



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: FB0102

ESSENTIAL OIL: FRANKINCENSE CARTERI C02

BOTANICAL NAME: BOSWELLIA CARTERI

ORIGIN: SOMALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FRANKINCENSE CARTERI C02 OIL	%
α-PINENE	26.6
INCENSOLE	8.1
LIMONENE	7.8
SABINENE	3.2
INCENSYL ACETATE	2.7
MYRCENE	2.6
VERTICILLA-4(20),7,11-TRIENE	2.2
p-CYMENE	2.0
β-CARYOPHYLLENE	2.0
trans-VERBENOL	1.7
CEMBRENOL	1.6
(3E)-CEMBRENE A	1.6
CARYOPHYLLENE OXIDE	1.4
CUBEBOL	1.3
α-PHELLANDRENE	1.3
β-PINENE	1.3
OCTYL ACETATE	1.1
α-THUJENE	1.0

Comments from Robert Tisserand:
Balsamic, lemon-earthy odor quality.
Contains 22% therapeutic, heavy
molecules not found in the essential oil.

Date : June 3, 2017

SAMPLE IDENTIFICATION

Internal code : 17E26-PTH5-1-DM

Customer identification : Frankincense Carterii CO2 - FB0102610R

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).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-06-03

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	1.30	757	0.02	25.16	950	1.11*	Simple phenolic
Tricyclene	3.20*	916	0.22	0.03	918	0.97	Monoterpene
Hashishene	3.20*	916	[0.22]	[25.16]	950	1.11*	Monoterpene
α -Thujene	3.31	922	1.01	1.38	954	1.12	Monoterpene
α -Pinene	3.46	931	26.63	[25.16]	950	1.11*	Monoterpene
Camphene	3.70*	946	0.52	0.49	1006	1.33	Monoterpene
α -Fenchene	3.70*	946	[0.52]	0.02	986	1.28	Monoterpene
Thuja-2,4(10)-diene	3.79	951	0.05	3.00	1059	1.83*	Monoterpene
Sabinene	4.13	971	3.21	[3.00]	1059	1.83*	Monoterpene
β -Pinene	4.19	975	1.25	1.14	1042	1.66	Monoterpene
Myrcene	4.47	992	2.59	2.52	1114	2.38	Monoterpene
α -Phellandrene	4.75*	1007	2.07	1.27	1107	2.29	Monoterpene
Δ 3-Carene	4.75*	1007	[2.07]	0.74	1088	2.11	Monoterpene
α -Terpinene	4.93	1017	0.02	0.04	1120	2.45	Monoterpene
para-Cymene	5.13	1028	1.99	1.94	1204	3.54	Monoterpene
Limonene	5.18	1031	7.79	6.96	1141	2.71	Monoterpene
β -Phellandrene	5.20	1032	0.25	0.60	1144	2.76*	Monoterpene
1,8-Cineole	5.23	1033	0.12	[0.60]	1144	2.76*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.33	1039	0.19	0.22	1182	3.25*	Monoterpene
<i>trans</i> - β -Ocimene	5.51	1049	0.09	0.07	1198	3.46	Monoterpene
γ -Terpinene	5.70	1059	0.05	[0.22]	1182	3.25*	Monoterpene
<i>cis</i> -Sabinene hydrate	6.01	1077	0.06	0.05	1403	6.51*	Monoterp. alcohol
Octanol	6.13	1083	0.23	0.67	1498	8.59*	Aliphatic alcohol
Terpinolene	6.18	1085	0.04	0.03	1220	3.75	Monoterpene
para-Cymenene	6.40	1098	0.05	0.04	1368	5.94	Monoterpene
Linalool	6.63*	1107	0.17	0.13	1487	8.35*	Monoterp. alcohol
<i>trans</i> -Sabinene hydrate	6.63*	1107	[0.17]	0.06	1475	8.05	Monoterp. alcohol
<i>cis</i> -Verbenol?	6.79	1113	0.15	1.94	1520	9.09*	Monoterp. alcohol
β -Thujone	6.98	1119	0.04	0.02	1363	5.88	Monoterp. ketone
<i>trans</i> -para-Mentha-2,8-dien-1-ol	7.13	1125	0.09	0.11	1573	10.96	Monoterp. alcohol
α -Campholenal	7.21	1128	0.24				Monoterp. aldehyde
<i>trans</i> -Pinocarveol	7.53	1140	0.47	0.40	1564	10.62	Monoterp. alcohol
<i>trans</i> -para-Menth-2-en-1-ol	7.61	1143	0.16	0.19	1558	10.42	Monoterp. alcohol
<i>trans</i> -Verbenol	7.75	1148	1.68	2.28	1594	11.74*	Monoterp. alcohol
Sabinaketone	7.90	1153	0.01	0.49	1578	11.14*	Normonoterp. ketone
Pinocamphone	8.08	1160	0.04	0.03	1426	6.88*	Monoterp. ketone
Pinocarvone	8.16	1163	0.14	[0.13]	1487	8.35*	Monoterp. ketone
<i>cis</i> -Sabinol	8.31	1168	0.03				Monoterp. alcohol
Borneol	8.51	1176	0.06	0.49	1620	12.68*	Monoterp. alcohol
Terpinen-4-ol	8.71	1183	0.21	0.22	1528	9.32	Monoterp. alcohol

para-Cymen-8-ol	9.21	1201	0.11	0.09	1765	20.38	Monoterp. alcohol
α -Terpineol	9.34	1204	0.46	0.34	1622	12.76	Monoterp. alcohol
α -Phellandrene epoxide	9.60	1209	0.17	0.26	1717	17.52	Monoterpene
Verbenone	9.72	1212	0.62	[2.28]	1594	11.74*	Monoterp. ketone
Octyl acetate	9.88	1216	1.10	1.13	1424	6.84*	Aliphatic ester
<i>trans</i> -Carveol	10.30	1225	0.19	0.20	1753	19.66	Monoterp. alcohol
Methyl decyl ether	10.35	1226	0.54	0.50	1317	5.16	Aliphatic ether
Neral	10.86	1237	0.06	0.07	1614	12.44	Monoterp. aldehyde
Carvone	11.27	1246	0.19	0.43	1633	13.21*	Monoterp. ketone
<i>cis</i> -Carveol	11.65	1255	0.05	0.06	1779	21.39	Monoterp. alcohol
3,5-Dimethoxytoluene	12.40	1271	0.07				Simple phenolic
Bornyl acetate	12.83	1281	0.33	[0.67]	1498	8.59*	Monoterp. ester
Bicycloelemene	14.85	1318	0.03	[0.03]	1426	6.88*	Sesquiterpene
Methyl undecyl ether	15.67	1330	0.09	[1.13]	1424	6.84*	Aliphatic ether
α -Cubebene	15.89	1334	0.04	[0.05]	1403	6.51*	Sesquiterpene
α -Copaene	17.59	1359	0.46	0.44	1431	7.01	Sesquiterpene
β -Bourbonene	18.01	1366	0.19	0.20	1449	7.43	Sesquiterpene
β -Elemene	18.81	1378	0.71	0.73	1524	9.20	Sesquiterpene
α -Gurjunene	19.22	1384	0.06	0.08	1468	7.87	Sesquiterpene
Geranyl acetate	19.56	1389	0.05	0.05	1687	16.02	Monoterp. ester
β -Caryophyllene	20.49	1403	1.96	[1.94]	1520	9.09*	Sesquiterpene
β -Copaene	21.36	1413	0.04	[1.94]	1520	9.09*	Sesquiterpene
<i>trans</i> - α -Bergamotene	22.03	1421	0.09	0.11	1529	9.37	Sesquiterpene
6,9-Guaiadiene	22.43	1426	0.12	0.10	1536	9.62	Sesquiterpene
α -Humulene	23.23	1436	0.47	[0.49]	1578	11.14*	Sesquiterpene
allo-Aromadendrene	23.48	1439	0.13	0.07	1552	10.20	Sesquiterpene
Selina-4,11-diene	24.94	1456	0.04				Sesquiterpene
γ -Muurolene	25.29	1460	0.17	0.26	1606	12.19	Sesquiterpene
Germacrene D	25.43	1462	0.58	[0.49]	1620	12.68*	Sesquiterpene
β -Selinene	26.03	1469	0.40	0.39	1625	12.89	Sesquiterpene
α -Selinene	26.66	1477	0.38	[0.43]	1633	13.21*	Sesquiterpene
α -Muurolene	27.44	1486	0.15	0.10	1645	13.81	Sesquiterpene
Germacrene A	27.57	1488	0.21	0.16	1701	16.69	Sesquiterpene
γ -Cadinene	28.47	1499	0.53	0.52	1666	14.90	Sesquiterpene
Cubebol	28.96	1505	1.33	1.26	1853	26.25	Sesquiterp. alcohol
δ -Cadinene	29.15	1508	0.48	0.45	1671	15.17	Sesquiterpene
α -Cadinene	30.59	1528	0.06	0.06	1706	16.97	Sesquiterpene
Liguloxide	32.02	1548	0.11				Sesquiterp. ether
α -Elemol	32.31*	1552	0.14	0.18	1997	35.08*	Sesquiterp. alcohol
Palustrol	32.31*	1552	[0.14]	0.03	1817	23.80	Sesquiterp. alcohol
Caryophyllene oxide	33.63*	1570	1.53	1.39	1848	25.87	Sesquiterp. ether
Spathulenol	33.63*	1570	[1.53]	0.42	2018	35.99	Sesquiterp. alcohol
Germacrene D-4-ol	33.63*	1570	[1.53]	0.22	1948	32.90	Sesquiterp. alcohol
Viridiflorol	34.60	1584	1.04	1.06	1978	34.27	Sesquiterp. alcohol

Humulene epoxide II	35.30	1594	0.19	0.18	1900	29.60	Sesquiterp. ether
10-epi- γ -Eudesmol	35.51	1596	0.22	[0.18]	1997	35.08*	Sesquiterp. alcohol
Copaborneol	35.86	1602	0.50				Sesquiterp. alcohol
τ -Cadinol	37.34	1639	0.99	1.08	2070	37.98	Sesquiterp. alcohol
α -Muurolol	37.58	1644	0.13	0.13	2104	39.04	Sesquiterp. alcohol
β -Eudesmol	37.66	1646	0.19	0.15	2112	39.25*	Sesquiterp. alcohol
α -Cadinol	37.86	1651	0.15	[0.15]	2112	39.25*	Sesquiterp. alcohol
Shyobunol	39.13	1682	0.13	2.44	2198	41.66	Sesquiterp. alcohol
Oplopanone	40.81	1730	0.08	0.08	2351	45.29	Sesquiterp. alcohol
Dimer of α -phellandrene II	42.25*	1775	0.39	0.09	1843	25.52	Diterpene
Benzyl benzoate	42.25*	1775	[0.39]	2.95	2494	48.23*	Phenolic ester
Dimer of α -phellandrene III	42.57	1786	0.08				Diterpene
Dimer of α -phellandrene IV	43.05	1801	0.05				Diterpene
Pentadecanol	45.55	1892	0.15				Aliphatic alcohol
(3E)-Cembrene A	46.61	1934	1.57	1.62	2132	39.88	Diterpene
meta-Camphorene	46.86	1944	0.11	0.11	2137	40.02	Diterpene
para-Camphorene	47.74	1979	0.08	0.08	2187	41.36	Diterpene
Verticilla-4(20),7,11-triene epimer	47.82	1983	0.36				Diterpene
Verticilla-4(20),7,11-triene	47.94	1988	2.19				Diterpene
Thunbergol?	49.73	2064	0.19	[2.95]	2494	48.23*	Diterp. alcohol
Cembrenol	51.08	2123	1.57	1.69	2636	50.95	Diterp. alcohol
Incensole	51.44*	2140	12.55	8.13	2582	49.97	Diterp. alcohol
Serratol	51.44*	2140	[12.55]				Diterp. alcohol
Incensyl acetate	51.71	2152	2.72				Diterp. ester
Incensole oxide	51.89	2160	0.17				Diterp. ether
24-Noroleana-3,12-diene	67.05	2979	0.02	0.02	3364	62.97	Nortriterpene
24-Norursa-3,12-diene	67.77	3024	0.06				Nortriterpene
Lanosta-8,24-dien-3-one?	71.28	3252	0.16				Triterp. ketone
Lanosterol analog	71.49	3266	0.11				Triterp. alcohol
Lanosterol	71.60	3273	0.22	0.61	4083	73.05*	Triterp. alcohol
β -Amyrin	71.77	3284	0.40	[0.61]	4083	73.05*	Triterp. alcohol
β -Amyrin acetate?	72.38	3319	0.57				Triterp. ester
α -Amyrin	72.58	3329	0.33				Triterp. alcohol
α -Amyrin acetate?	72.97	3350	0.57				Triterp. ester
Lupenyl acetate?	73.26	3365	0.18				Triterp. ester
Total identified			90.38%	83.45%			

*: 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

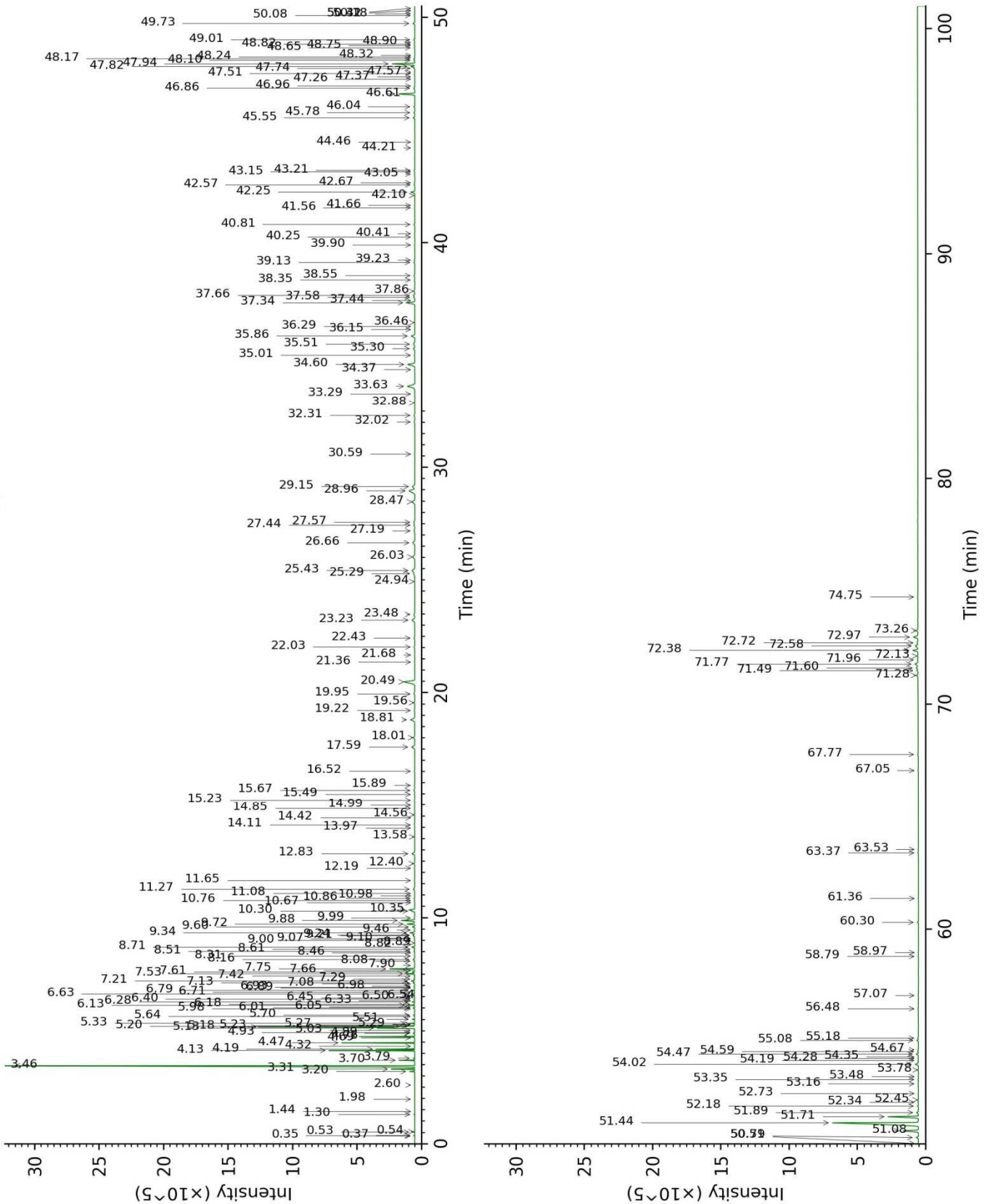
Physical aspect : Light yellow liquid

Refractive index : 1.4878 ± 0.0003 (20 °C)

CONCLUSION

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

17E26-PTH5-1-DM_BP5



17E26-PTH5-1-DM_WAX

