

ANALYSIS Cypress Essential Oil

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SAMPLE IDENTIFICATION

Internal code : 17E10-FSE5-1-DM

Customer identification : Cypress Whole Plant - Lot #MP17C25

Type : Essential oil

Source : Cupressus sempervirens

Customer : Flowers Shining Everywhere Inc.



ANALYSIS

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

Analyst : Benoit Roger Ph. D.

Analysis date : 2017-05-18

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.	
ε-Fenchene	2.95	901	0.04	0.03	884	0.87	Monoterpene
Tricyclene	3.23	917	0.30	0.31	920	1.01	Monoterpene
α-Thujene	3.32	923	0.58	60.51	960	1.17*	Monoterpene
α-Pinene	3.50	934	60.14	[60.51]	960	1.17*	Monoterpene
α-Fenchene	3.69	945	0.52	0.48	994	1.33	Monoterpene
Camphene	3.71	946	0.30	0.30	1000	1.38	Monoterpene
Thuja-2,4(10)-diene	3.79	951	0.04	1.26	1054	1.88*	Monoterpene
Sabinene	4.13	971	1.29	[1.26]	1054	1.88*	Monoterpene
β-Pinene	4.20	975	1.41	1.37	1038	1.72	Monoterpene
Myrcene	4.48	992	2.31	2.51	1116	2.45*	Monoterpene
Δ ³ -Carene	4.78*	1009	11.53	11.40	1083	2.22	Monoterpene
α-Phellandrene	4.78*	1009	[11.53]	0.03	1109	2.35	Monoterpene
α-Terpinene	4.93	1017	0.23	[2.51]	1116	2.45*	Monoterpene
meta-Cymene	5.06	1024	0.09	[2.51]	1116	2.45*	Monoterpene
para-Cymene	5.12	1027	0.31	0.33	1206	3.62	Monoterpene
Limonene	5.16	1030	2.26	2.26	1140	2.76	Monoterpene
β-Phellandrene	5.19	1033	0.25	0.30	1145	2.82*	Monoterpene
1,8-Cineole	5.23	1033	0.01	[0.30]	1145	2.82*	Monoterp. ether
cis-β-Ocimene	5.34	1039	tr	0.35	1185	3.35*	Monoterpene
trans-β-Ocimene	5.51	1049	0.08	0.07	1200	3.53	Monoterpene
Lavender lactone	5.60	1054	0.03	0.35	1607	12.47	Lactone
γ-Terpinene	5.70	1060	0.36	[0.35]	1185	3.35*	Monoterpene
Isoterpinolene	6.10	1081	0.09	0.08	1216	3.77	Monoterpene
Terpinolene	6.19	1086	2.21	2.16	1223	3.85	Monoterpene
para-Cymenene	6.37	1096	0.10	0.09	1364	5.98	Monoterpene
Linalool	6.62	1107	0.02	0.80	1488	8.51	Monoterp. alcohol
cis-Limonene oxide	7.29	1131	0.02	0.01	1368	6.04	Monoterp. ether
trans-Limonene oxide	7.53	1140	0.02	0.01	1391	6.39	Monoterp. ether
trans-Pinocarveol	7.57	1141	0.01	0.03	1564	10.90	Monoterp. alcohol
Camphor	7.72	1147	0.05	0.06	1422	6.94	Monoterp. ketone
Karahaenone	7.96	1156	0.02	0.02	1433	7.21	Monoterp. ketone
Borneol	8.50	1175	0.06	0.83	1614	12.77*	Monoterp. alcohol
Umbellulone	8.60	1179	0.02	0.03	1549	10.35*	Monoterp. ketone
Terpinen-4-ol	8.70	1182	0.35	0.34	1527	9.54*	Monoterp. alcohol
para-Cymen-8-ol	9.18	1200	0.03	0.03	1764	20.93	Monoterp. alcohol
Myrcenol	9.26	1202	0.01	[0.34]	1527	9.54*	Monoterp. aldehyde
α-Terpineol	9.32	1203	0.05	0.05	1625	13.17	Monoterp. alcohol
Carvacrol methyl ether	10.91	1239	3.38	3.79	1532	9.72*	Monoterp. ether
Bornyl acetate	12.84	1281	0.67	0.81	1500	8.80*	Monoterp. ester
trans-Pinocarvyl acetate	13.53	1297	0.20	0.21	1539	9.99	Monoterp. ester
trans-β-Terpinyl acetate	15.72	1331	0.13	0.16	1601	12.24*	Monoterp. ester

α -Cubebene	15.91	1334	0.52	0.56	1404	6.61	Sesquiterpene
α -Terpinyl acetate	16.54	1343	0.76	[0.83]	1619	12.77*	Monoterp. ester
α -Copaene	17.60	1359	0.14	0.14	1429	7.41	Sesquiterpene
β -Elemene	18.80	1378	0.10	0.09	1522	9.37	Sesquiterpene
α -Cedrene	19.52	1389	0.26	0.26	1481	8.35	Sesquiterpene
β -Funebrene?	20.02	1396	0.77	[0.81]	1500	8.80*	Sesquiterpene
β -Caryophyllene	20.46	1402	0.64	0.69	1519	9.24	Sesquiterpene
β -Cedrene	20.62	1404	0.22	0.22	1512	9.09	Sesquiterpene
Thujopsen	21.53	1415	0.32	[3.79]	1532	9.72*	Sesquiterpene
cis-Muurola-3,5-diene	22.73	1430	0.05	[0.03]	1549	10.35*	Sesquiterpene
α -Humulene	23.22	1436	0.41	0.43	1577	11.38	Sesquiterpene
Thujopsadiene?	23.88	1443	0.18				Sesquiterpene
Germacrene D	25.49*	1463	2.96	2.82	1621	13.01	Sesquiterpene
γ -Muurolene	25.49*	1463	[2.96]	[0.16]	1601	12.24*	Sesquiterpene
Bicyclgermacrene	26.68	1477	0.09	0.15	1639	13.94	Sesquiterpene
α -Muurolene	27.44	1486	0.14	0.17	1643	14.11	Sesquiterpene
γ -Cadinene	28.19	1495	0.15	0.16	1664	15.22	Sesquiterpene
δ -Cadinene	29.13	1508	0.50	0.50	1670	15.52	Sesquiterpene
Caryophyllene oxide	33.61*	1570	0.03	0.02	1845	26.35	Sesquiterp. ether
Spathulenol	33.61*	1570	[0.03]	0.01	2016	36.41	Sesquiterp. alcohol
α -Cedrol	35.17	1599	0.31	0.35	1991	35.29	Sesquiterp. alcohol
Alloaromadendrene epoxide?	36.86	1627	0.06	0.07	1953	33.59	Sesquiterp. ether
α -Cadinol	37.84	1651	0.03	0.06	2122	39.95	Sesquiterp. alcohol
Isopimaradiene?	46.71	1938	0.01				Diterpene
Manoyl oxide	47.58	1973	0.13	0.10	2158	40.96	Diterp. ether
Total identified			98.80%	98.67%			

*: 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: Faintly yellow liquid

Refractive index: 1.4720 \pm 0.0003 (20 °C)

CONCLUSION

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