



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: FB0103

ESSENTIAL OIL: FRANKINCENSE CARTERI C02

BOTANICAL NAME: BOSWELLIA CARTERII

ORIGIN: SOMALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FRANKINCENSE CARTERI C02 OIL	%
α -Pinene	23.81
Limonene	8.24
Serratol	6.03
Δ 3-Carene	4.40
β -Caryophyllene	4.21
Sabinene	4.03
Myrcene	3.93
p-Cymene	2.14
Cubebol	1.81
Caryophyllene oxide	1.50
α -Phellandrene	1.54
α -Amyrin	1.29
Lanosterol	1.25
trans-Verbenol	1.19
α -Copaene	1.06
Germacrene D	1.02

Comments from Robert Tisserand: Beautifully rich, resinous-green-lemon odor quality. Contains 16% of heavy molecules, almost entirely not found in the essential oil.

Date : January 10, 2018

SAMPLE IDENTIFICATION

Internal code : 18A04-PTH4-1-CC

Customer identification : Frankincense Carteri CO2 - Somalia - FB10375R

Type : Essential oil

Source : *Boswellia carterii*

Customer : Plant Therapy

ANALYSIS

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

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2018-01-10

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.	
Toluene	1.32	759	0.02	23.34	954	1.07*	Simple phenolic
Tricyclene	3.21*	914	0.13	0.04	916	0.94	Monoterpene
Hashishene	3.21*	914	[0.13]	[23.34]	954	1.07*	Monoterpene
α -Thujene	3.32	920	0.59	0.74	959	1.09	Monoterpene
α -Pinene	3.47	929	23.81	[23.34]	954	1.07*	Monoterpene
α -Fenchene	3.69	942	0.01	0.01	986	1.24	Monoterpene
Camphene	3.71	944	0.39	0.38	994	1.30	Monoterpene
Thuja-2,4(10)-diene	3.81	949	0.02	3.72	1061	1.79*	Monoterpene
Sabinene	4.16	970	4.03	[3.72]	1061	1.79*	Monoterpene
β -Pinene	4.21	973	0.85	0.83	1039	1.62	Monoterpene
Myrcene	4.50	990	3.93	4.05	1115	2.34*	Monoterpene
Δ^3 -Carene	4.79*	1006	6.06	4.40	1093	2.08	Monoterpene
α -Phellandrene	4.79*	1006	[6.06]	1.54	1107	2.24	Monoterpene
α -Terpinene	4.95	1015	0.07	[4.05]	1115	2.34*	Monoterpene
meta-Cymene	5.06	1021	0.02	0.02	1119	2.39	Monoterpene
Limonene	5.22*	1029	10.62	8.24	1141	2.65	Monoterpene
para-Cymene	5.22*	1029	[10.62]	2.14	1208	3.50	Monoterpene
β -Phellandrene	5.24	1030	0.44	0.56	1144	2.70*	Monoterpene
1,8-Cineole	5.25	1031	0.08	[0.56]	1144	2.70*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.36	1037	0.16	0.19	1181	3.19*	Monoterpene
<i>trans</i> - β -Ocimene	5.54	1047	0.09	0.08	1201	3.39	Monoterpene
γ -Terpinene	5.73	1057	0.06	[0.19]	1181	3.19*	Monoterpene
<i>cis</i> -Sabinene hydrate	6.08	1076	0.06	0.04	1414	6.64	Monoterp. alcohol
Terpinolene	6.21	1083	0.09	0.08	1221	3.68	Monoterpene
para-Cymenene	6.44	1096	0.07	0.08	1360	5.72	Monoterpene
Perillene	6.55	1100	0.06	0.05	1351	5.58	Monoterp. ether
<i>trans</i> -Sabinene hydrate	6.72*	1107	0.17	0.05	1489	8.16	Monoterp. alcohol
Linalool	6.72*	1107	[0.17]	0.21	1501	8.55	Monoterp. alcohol
<i>cis</i> -Verbenol?	6.88	1112	0.29	3.95	1513	8.92*	Monoterp. alcohol
β -Thujone	7.03	1118	0.09	0.11	1373	5.92	Monoterp. ketone
<i>trans</i> -para-Mentha-2,8-dien-1-ol	7.28	1127	0.20	0.24	1551	10.14	Monoterp. alcohol
α -Campholenal	7.34	1129	0.12				Monoterp. aldehyde
<i>trans</i> -Pinocarveol	7.64	1140	0.37	0.30	1572	10.81	Monoterp. alcohol
<i>trans</i> -para-Mentha-2-en-1-ol	7.72	1143	0.10	0.11	1564	10.57	Monoterp. alcohol
<i>trans</i> -Verbenol	7.87	1148	1.19	1.19	1603	12.00*	Monoterp. alcohol
Pinocarvone	8.24	1161	0.09	0.05	1475	7.89	Monoterp. ketone
α -Phellandren-8-ol	8.47	1170	0.14				Monoterp. alcohol
Borneol	8.74	1180	0.10	0.31	1615	12.56*	Monoterp. alcohol
Terpinen-4-ol	8.84	1183	0.19	0.24	1528	9.39*	Monoterp. alcohol
para-Cymen-8-ol	9.22	1197	0.12	0.17	1768	20.90	Monoterp. alcohol

Myrtenal	9.36	1200	0.07	[0.24]	1528	9.39*	Monoterp. aldehyde
Myrtenol	9.44	1202	0.16	0.14	1706	17.06	Monoterp. alcohol
α -Terpineol	9.53	1204	0.39	0.34	1621	12.86	Monoterp. alcohol
α -Phellandrene epoxide	9.80	1210	0.16	0.22	1719	17.86	Monoterpene
Verbenone	9.86	1211	0.43	0.40	1601	11.91	Monoterp. ketone
<i>trans</i> -Carveol	10.55	1226	0.18	0.18	1754	20.05	Monoterp. alcohol
Neral	11.13	1239	0.06	[1.19]	1603	12.00*	Monoterp. aldehyde
Carvone	11.45	1246	0.17	0.10	1628	13.19	Monoterp. ketone
3,5-Dimethoxytoluene	12.65	1272	0.08				Simple phenolic
Bornyl acetate	12.94	1279	0.22	0.24	1507	8.73	Monoterp. ester
Bicycloelemene	14.75	1312	0.14	1.05	1423	6.82*	Sesquiterpene
Methyl undecyl ether	15.76	1327	0.11	0.14	1412	6.61	Aliphatic ether
α -Cubebene	16.02	1331	0.10	0.11	1408	6.52	Sesquiterpene
Carvacrol	16.27	1335	0.12	0.70	2111	39.51*	Monoterp. alcohol
α -Terpinyl acetate	16.71	1341	0.05	[0.31]	1615	12.56*	Monoterp. ester
α -Copaene	17.79	1357	1.06	[1.05]	1423	6.82*	Sesquiterpene
β -Bourbonene	18.19	1364	0.11	0.12	1443	7.23	Sesquiterpene
β -Cubebene	18.73	1372	0.07	0.07	1468	7.74	Sesquiterpene
β -Elemene	19.02	1376	0.48	0.46	1515	8.99	Sesquiterpene
α -Gurjunene	19.73	1387	0.13	0.11	1454	7.46	Sesquiterpene
β -Caryophyllene	20.77	1401	4.21	[3.95]	1513	8.92*	Sesquiterpene
β -Copaene	21.61	1411	0.04	0.07	1517	9.04	Sesquiterpene
<i>trans</i> - α -Bergamotene	22.22	1419	0.09	[0.24]	1528	9.39*	Sesquiterpene
6,9-Guaiadiene	22.65	1424	0.04	0.02	1543	9.87	Sesquiterpene
α -Humulene	23.52	1434	0.98	0.98	1575	10.91	Sesquiterpene
allo-Aromadendrene	23.76	1437	0.20	0.12	1559	10.39	Sesquiterpene
Selina-4,11-diene	25.21	1454	0.04				Sesquiterpene
γ -Muuroolene	25.61	1459	0.34	[1.19]	1603	12.00*	Sesquiterpene
Germacrene D	25.76	1461	1.02	1.08	1611	12.38	Sesquiterpene
β -Selinene	26.36	1468	0.35	0.27	1623	12.95	Sesquiterpene
α -Selinene	27.00*	1475	0.35	0.17	1634	13.44	Sesquiterpene
Bicyclgermacrene	27.00*	1475	[0.35]	0.09	1637	13.59	Sesquiterpene
α -Muuroolene	27.65	1483	0.21	0.15	1645	13.98	Sesquiterpene
4-epi-Cubebol	27.78	1485	0.19	0.20	1797	22.73	Sesquiterp. alcohol
γ -Cadinene	28.85	1497	0.66	0.62	1657	14.55	Sesquiterpene
δ -Cadinene	29.48*	1506	2.45	0.85	1664	14.86	Sesquiterpene
Cubebol	29.48*	1506	[2.45]	1.81	1838	25.74	Sesquiterp. alcohol
α -Cadinene	30.99	1528	0.06	0.05	1691	16.16	Sesquiterpene
Liguloxide	32.35	1547	0.05				Sesquiterp. ether
α -Elemol	33.13	1558	0.06	0.04	2008	36.04	Sesquiterp. alcohol
Caryophyllene oxide	33.97*	1570	2.34	1.50	1846	26.27	Sesquiterp. ether
Germacrene D-4-ol	33.97*	1570	[2.34]	0.21	1947	32.83	Sesquiterp. alcohol
Spathulenol	34.09	1571	0.13	0.11	2012	36.19	Sesquiterp. alcohol
Viridiflorol	34.97	1584	0.46	0.36	1970	34.22	Sesquiterp. alcohol

Humulene epoxide II	35.60	1593	0.37	0.41	1889	29.43	Sesquiterp. ether
10-epi- γ -Eudesmol	35.91	1597	0.18				Sesquiterp. alcohol
Copaborneol	36.17	1603	0.27				Sesquiterp. alcohol
τ -Cadinol	37.66	1640	0.95	0.93	2063	37.98	Sesquiterp. alcohol
τ -Muurolol	37.88	1645	0.09	0.06	2092	38.98	Sesquiterp. alcohol
β -Eudesmol	37.99	1648	0.11	0.07	2103	39.28	Sesquiterp. alcohol
α -Cadinol	38.19	1653	0.12	0.10	2119	39.72	Sesquiterp. alcohol
Shyobunol	38.92	1671	0.11	0.13	2195	41.77	Sesquiterp. alcohol
Dimer of α -phellandrene II	42.38	1773	0.27	0.27	1832	25.31	Diterpene
Dimer of α -phellandrene III	42.72	1783	0.04				Diterpene
Dimer of α -phellandrene IV	43.37	1805	0.08				Diterpene
Pentadecanol	45.69	1889	0.05				Aliphatic alcohol
(3E)-Cembrene A	46.74	1931	0.63	[0.70]	2111	39.51*	Diterpene
meta-Camphorene	46.98	1940	0.16	0.17	2117	39.66	Diterpene
para-Camphorene	47.96	1980	0.14	0.17	2184	41.49	Diterpene
Verticilla-4(20),7,11-triene	48.09	1985	0.40				Diterpene
Thunbergol?	49.91	2062	0.10	0.16	2442	47.33	Diterp. alcohol
Cembrenol	51.28	2122	0.74	0.71	2624	50.88	Diterp. alcohol
Serratol	51.61*	2137	6.87	6.03	2570	49.85	Diterp. alcohol
Incensole	51.61*	2137	[6.87]	0.57	2691	52.12	Diterp. alcohol
Incensole oxide	52.12	2160	0.16				Diterp. ether
24-Noroleana-3,12-diene	67.31	2976	0.04				Nortriterpene
24-Norursa-3,12-diene	68.03	3022	0.14				Nortriterpene
Lanosta-8,24-dien-3-one?	71.56	3249	0.49				Triterp. ketone
Lanosterol analog	71.80	3264	0.34				Triterp. alcohol
β -Amyrin	71.94	3272	0.49				Triterp. alcohol
Lanosterol	72.12	3283	1.25	1.82	3996	72.83	Triterp. alcohol
β -Amyrin acetate?	72.80	3320	1.32				Triterp. ester
α -Amyrin	73.01	3331	1.29				Triterp. alcohol
α -Amyrin acetate?	73.35	3348	1.24				Triterp. ester
Lupenyl acetate?	73.62	3361	0.59				Triterp. ester
Total identified			92.42%	82.14%			

*: 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

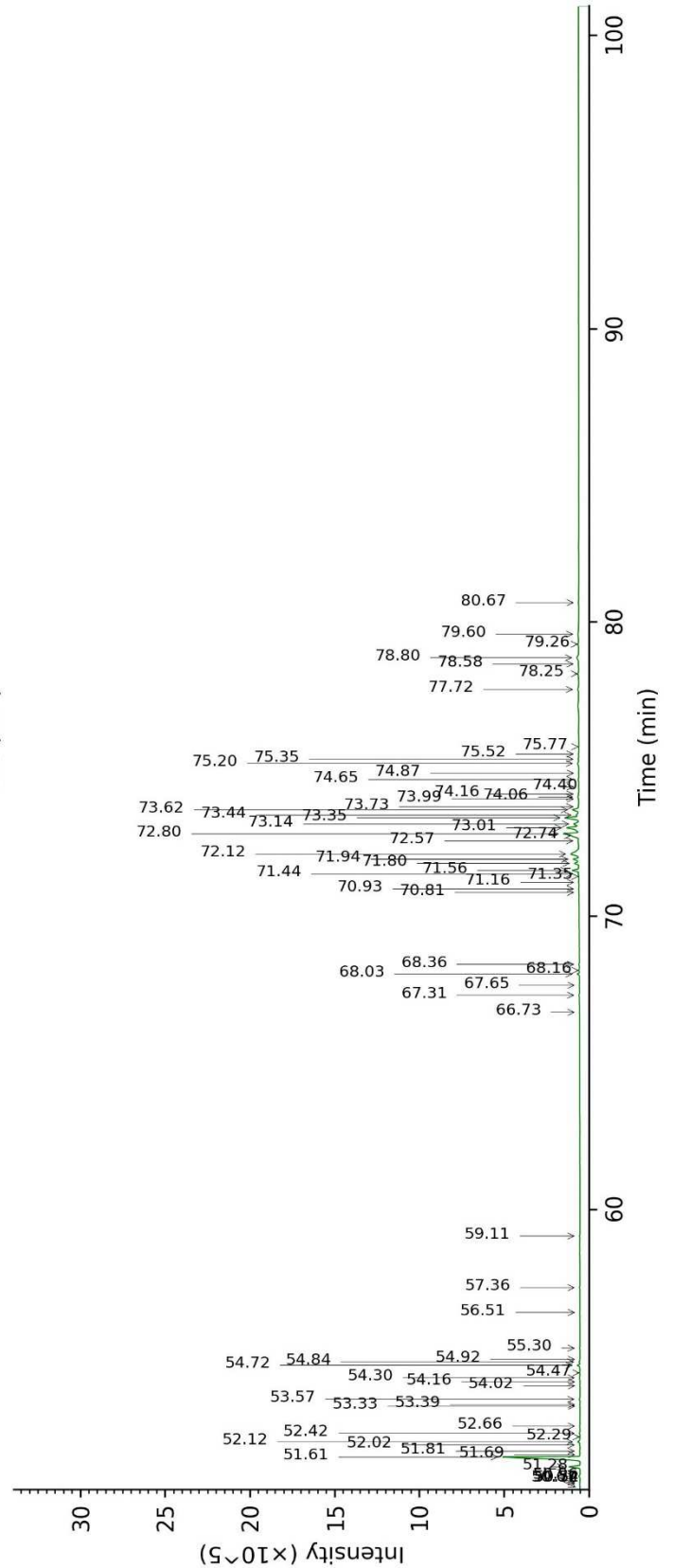
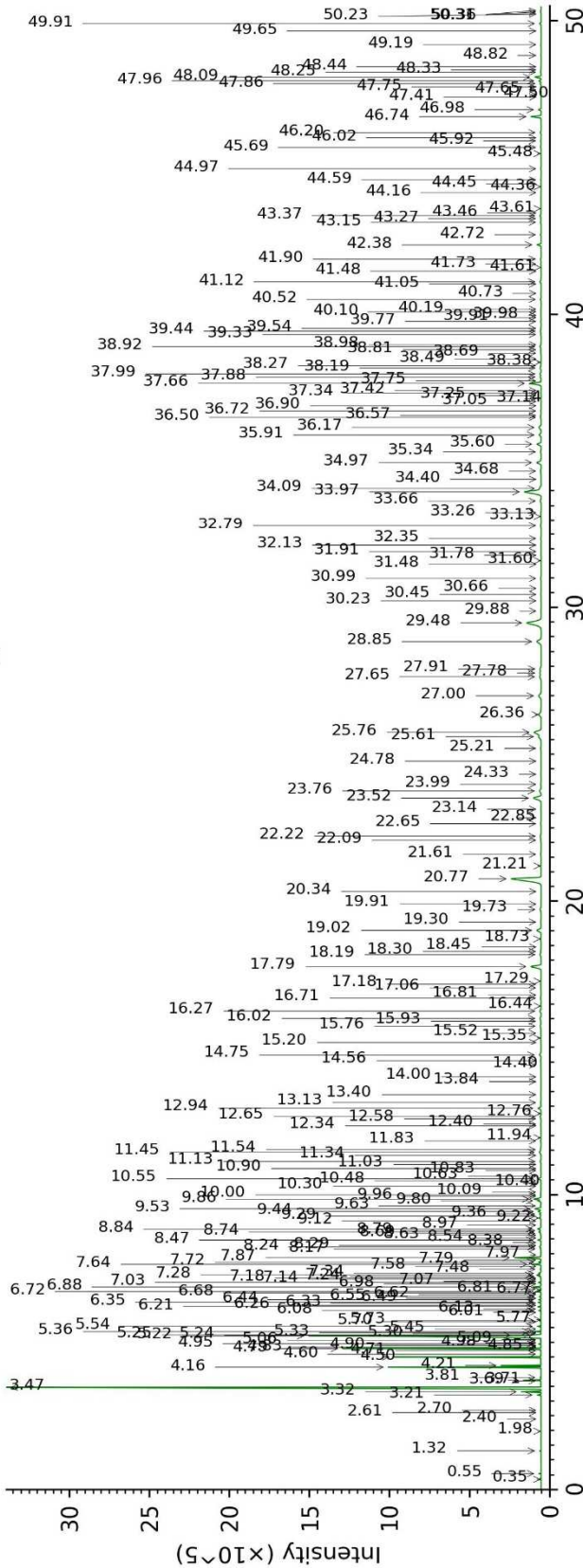
Physical aspect : Light yellow liquid

Refractive index : 1.4863 \pm 0.0003 (20 °C)

CONCLUSION

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

18A04-PTH4-1-CC_BP5



18A04-PTH4-1-CC_WAX

