1558	0.08	0.06	1851	24.36	Sesquiterp. ether
(E)-Nerolidol	30.88*	1565	0.19	[0.13]	1994	33.65*	Sesquiterp. alcohol
Spathulenol	30.88*	1565	[0.19]	[0.09]	2022	35.21*	Sesquiterp. alcohol
(E)-o-Methoxycinnamyl acetate	37.88	1688	0.45	0.41	2414	45.76	Phenylpropanoid ester
Benzyl benzoate	40.69	1767	0.05	0.05	2487	47.22	Phenolic ester
Phenylethyl benzoate	43.28	1854	0.02	0.05	2572	48.87	Phenolic ester
Total identified			99.28%	98.13%			

*: Two or more compounds are coeluting on this column

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

Note: no correction factor was applied

OTHER DATA

Physical aspect : Bright yellow liquid

Refractive index : 1.6080 \pm 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.



