
Analytical Report	
Title	**Tea Tree Australian** Essential Oil Profile by GC-MS
Report No.	SE-37270-26
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Contributors:	
Quote No.	
Requester	World Naturals LLC

Primary Aim

To identify GC amendable volatile organic compounds present in submitted **Cardamom** essential oil sample.

Samples

The sample arrived as clear liquid with characteristic odor labeled as "Tea Tree Australian lot 11144-c28".

Experimental:

1. Oil was dissolved in methanol to concentration of ~0.1%, 1 ul injected into the GC injector port.

2. GC conditions:

Injector temperature:	250 C
Initial oven temperature:	80 C
Ramp	10 C/min
Final temperature	220 C
Final temperature hold	5 min

3. MS parameters

Ionization and ion polarity	EI+
Scan rate	2 scans/sec
Mass range	35-350 Da
Ion source temperature	150C
Transfer line temperature	280C

4. GC-MS analysis. Waters/Micromass Quatro GC mass spectrometer interfaced to a ThermoElectron Trace gas chromatograph was utilized for the analysis. 30m 0.25 mm ID DB-5 column was used to separate components. Carrier gas was helium at 1.1 ml/min with split ratio of 50.

5. Data treatment.
For each sample, a set of target components was identified with the aid of the AMDIS software[1].The components were identified using the NIST mass spectral library[2].

Deliverables

1. GC-MS chromatogram. GC-MS chromatogram is shown in Appendix I.

2. Appendix II lists library search results.

- RT Retention Time, time in minutes at which the compound elutes out of column
- CAS. CAS registry number or EPA number.
- Name. IUPAC or common name of identified compound.
- Area. Peak area of a component in %% to total ion count

1 http://chemdata.nist.gov/mass-spc/amdis/
2 http://www.nist.gov/srd/nistla.cfm

APPENDIX I
Tea Tree Australian
GC-MS Chromatogram

Sample “Tea Tree Australian"

APPENDIX II
Tea Tree Australian
Identified Compounds

Tea Tree Australian

CAS	Name	R.T.	Area
28634-89-1	Thujene	3.082	0.8
80-56-8	alpha-Pinene	3.19	5.0
3387415	Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)-	3.655	0.8
127913	ß-Pinene	3.746	0.8
123353	ß-Myrcene	3.807	0.8
99832	α-Phellandrene	4.091	0.6
99854	1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-	4.219	17.3
527844	Benzene, 1-methyl-2-(1-methylethyl)-	4.338	2.7
5989548	Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)-	4.399	1.0
555102	ß-Phellandrene	4.438	1.5
470826	Eucalyptol	4.466	5.0
99854	1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-	4.793	39.5
15537550	Bicyclo[3.1.0]hexan-2-ol, 2-methyl-5-(1-methylethyl)-, (1α,2ß,5α)-	5.037	0.3
586629	Cyclohexene, 1-methyl-4-(1-methylethylidene)-	5.195	5.5
15537550	Bicyclo[3.1.0]hexan-2-ol, 2-methyl-5-(1-methylethyl)-, (1α,2ß,5α)-	5.495	0.4
29803814	2-Cyclohexen-1-ol, 1-methyl-4-(1-methylethyl)-, trans-	5.833	0.5
547615	Bicyclo[3.1.1]heptan-3-ol, 6,6-dimethyl-2-methylene-, [1S-(1α,3α,5α)]-	6.108	0.7
543395	7-Octen-2-ol, 2-methyl-6-methylene-	6.52	0.1
507700	Borneol	6.556	0.2
562743	3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)-	6.725	0.6
98555	3-Cyclohexene-1-methanol, α,α4-trimethyl-	6.849	10.0
23986745	1,6-Cyclodecadiene, 1-methyl-5-methylene-8-(1-methylethyl)-, [s-(E,E)]-	9.333	0.1
489407	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-tetramethyl-	9.761	0.2
118650	Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-,[1R-(1R*,4Z,9S*)]-	9.937	0.2
109119917	Aromadendrene	10.176	1.1
109119917	Aromadendrene	10.455	0.4
483761	Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)-	10.57	0.2
21747466	1H-Cycloprop[e]azulene, 1a,2,3,5,6,7,7a,7b-octahydro-1,1,4,7-tetramethyl-	10.823	1.0
339154915	τ-Elemene	10.891	1.5
483761	Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)-	11.125	0.7
16728997	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methylethyl)-	11.317	0.1
577-27-5	Ledol	12.029	0.2
19078354	1H-3a,7-Methanoazulene, octahydro-1,4,9,9-tetramethyl-	12.133	0.2
21284220	Cubenol	12.474	0.1