

GC/MS BATCH NUMBER: BG0102

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF BLUE CYPRESS OIL	%
GUAIOL	13.2
DIHYDROCOLUMELLARIN	11.7
β -EUDESMOL	10.5
BULNESOL	9.6
γ -EUDESMOL	7.2
MYRTENOIC ACID	3.4
β -SELINENE	2.7
γ -COSTOL	2.4
α -SELINENE	2.0
β -COSTOL	1.9
CALLITRIN	1.7
α -ELEMOL	1.5
α -EUDESMOL	1.4
CALLITRISIN ISOMER I	1.2
α -PINENE	1.1

Comments from Robert Tisserand: A genuine Blue Cypress oil with typical soft odor quality and constituents in expected amounts.

Date : December 22, 2016

SAMPLE IDENTIFICATION

Internal code : 16L12-PTH3-1-DM

Customer identification : Blue Cypress - BG010267R

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 : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2016-12-20

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	3.19	914	0.06	0.05	932	0.81	Monoterpene
α -Thujene	3.28	920	tr	0.01	944	0.85	Monoterpene
α -Pinene	3.38	926	1.13	1.11	952	0.89	Monoterpene
α -Fenchene	3.65	942	0.02	0.02	993	1.06	Monoterpene
Camphene	3.67	943	0.07	0.06	1004	1.10	Monoterpene
Thuja-2,4(10)-diene	3.77	949	0.02	0.02	1054	1.49*	Monoterpene
Sabinene	4.10	970	0.01	[0.02]	1054	1.49*	Monoterpene
β -Pinene	4.16	973	0.03	0.03	1042	1.39	Monoterpene
Δ 3-Carene	4.72*	1006	0.50	0.46	1093	1.80	Monoterpene
α -Phellandrene	4.72*	1006	[0.50]	0.01	1112	1.96	Monoterpene
α -Terpinene	4.91	1017	0.02	0.01	1125	2.09	Monoterpene
para-Cymene	5.11	1028	0.06	0.07	1206	3.04	Monoterpene
Limonene	5.13	1029	0.21	0.22	1143	2.31	Monoterpene
β -Phellandrene	5.16	1031	0.04	0.05	1148	2.37*	Monoterpene
1,8-Cineole	5.19	1032	0.04	[0.05]	1148	2.37*	Monoterp. ether
γ -Terpinene	5.69	1060	0.01	0.01	1190	2.86	Monoterpene
<i>P. mariana</i> biomarker‡	5.97	1074	0.02	0.03	1446	6.54	Monoterp. alcohol
meta-Cymenene	6.08	1081	0.02	0.02	1375	5.40	Monoterpene
Terpinolene	6.16	1085	0.05	0.04	1226	3.30	Monoterpene
para-Cymenene	6.40	1097	0.10	0.07	1365	5.25	Monoterpene
endo-Fenchol	7.18	1127	0.02	0.02	1506	7.66	Monoterp. alcohol
Limona ketone	7.23	1129	0.03	0.02	1463	6.86	Simple phenolic
trans-Pinocarveol	7.63	1144	0.12	0.16	1556	8.99	Monoterp. alcohol
Camphor	7.72	1147	0.02	0.01	1419	6.03	Monoterp. ketone
Pinocamphone	8.09	1161	0.05	0.05	1425	6.13	Monoterp. ketone
Isoborneol	8.17	1164	0.03	0.04	1575	9.57	Monoterp. alcohol
Borneol	8.68	1183	0.11	1.47	1612	10.65*	Monoterp. alcohol
Terpinen-4-ol	8.79	1187	0.03	0.13	1525	8.07*	Monoterp. alcohol
Myrtenal	9.27*	1201	0.14	0.49	1540	8.48*	Monoterp. aldehyde
para-Cymen-8-ol	9.27*	1201	[0.14]	0.06	1756	17.14	Monoterp. alcohol
α -Terpineol	9.50	1207	0.30	0.27	1619	10.86	Monoterp. alcohol
Verbenone	9.78	1213	0.19	[1.47]	1612	10.65*	Monoterp. ketone
Eucarvone	9.92	1216	0.04				Monoterp. ketone
2-Caren-10-al?	11.23	1246	0.24				Monoterp. aldehyde
3-Caren-10-al?	11.38	1249	0.11				Monoterp. aldehyde
Methyl myrtenate	13.67	1298	0.03				Monoterp. ester
α -Copaene	17.31	1354	0.05	0.07	1435	6.33	Sesquiterpene
β -Elemene	18.85	1378	0.92	0.92	1537	8.40	Sesquiterpene
β -Caryophyllene	20.46	1401	0.14	[0.13]	1525	8.07*	Sesquiterpene
α -Guaiene	21.96*	1419	3.46	[0.49]	1540	8.48*	Sesquiterpene

Myrtenoic acid	21.96*	1419	[3.46]	3.40	2292	42.18	Monoterp. acid
α-Humulene	23.27	1435	0.17	0.19	1587	9.91*	Sesquiterpene
4,5-diepi-Aristolochene	24.62	1451	0.19	[0.19]	1587	9.91*	Sesquiterpene
Unknown (m/z = 189, 105 (80), 133 (77), 91 (76), 204 (51))	25.00*	1456	2.40	0.13	1595	10.13	Sesquiterpene
Dehydroaromadendrene?	25.00*	1456	[2.40]	1.50	1658	12.48	Sesquiterpene
Liguloxide or agarofuran analog	25.76	1465	1.60	1.27	1623	10.98	Sesquiterp. ether
β-Selinene	26.19	1470	2.73	2.40	1642	11.77	Sesquiterpene
α-Selinene	26.82	1477	2.04	2.66	1649	12.09*	Sesquiterpene
δ-Guaiene	27.42	1484	0.67	[2.66]	1649	12.09*	Sesquiterpene
Selina-3,7(11)-diene	30.13	1520	0.14	0.09	1676	13.26	Sesquiterpene
α-Cadinene	30.28	1522	0.14	0.09	1708	14.64	Sesquiterpene
α-Elemol	32.80	1556	1.52	1.60	2001	32.45	Sesquiterp. alcohol
Guaiol	35.64	1596	13.19	13.22	2014	33.24	Sesquiterp. alcohol
Rosifoliol analog?	35.73	1598	0.11	0.12	2018	33.50	Sesquiterp. alcohol
10-epi-γ-Eudesmol	36.00*	1605	0.78	0.11	1984	31.44	Sesquiterp. alcohol
Unknown (m/z = 161, 105 (52), 107 (47), 59 (44), 91 (43), 93 (42), 189 (41)... 222 (6))	36.00*	1605	[0.78]	0.11	2015	33.30	Oxygenated sesquiterpene
Unknown (m/z = 43, 81 (100), 135 (77), 204 (72), 67 (70), 71 (68), 189 (63), 207 (62), 95 (61)... 222 (5))	36.29	1612	0.27	0.28	2032	34.27	Oxygenated sesquiterpene
Eremoligenol	36.88	1626	0.57	0.67	2097	36.77	Sesquiterp. alcohol
γ-Eudesmol	37.16	1633	7.17	7.30	2072	35.97	Sesquiterp. alcohol
Hinesol	37.35	1637	0.30	18.89	2121	37.60*	Sesquiterp. alcohol
Selin-11-en-4-α-ol	38.13*	1656	10.86	0.42	2137	38.14	Sesquiterp. alcohol
β-Eudesmol	38.13*	1656	[10.86]	[18.89]	2121	37.60*	Sesquiterp. alcohol
α-Eudesmol	38.19	1658	1.39	1.34	2122	37.64	Sesquiterp. alcohol
Bulnesol	38.60	1668	9.55	[18.89]	2121	37.60*	Sesquiterp. alcohol
epi-β-Bisabolol	38.70	1670	0.77	0.91	2079	36.17	Sesquiterp. alcohol
β-Bisabolol	39.04	1677	0.49	0.31	2085	36.41	Sesquiterp. alcohol
α-Bisabolol	39.36	1685	0.19	0.19	2127	37.82	Sesquiterp. alcohol
Chamazulene	40.68	1724	0.20	0.18	2240	40.93	Azulene
γ-Costol	41.54	1751	2.42	2.31	2396	44.44	Sesquiterp. alcohol
Unknown (m/z = 91, 105 (71), 79 (52), 77 (50), 93 (47), 143 (47)... 218 (9))	41.77	1758	0.57				Oxygenated sesquiterpene
β-Costol	42.27	1774	1.90	3.21	2455	45.64*	Sesquiterp. alcohol
Guaiazulene	42.39*	1778	1.59	0.15	2263	41.54	Azulene
α-Costol	42.39*	1778	[1.59]	[3.21]	2455	45.64*	Sesquiterp. alcohol

Callitrin isomer	42.90	1794	0.49	0.57	2478	46.09	Sesquiterp. lactone
Callitrin	43.84	1828	1.74	1.74	2494	46.40	Sesquiterp. lactone
Callitrisin isomer I	44.70	1860	1.18	1.17	2505	46.62	Sesquiterp. lactone
Unknown (m/z = 159, 131 (22), 91 (20), 119 (18), 105 (17), 232 (15))	45.59	1891	0.44	0.38	2530	47.08	Sesquiterp. lactone
Dihydrocolumellarin	46.02	1908	11.65	11.14	2557	47.58	Sesquiterp. lactone
Unknown (m/z = 219, 107 (33), 91 (29), 145 (24), 93 (23), 105 (22), 234 (20))	46.11	1912	0.19	0.19	2571	47.85	Sesquiterp. lactone
Columellarin isomer?	46.89	1943	1.57	1.59	2655	49.36	Sesquiterp. lactone
Callitrisin isomer II	47.05	1950	0.44	0.42	2709	50.31	Sesquiterp. lactone
Columellarin	47.12	1952	0.70	0.72	2668	49.59	Sesquiterp. lactone
Callitrisin	47.19	1955	0.77	0.76	2732	50.71	Sesquiterp. lactone
Dihydrocallitrisin	47.24	1957	0.28				Sesquiterp. lactone
Total identified			87.94%	86.77%			

*: Two or more compounds are coeluting on this column

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

‡: Also characteristic of a number of other conifers.

Note: no correction factor was applied

OTHER DATA

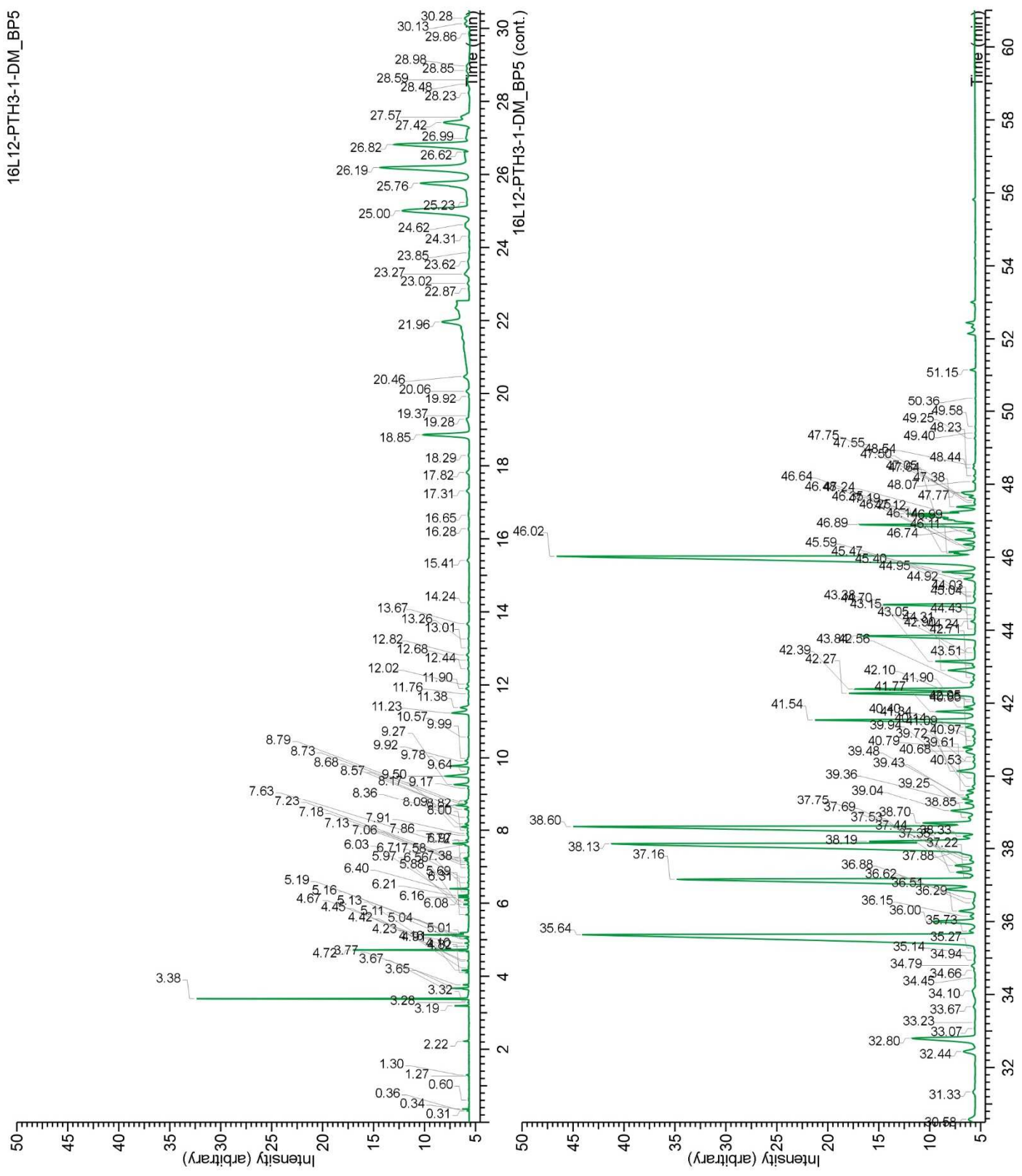
Physical aspect : Blue liquid

Refractive index : 1.5060 ± 0.0003 (20 °C)

CONCLUSION

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

16L12-PTH3-1-DM_BP5



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