



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: MF0101

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**ESSENTIAL OIL:** MANUKA

**BOTANICAL NAME:** LEPTOSPERMUM SCOPARIUM

**ORIGIN:** NEW ZEALAND

KEY CONSTITUENTS PRESENT IN THIS BATCH OF MANUKA OIL	%
ISO-LEPTOSPERMONE	17.9
TRANS-CALAMENENE	12.6
$\delta$ -CADINENE	5.6
LEPTOSPERMONE	5.3
TRANS-CADINA-1,4-DIENE	4.7
$\alpha$ -COPAENE	4.3
SEYCHELLENE	4.2
$\beta$ -SELINENE	3.8
TRANS-CADINA-1(6),4-DIENE	3.8
$\alpha$ -SELINENE	3.7
$\alpha$ -CUBEBENE	3.5
$\beta$ -CARYOPHYLLENE	2.8
AROMADENDRENE	1.6
CUBENOL	1.1

Comments from Robert Tisserand: Fresh, fruity-herbal odor profile with constituents in expected amounts.

**Date :** January 27, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17A17-PTH6-1-DM

**Customer identification :** Manuka - MF010169R

**Type :** Essential Oil

**Source :** *Leptospermum scoparium*

**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 :** 2017-01-26

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.	
2,4-Dimethyl-3-pentanone	1.51	793	0.01	0.01	904	1.07	Aliphatic ketone
Isovaleric acid	2.96	904	0.02				Aliphatic acid
$\alpha$ -Thujene	3.24	921	0.02	0.05	955	1.29	Monoterpene
$\alpha$ -Pinene	3.34	927	0.87	0.88	944	1.24	Monoterpene
Sabinene	4.06	972	0.01	0.01	1065	2.10	Monoterpene
$\beta$ -Pinene	4.12	976	0.08	0.08	1042	1.93	Monoterpene
Myrcene	4.40	993	0.22	0.22	1118	2.70	Monoterpene
$\alpha$ -Terpinene	4.86	1017	0.02	0.01	1124	2.79	Monoterpene
para-Cymene	5.05	1027	0.10	0.10	1211	3.97	Monoterpene
Limonene	5.08	1028	0.06	0.06	1142	3.03	Monoterpene
$\beta$ -Phellandrene	5.11	1030	0.01	0.14	1149	3.11*	Monoterpene
1,8-Cineole	5.14	1032	0.13	[0.14]	1149	3.11*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.27	1038	tr	tr	1180	3.54	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.45	1048	0.02	0.03	1203	3.86	Monoterpene
$\gamma$ -Terpinene	5.63	1057	0.09	0.09	1191	3.68	Monoterpene
Terpinolene	6.11	1082	0.03	0.03	1225	4.18	Monoterpene
2,4-Dimethyl-heptane-3,5-dione	6.63	1105	0.15	0.14	1472	8.78	Aliphatic ketone
2-Methylbutyl 2-methylbutyrate	6.67	1107	0.04	0.02	1232	4.29	Aliphatic ester
Isoamyl isovalerate	6.86	1114	0.17	0.11	1249	4.55	Aliphatic ester
2,7-Dimethyl-3,5-octanedione	7.97	1155	0.03				Aliphatic ketone
Terpinen-4-ol	8.68	1181	0.04	0.05	1540	11.08	Monoterp. alcohol
Isoamyl tiglate	9.36	1202	0.05	0.06	1405	7.15	Aliphatic ester
Prenyl 3-methylcrotonate?	9.41	1203	0.06				Aliphatic ester
Prenyl tiglate	11.20	1243	0.06	0.06	1500	9.55	Aliphatic ester
$\delta$ -Elemene	15.20	1321	0.01	0.01	1414	7.35	Sesquiterpene
$\alpha$ -Cubebene	15.73	1329	3.51	3.46	1404	7.12	Sesquiterpene
$\alpha$ -Ylangene	16.90	1347	0.19	0.16	1419	7.49	Sesquiterpene
$\alpha$ -Copaene	17.44	1355	4.34	4.34	1429	7.72	Sesquiterpene
$\beta$ -Cubebene	18.33	1368	0.11	0.06	1478	8.94	Sesquiterpene
$\beta$ -Elemene	18.61	1372	0.58	0.68	1518	10.25*	Sesquiterpene
$\alpha$ -Gurjunene	19.31	1383	0.97	0.90	1460	8.48	Sesquiterpene
Benzyl isovalerate	19.71	1389	0.04	0.05	1811	26.50	Phenolic ester
$\beta$ -Caryophyllene	20.27	1397	2.76	2.57	1516	10.16	Sesquiterpene
$\beta$ -Gurjunene	20.84	1404	0.13	0.16	1521	10.36	Sesquiterpene
Aromadendrene	21.63	1413	1.58	1.59	1525	10.50	Sesquiterpene
<i>trans</i> - $\alpha$ -Bergamotene	21.77	1415	0.14	[0.68]	1518	10.25*	Sesquiterpene
6,9-Guaiadiene	22.21	1420	0.18	0.24	1531	10.75	Sesquiterpene
Seychellene	22.69	1426	4.21	4.16	1550	11.45	Sesquiterpene

$\alpha$ -Humulene	23.02	1430	0.27	0.23	1599	13.46	Sesquiterpene
allo-Aromadendrene	23.26	1433	0.67	0.70	1557	11.71	Sesquiterpene
Unknown (m/z = 105, 161 (58), 91 (41), 93 (41)... 204 (21))	24.07	1442	0.07				Sesquiterpene
<i>trans</i> -Cadinane-1(6),4-diene	24.75	1451	3.84	3.58	1582	12.67	Sesquiterpene
$\gamma$ -Muuroolene	25.10	1455	0.83	0.74	1609	13.96	Sesquiterpene
$\beta$ -Selinene	25.93	1465	3.81	3.83	1621	14.61	Sesquiterpene
<i>cis</i> -Muurolo-4(14),5-diene	26.08*	1467	1.53	0.82	1616	14.38	Sesquiterpene
$\alpha$ -Amorphene	26.08*	1467	[1.53]	0.93	1605	13.77	Sesquiterpene
$\alpha$ -Selinene	26.57	1473	3.73	3.53	1628	14.99	Sesquiterpene
$\delta$ -Guaiane	27.25	1481	0.77	0.57	1639	15.55	Sesquiterpene
$\alpha$ -Muuroolene	27.38	1482	0.31	0.36	1658	16.54	Sesquiterpene
$\delta$ -Cadinene	29.09	1504	5.64	5.31	1689	18.21	Sesquiterpene
<i>trans</i> -Calamenene	29.64	1512	12.61	12.34	1733	21.12	Sesquiterpene
<i>trans</i> -Cadinane-1,4-diene	30.28	1520	4.65	4.21	1672	17.29	Sesquiterpene
$\alpha$ -Calacorene	30.98	1530	0.54	0.54	1795	25.27	Sesquiterpene
Caryophyllene oxide	33.53	1565	0.32	0.27	1843	28.86	Sesquiterp. ether
Spathulenol	33.78	1569	0.72	23.90	1972	36.20*	Sesquiterp. alcohol
Globulol	34.12	1573	0.28	[23.90]	1972	36.20*	Sesquiterp. alcohol
Gleenol	34.64	1580	0.35	[23.90]	1972	36.20*	Sesquiterp. alcohol
Leptospermone	36.09	1604	5.27	7.85	1954	35.38*	Triketone
iso-Leptospermone	36.73	1620	17.85	[23.90]	1972	36.20*	Triketone
$\gamma$ -Eudesmol	36.92	1625	0.45	0.30	2082	40.02	Sesquiterp. alcohol
Cubenol	37.13	1630	1.12	[7.85]	1954	35.38*	Sesquiterp. alcohol
$\beta$ -Eudesmol	37.62	1642	0.14	0.14	2107	40.76	Sesquiterp. alcohol
$\alpha$ -Eudesmol	37.74	1645	0.15	0.19	2122	41.15	Sesquiterp. alcohol
$\alpha$ -Cadinol	37.92	1649	0.34	0.23	2131	41.41	Sesquiterp. alcohol
<i>trans</i> -Calamenen-10-ol	38.50	1663	0.13	0.16	2217	43.60	Sesquiterp. alcohol
Cadalene	38.69	1668	0.33	[23.90]	1972	36.20*	Sesquiterpene
Grandiflorone	52.00	2156	0.66	1.04	3046	59.47	Triketone
<b>Total identified</b>			<b>88.35%</b>	<b>92.30%</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

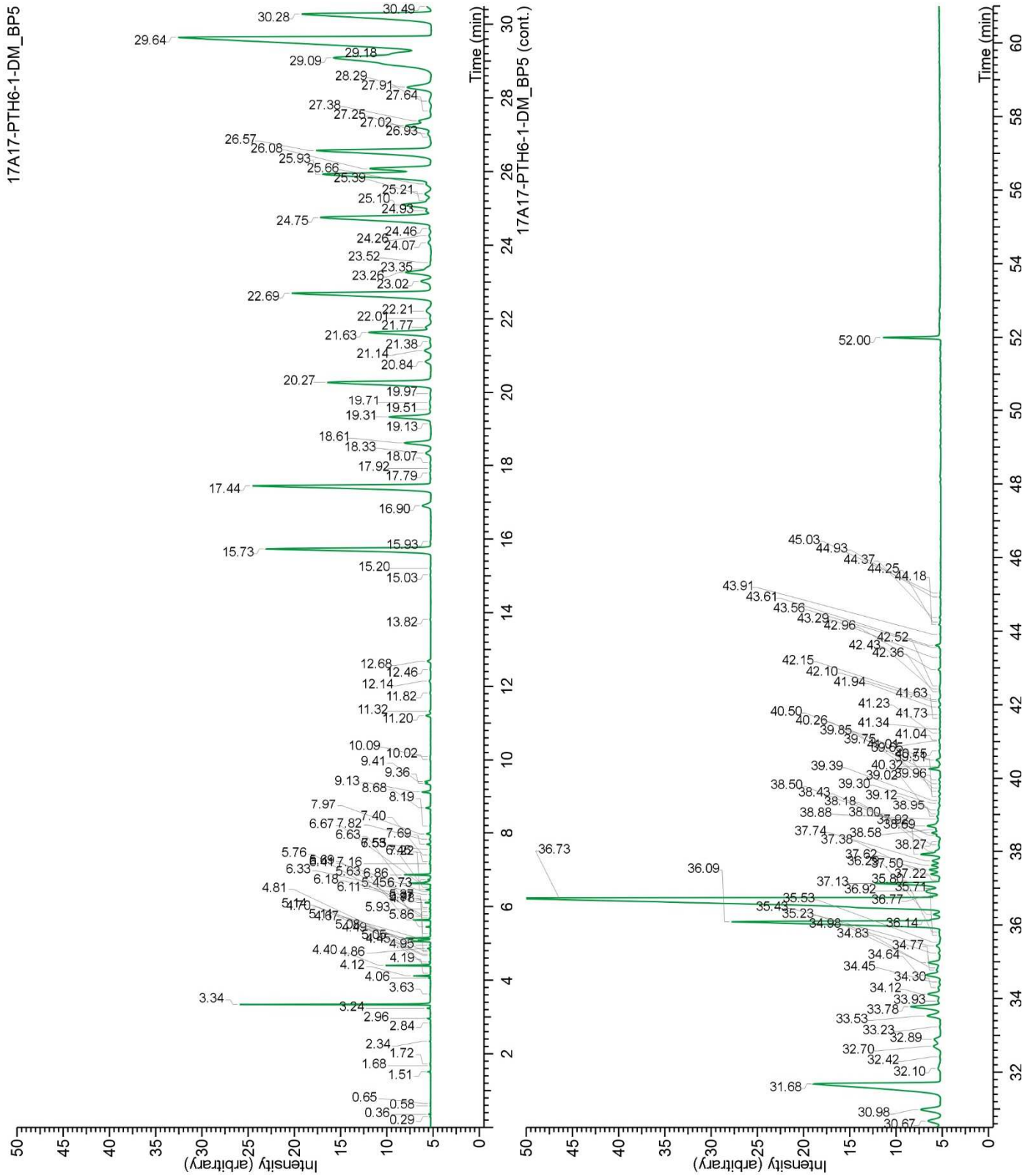
#### OTHER DATA

**Physical aspect :** Light yellow liquid

**Refractive index :** 1.5008  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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



17A17-PTH6-1-DM\_WAX

