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Certificate of Analysis & Gas Chromatography
Organic Manuka Essential Oil
(Leptospermum scoparium)

BATCH NUMBER	090620-18	COUNTRY OF ORIGIN	New Zealand
ANALYSIS	FULL CoA - Manuka		

TEST	RESULTS	TESTMETHOD
Relative Density @ 20°C	0.944	Ph.Eur.2.2.5
Refractive Index @ 20°C	1.5044	Ph.Eur.2.2.6
Optical Rotation @ 20°C	-33.76°	Ph.Eur.2.2.7
MTK**	6.61	ARL-TM101-4*

TEST	RESULTS	TESTMETHOD
	Area%	
()(-pinene)	1.58	ARL-TM101-4*
()(-cubebene)	3.68	
()(ylangene)	0.28	
()(-copaene)	5.85	
-elemene	1.13	
-caryophyllene	2.57	
aromadendrene	2.37	
isoleadene	5.57	
()(-humulene)	0.84	
7() (H, 10H, cadinal,4diene)	3.80	
cadinal 3,5 diene	1.16	
-selinene	4.65	
()(-selinene)	4.67	
epi-bicyclosesqui-phellandrene	0.20	
lgermacrene D	1.15	
8-cadinene	5.31	
(trans) cadinal 1,4 diene	5.74	
(cis) calamenene	16.96	
flavosone	1.04	
spathulenol	1.07	
caryophyllene oxide	0.76	
isoleptospermone	1.38	
leptospermone	4.14	
cubenol	1.30	
intermediol	0.25	
grandiflorone	0.06	

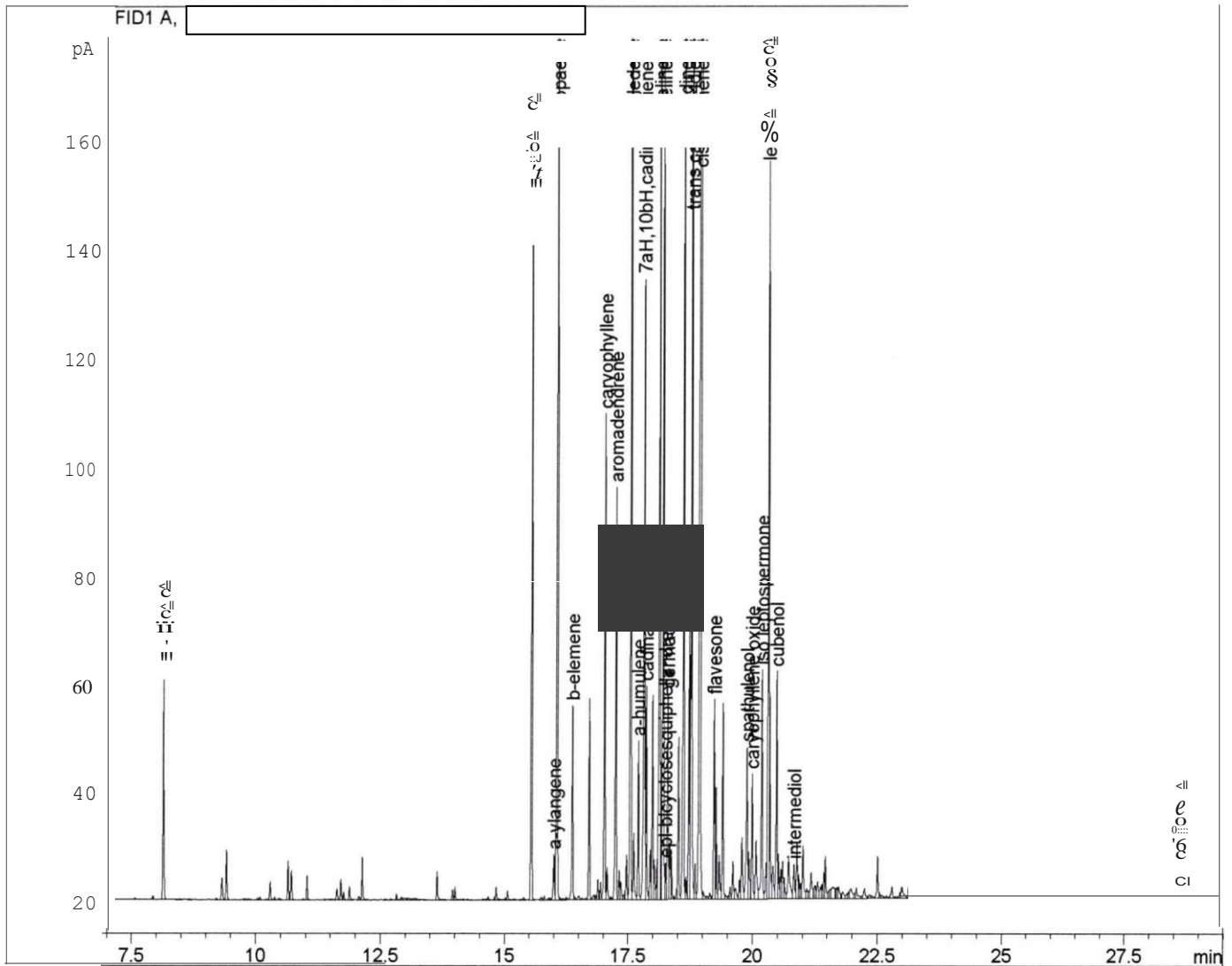
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Acq. Operator   RB                               Seq. Line    15
Acq. Instrument GC-3                               Location     Vial 9
Injection Date  10:58:37 PM                               Inj         1
                                                Inj Volume  1 µl

Acq. Method    C:\DATA\GC-3\DATA\191126\09-27-08\MANUKA.M
Analysis Method C:\DATA\GC-3\METHODS\MANUKA.M 11/27/20
Last changed   10:30:52 AM by AW
                (modified after loading)

Method Info    Method to analyse essential oils
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Area Percent Report

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Sorted By          Signal
Calib. Data Modified 10:19:43 AM
Multiplier:        1.0000
Dilution:          1.0000
Use Multiplier & Dilution Factor with ISTDs

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GC-3 11/2zz

Signal 1: FID1 A,

Peak #	RetTime [min)	Type	Width [min)	Area [pA*s]	Area %	Name
1	8.133	W	0.0303	77.74803	1.57814	a - pinene
2	15.544	W	0.0218	181.20273	3.67808	a-cubebene
3	15.996	W	0.0252	13.80132	0.28014	a-ylangene
4	16.058	W	0.0214	288.35675	5.85311	a-copaene
5	16.375	W	0.0246	55.75172	1.13166	b-elemene
6	17.024	W	0.0219	126.42400	2.56617	caryophyllene
7	17.250	W	0.0233	116.68597	2.36851	aromadendrene
8	17.548	W	0.0218	274.34576	5.56871	iso-ledene
9	17.707	W	0.0221	41.56799	0.84375	a-humulene
10	17.817	W	0.0251	187.02350	3.79623	7aH,10bH,cadinal,4diene
11	17.866	W	0.0224	57.04039	1.15781	cadina 3,5 diene
12	18.124	W	0.0226	229.02669	4.64882	b-selinene
13	18.200	W	0.0229	229.91667	4.66688	a-selinene
14	18.251	W	0.0210	9.83372	0.19961	epi-bicyclosesquiphellandrene
15	18.296	W	0.0224	56.63819	1.14965	germacrene D
16	18.613	W	0.0208	261.77863	5.31362	d-cadinene
17	18.772	W	0.0223	282.56909	5.73563	trans cadinal,4diene
18	18.949	W	0.0222	835.78864	16.96495	cis calamenene
19	19.237	W	0.0212	51.14874	1.03822	flavesone
20	19.886	W	0.0275	52.72667	1.07025	spathulenol
21	19.991	W	0.0254	37.25885	0.75629	caryophyllene oxide
22	20.184	W	0.0238	68.10058	1.38231	iso leptospermone
23	20.312	W	0.0226	203.90553	4.13890	leptospermone
24	20.481	W	0.0238	63.99322	1.29894	cubenol
25	20.831	W	0.0295	12.52660	0.25427	intermediol
26	28.642	W	0.0618	2.71160	0.05504	grandiflorone

Totals : 3817.87158 77.4957

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*** End of Report ***