

GC/MS BATCH NUMBER: BG0101

ESSENTIAL OIL: BLUE CYPRESS
BOTANICAL NAME: CALLITRIS INTRATROPICA
ORIGIN: AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF BLUE CYPRESS OIL	%
GUAIOL	13.5
β -EUDESMOL	13.2
DIHYDROCOLUMELLARIN	11.3
BULNESOL	10.0
γ -EUDESMOL	7.4
β -SELINENE	3.1
MYRTENOIC ACID	2.9
α -SELINENE	2.5
γ -COSTOL	2.5
β -COSTOL	2.0
α -ELEMOL	1.7
CALLITRIN	1.7
CALLITRIN ISOMER I	1.3
CHAMAZULENE	0.2
GUAIAZULENE	0.2

Comments from Robert Tisserand: Smells sweet, almost floral. A good quality Blue Cypress oil.

Date : June 1, 2016

SAMPLE IDENTIFICATION

Internal code : 16E12-PTH6-1-SM

Customer identification : Blue Cypress - Australia - BG010162

Type : Essential oil

Source : *Callitris intratropica*

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 : 2016-05-14

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.	
Tricyclene	3.15	917	0.05	0.04	930	0.83	Monoterpene
α -Pinene	3.34	928	0.55	0.52	950	0.90	Monoterpene
α -Fenchene	3.60	944	0.03	0.03	995	1.09	Monoterpene
Camphene	3.62	945	0.09	0.07	1005	1.13	Monoterpene
Thuja-2,4(10)-diene	3.70	950	0.02	0.02	1058	1.56	Monoterpene
Δ^3 -Carene	4.65*	1007	0.56	0.51	1093	1.84	Monoterpene
α -Phellandrene	4.65*	1007	[0.56]	0.01	1116	2.05	Monoterpene
α -Terpinene	4.83	1017	0.01	0.01	1124	2.14	Monoterpene
para-Cymene	5.01	1027	0.07	0.08	1211	3.16	Monoterpene
Limonene	5.05	1030	0.09	0.09	1142	2.35	Monoterpene
β -Phellandrene	5.08	1031	0.02	0.05	1147	2.42*	Monoterpene
1,8-Cineole	5.13	1034	0.03	[0.05]	1147	2.42*	Monoterp. ether
<i>P. mariana</i> biomarker†	5.91	1077	0.02	0.02	1464	7.01	Monoterp. alcohol
meta-Cymenene	6.08*	1086	0.10	0.06	1364	5.32	Monoterpene
Terpinolene	6.08*	1086	[0.10]	0.02	1226	3.37	Monoterpene
para-Cymenene	6.25	1096	0.10	0.08	1371	5.43	Monoterpene
endo-Fenchol	6.90	1122	0.03	1.85	1530	8.43*	Monoterp. alcohol
Limona ketone	7.08	1129	0.03	0.02	1480	7.30	Simple phenolic
Camphor	7.36	1140	0.08	0.06	1428	6.34	Monoterp. ketone
Borneol	8.30	1174	0.13	0.26	1628	11.58	Monoterp. alcohol
Terpinen-4-ol	8.39	1178	0.08	[1.85]	1530	8.43*	Monoterp. alcohol
para-Cymen-8-ol	8.87	1196	0.05	0.05	1783	19.47	Monoterp. alcohol
Myrtenal	9.07	1203	0.15	[1.85]	1530	8.43*	Monoterp. aldehyde
Verbenone	9.55	1214	0.16	1.33	1603	10.67*	Monoterp. ketone
2-Caren-10-al?	10.63	1238	0.22				Monoterp. aldehyde
3-Caren-10-al?	10.89	1244	0.39				Monoterp. aldehyde
Methyl myrtenate	13.33	1299	0.03				Monoterp. ester
α -Copaene	16.74	1353	0.20	0.07	1425	6.27	Sesquiterpene
β -Elemene	18.43†	1379	4.02	[1.85]	1530	8.43*	Sesquiterpene
β -Caryophyllene	19.71†*	1399	[4.02]	0.03	1520	8.12	Sesquiterpene
Myrtenoic acid	19.71†*	1399	[4.02]	2.87	2305	43.15	
α -Guaiene	21.55	1422	0.53	[1.85]	1530	8.43*	Sesquiterpene
Unknown (m/z = 79, 105 (70), 77 (68), 91 (66), 123 (62))	21.87	1426	0.20				Monoterp. acid
α -Humulene	22.75*	1437	0.55	0.13	1586	10.14	Sesquiterpene
Unknown (m/z = 79, 121 (78), 105 (77), 91 (66), 123 (51))	22.75*	1437	[0.55]				Monoterp. acid
4,5-diepi-Aristolochene	23.93	1451	0.43	[1.33]	1603	10.67*	Sesquiterpene
Dehydroaromadendrene?	24.37	1456	1.70	1.68	1651	12.64	Sesquiterpene

Unknown (m/z = 189, 105 (80), 133 (77), 91 (76), 204 (51))	24.52	1458	1.12	[1.33]	1603	10.67*	Sesquiterpene
Liguloxide or agarofuran analog	25.22	1466	1.23	1.02	1613	10.94	Sesquiterp. ether
β-Selinene	25.60	1471	3.09	2.84	1632	11.77	Sesquiterpene
α-Selinene	26.23	1479	2.51	3.28	1639	12.10*	Sesquiterpene
δ-Guaiene	26.86	1486	0.57	[3.28]	1639	12.10*	Sesquiterpene
Selina-3,7(11)-diene	29.53	1521	0.13	0.41	1684	14.11	Sesquiterpene
α-Cadinene	29.63	1522	0.12	0.15	1703	14.94	Sesquiterpene
α-Elemol	31.81	1552	1.65	1.65	1999	33.49	Sesquiterp. alcohol
Guaiol	34.97	1595	13.46	13.52	2009	34.11	Sesquiterp. alcohol
10-epi-γ-Eudesmol	35.06	1596	0.03	0.04	1986	32.67	Sesquiterp. alcohol
Unknown (m/z = 161, 105 (52), 107 (47), 59 (44), 91 (43), 93 (42), 189 (41)... 222 (6))	35.36	1600	0.74	0.50	2022	34.83	Oxygenated sesquiterpene
Unknown (m/z = 43, 81 (100), 135 (77), 204 (72), 67 (70), 71 (68), 189 (63), 207 (62), 95 (61)... 222 (5))	35.62*	1605	0.30	0.15	2041	35.60	Oxygenated sesquiterpene
Rosifoliol analog?	35.62*	1605	[0.30]	0.21	2016	34.48	Sesquiterp. alcohol
Eremoligenol	36.25	1620	0.64	0.52	2078	36.89	Sesquiterp. alcohol
γ-Eudesmol	36.53	1627	7.42	7.92	2072	36.69	Sesquiterp. alcohol
Hinesol	36.73	1631	0.21				Sesquiterp. alcohol
β-Eudesmol	37.51††*	1650	13.16	20.41	2117	38.24*	Sesquiterp. alcohol
α-Eudesmol	37.51*	1650	[11.63]	1.48	2118	38.28	Sesquiterp. alcohol
Selin-11-en-4-α-ol	37.60††	1652	[13.16]	0.79	2133	38.79	Sesquiterp. alcohol
Bulnesol	38.02	1663	9.99	[20.41]	2117	38.24*	Sesquiterp. alcohol
epi-β-Bisabolol	38.46	1673	0.24	0.26	2084	37.10	Sesquiterp. alcohol
β-Bisabolol	38.53	1675	0.14	0.25	2077	36.84	Sesquiterp. alcohol
α-Bisabolol	38.92	1684	0.28	0.26	2145	39.11*	Sesquiterp. alcohol
Chamazulene	40.30	1722	0.21	0.12	2232	41.46	Azulene
γ-Costol	40.93	1742	2.50	2.38	2396	45.14	Sesquiterp. alcohol
Unknown (m/z = 91, 105 (71), 79 (52), 77 (50), 93 (47), 143 (47)... 218 (9))	41.10	1747	0.46				Oxygenated sesquiterpene
β-Costol	41.62	1764	2.04	3.24	2453	46.33*	Sesquiterp. alcohol
Guaiazulene	41.76*	1768	1.63	0.16	2265	42.21	Azulene
α-Costol	41.76*	1768	[1.63]	[3.24]	2453	46.33*	Sesquiterp. alcohol
Unknown lactone (m/z = 233, 91 (76), 173 (66), 105 (54), 79 (47), 201 (46), 93 (44), 145 (44), 248 (41))	41.96	1774	0.29	[0.26]	2145	39.11*	Sesquiterp. lactone

Callitrin isomer	42.64	1797	0.44	0.44	2479	46.84	Sesquiterp. lactone
Callitrin	43.29	1819	1.65	1.69	2489	47.04	Sesquiterp. lactone
Callitrin isomer I	44.23	1853	1.28	1.16	2502	47.30	Sesquiterp. lactone
Unknown (m/z = 159, 131 (22), 91 (20), 119 (18), 105 (17), 232 (15))	45.13	1886	0.30	0.30	2523	47.70	Sesquiterp. lactone
Dihydrocolumellarin	45.52	1901	11.26	11.16	2545	48.14	Sesquiterp. lactone
Unknown (m/z = 219, 107 (33), 91 (29), 145 (24), 93 (23), 105 (22), 234 (20))	45.65	1905	0.34	0.57	2561	48.44	Sesquiterp. lactone
Columellarin isomer?	46.40	1935	1.51	1.59	2646	50.03	Sesquiterp. lactone
Callitrisin isomer II	46.51	1940	0.47	0.51	2697	50.94	Sesquiterp. lactone
Columellarin	46.65*	1945	1.23	0.74	2653	50.16	Sesquiterp. lactone
Callitrisin	46.65*	1945	[1.23]	0.63	2722	51.41	Sesquiterp. lactone
Dihydrocallitrisin	46.86	1954	0.20				Sesquiterp. lactone
Total identified			89.81%	88.94%			

*: Two or more compounds are coeluting on this column

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

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

‡: Also characteristic of a number of other coniferous species, including this one.

Note: no correction factor was applied

OTHER DATA

Physical aspect : Blue liquid with tiny crystalline needles

Refractive index : 1.5070 ± 0.0003 (20 °C)

CONCLUSION

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



