

## GC/MS BATCH NUMBER: F30102

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**ESSENTIAL OIL:** FRANKINCENSE CARTERI  
**BOTANICAL NAME:** BOSWELLIA CARTERII  
**ORIGIN:** SOMALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FRANKINCENSE CARTERI OIL	%
$\alpha$ -PINENE	58.0
LIMONENE	5.9
$\beta$ -PINENE	5.9
SABINENE	5.2
MYRCENE	3.8
METHYL DECYL ETHER	2.4
OCTYL ACETATE	1.9
p-CYMENE	1.3
INCENSOLE	0.1

Comments from Robert Tisserand: Has a great odor profile. The analysis shows an  $\alpha$ -pinene chemotype.

**Date :** August 10, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16H03-PTH1-1-DM

**Customer identification :** Organic Frankincense Carteri – F3010266R

**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 :** 2016-08-09

Checked and approved by :

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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	1.27	749	0.06	58.69	955	0.93*	Simple phenolic
Tricyclene	3.14*	916	0.96	0.06	924	0.80	Monoterpene
Hashishene	3.14*	916	[0.96]	[58.69]	955	0.93*	Monoterpene
$\alpha$ -Thujene	3.25	923	0.75	0.86	957	0.93	Monoterpene
$\alpha$ -Pinene	3.42	933	58.03	[58.69]	955	0.93*	Monoterpene
Camphene	3.64*	946	0.87	0.85	999	1.10	Monoterpene
$\alpha$ -Fenchene	3.64*	946	[0.87]	0.01	987	1.06	Monoterpene
Thuja-2,4(10)-diene	3.73	952	0.63	6.26	1056	1.54*	Monoterpene
Sabinene	4.08	973	5.20	[6.26]	1056	1.54*	Monoterpene
$\beta$ -Pinene	4.14	977	5.89	6.09	1039	1.40	Monoterpene
Myrcene	4.42	994	3.77	4.56	1113	2.02	Monoterpene
$\alpha$ -Phellandrene	4.67*	1009	0.88	0.53	1106	1.94	Monoterpene
$\Delta$ 3-Carene	4.67*	1009	[0.88]	0.13	1086	1.78	Monoterpene
Octanal	4.77	1014	0.03	0.02	1233	3.47	Aliphatic aldehyde
$\alpha$ -Terpinene	4.86	1019	0.23	0.32	1119	2.09	Monoterpene
para-Cymene	5.06	1030	1.26	1.37	1204	3.09	Monoterpene
Limonene	5.10	1032	5.90	4.73	1138	2.31	Monoterpene
$\beta$ -Phellandrene	5.12	1034	0.20	0.85	1142	2.36*	Monoterpene
1,8-Cineole	5.15	1035	0.30	[0.85]	1142	2.36*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.27	1042	0.67	0.98	1183	2.84*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.45	1052	0.22	0.18	1199	3.02	Monoterpene
$\gamma$ -Terpinene	5.63	1062	0.31	[0.98]	1183	2.84*	Monoterpene
<i>cis</i> -Sabinene hydrate	5.98	1081	0.06	0.32	1412	6.03	Monoterp. alcohol
Terpinolene	6.10	1088	0.08	0.10	1217	3.24	Monoterpene
Octanol	6.16	1091	0.24	0.64	1499	7.69*	Aliphatic alcohol
para-Cymenene	6.32	1100	0.06	0.05	1365	5.34	Monoterpene
Linalool	6.63	1112	0.15	0.14	1489	7.49	Monoterp. alcohol
Nonanal	6.71	1115	0.07	0.08	1334	4.90	Aliphatic aldehyde
$\alpha$ -Thujone	6.78	1118	0.04	0.07	1350	5.12	Monoterp. ketone
$\beta$ -Thujone	7.03	1127	0.14	0.10	1355	5.20	Monoterp. ketone
<i>cis</i> -para-Menth-2-en-1-ol	7.14	1131	0.40	[0.64]	1499	7.69*	Monoterp. alcohol
<i>trans</i> -Pinocarveol	7.53	1146	0.53	0.64	1560	9.38*	Monoterp. alcohol
<i>trans</i> -para-Menth-2-en-1-ol	7.61	1149	0.19	0.15	1571	9.68	Monoterp. alcohol
<i>trans</i> -Verbenol	7.74	1154	0.58	0.92	1592	10.34*	Monoterp. alcohol
$\alpha$ -Phellandren-8-ol analog	7.86	1158	0.18				Monoterp. alcohol
<i>trans</i> -2-Caren-4-ol?	8.08	1166	0.14				Monoterp. alcohol
Terpinen-4-ol	8.63	1187	0.77	0.79	1526	8.31*	Monoterp. alcohol
$\beta$ -Phellandren-8-ol	9.15	1205	0.21	0.16	1697	14.70	Monoterp. alcohol
$\alpha$ -Terpineol	9.32	1209	0.29	0.38	1621	11.28*	Monoterp. alcohol
Methylchavicol	9.39	1210	0.20	0.28	1581	9.99*	Phenylpropanoid
Verbenone	9.64	1216	0.30	[0.92]	1592	10.34*	Monoterp. ketone

Octyl acetate	9.78	1219	1.92	2.09	1423	6.24	Aliphatic ester
Methyl decyl ether	10.22	1229	2.35	2.42	1323	4.73	Aliphatic ether
Bornyl acetate	12.68	1284	0.32	[0.64]	1499	7.69*	Monoterp. ester
α-Cubebene	15.65	1336	0.04	0.03	1417	6.12	Sesquiterpene
α-Copaene	17.32	1362	0.18	0.20	1433	6.40	Sesquiterpene
β-Bourbonene	17.74	1369	0.33	0.24	1452	6.78	Sesquiterpene
β-Elemene	18.56	1381	0.09	[0.79]	1526	8.31*	Sesquiterpene
β-Caryophyllene	20.17	1405	0.41	0.37	1521	8.16	Sesquiterpene
6,9-Guaiadiene	22.14	1429	0.26	0.21	1537	8.65	Sesquiterpene
α-Humulene	22.93	1439	0.13	[0.28]	1581	9.99*	Sesquiterpene
allo-Aromadendrene	23.17	1442	0.05	[0.64]	1560	9.38*	Sesquiterpene
γ-Murolene	24.98	1464	0.05	0.05	1614	10.99	Sesquiterpene
Germacrene D	25.11	1465	0.12	[0.38]	1621	11.28*	Sesquiterpene
β-Selinene	25.71	1472	0.04	0.07	1627	11.56*	Sesquiterpene
α-Selinene	26.35	1480	0.05	[0.07]	1627	11.56*	Sesquiterpene
γ-Cadinene	28.15	1502	0.09	0.08	1666	13.27	Sesquiterpene
δ-Cadinene	28.81	1511	0.20	0.13	1671	13.51	Sesquiterpene
Caryophyllene oxide	33.40	1574	0.05	0.04	1842	23.18	Sesquiterp. ether
Viridiflorol	34.50	1588	0.15	0.14	1974	31.92	Sesquiterp. alcohol
τ-Cadinol	37.25	1644	0.06	0.05	2064	36.37	Sesquiterp. alcohol
Incensole	51.20	2139	0.17	0.12	2571	48.63	Diterpenic alcohol
<b>Total identified</b>			<b>97.85%</b>	<b>97.55%</b>			

\*: 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 :** Clear liquid

**Refractive index :** 1.4650 ± 0.0003 (20 °C)

#### CONCLUSION

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



