



APRC
Aromatic Plant Research Center

LABORATORY REPORT

SAMPLE NAME: Niaouli

BOTANICAL NAME: *Melaleuca quinquenervia*

COMPANY NAME: ACHS

COMPANY LOT #: 13118R

Column: ZB5 (60 m length × 0.25 mm inner diameter × 0.25 µm film thickness)

Instrument: Shimadzu GCMS-QP2010 Ultra

Carrier gas: Helium 80 psi

Temperature ramp: 2 degrees Celsius per minute up to 260-degree Celsius

Split ratio: 30:1

Sample preparation: 5%w/v solution with Dichloromethane

Interpretation on sample:

This oil meets the standard profile of *Melaleuca quinquenervia*.

Analyzed by: Dr. Prabodh Satyal

Reviewed by: Ambika Poudel

Issued Date: 2/12/2019

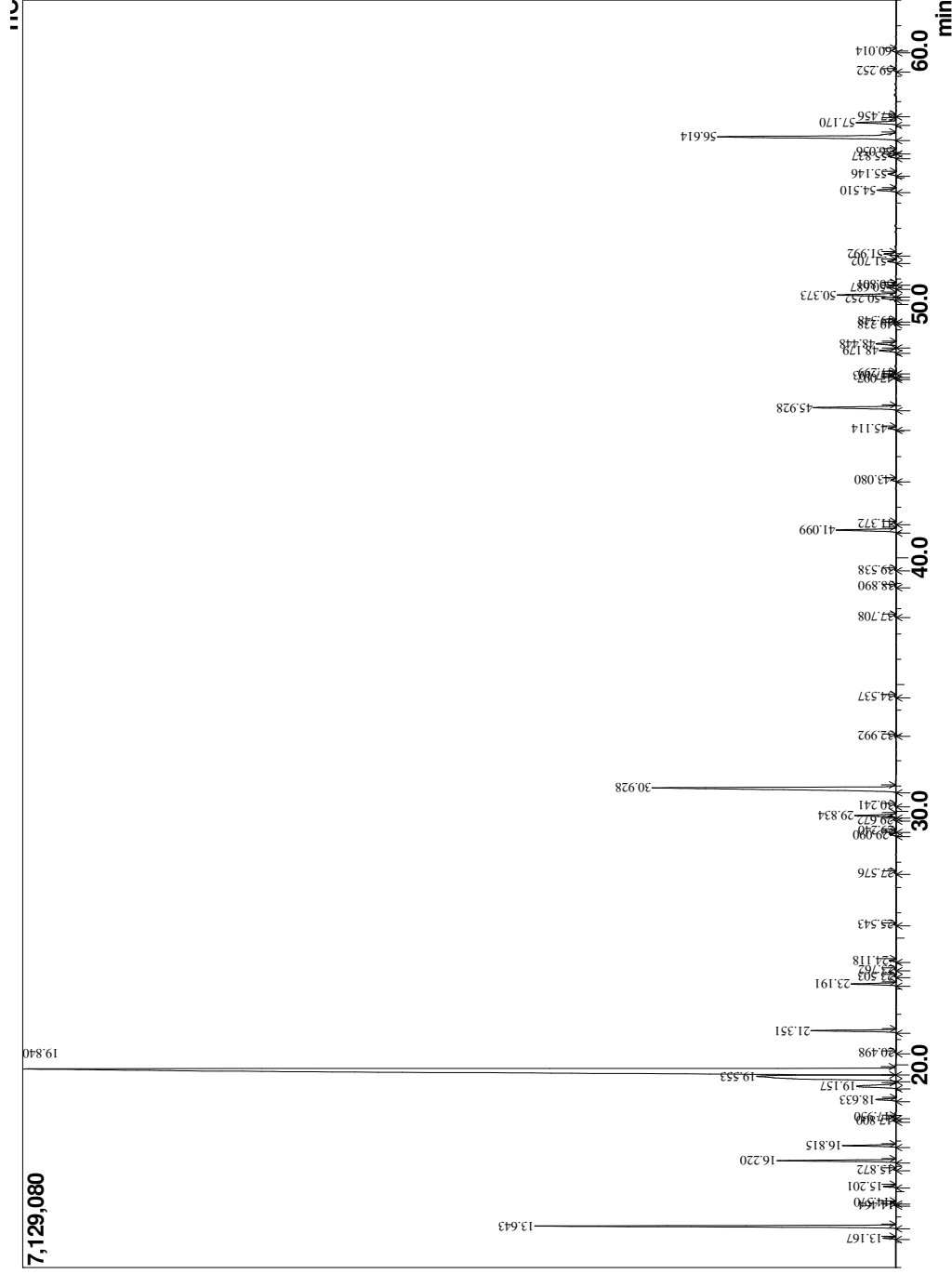
Sample Information

Analyzed by : Dr. Prabodh Satyal
 Analyzed : 2/11/2019 10:27:24 PM
 Sample Type : Essential Oil
 Sample Name : Niaouli
 Lot# : 13118R
 Injection Volume : 0.30



Peak Report TIC

R.Time	Name	Area%
13.167	Thujene <alpha->	0.21
13.643	Pinene <alpha->	7.59
14.464	Fenchene <alpha->	0.02
14.570	Camphene	0.10
15.201	Benzaldehyde	0.22
15.872	Sabinene	0.04
16.220	Pinene <beta->	2.32
16.815	Myrcene	1.03
17.800	Pseudolimonene	0.06
17.950	Phellandrene<alpha->	0.11
18.633	Terpinene <alpha->	0.45
19.157	Cymene <para->	1.45
19.553	Limonene	8.28
19.840	1,8-cineole	49.01
20.498	Ocimene <E-beta->	0.02
21.351	Terpinene <gamma->	1.79
23.191	Terpinolene	0.99
23.503	Cymenene <para->	0.04
23.762	Methyl benzoate	0.02
24.118	Linalool	0.15
25.543	Fenchol<endo->	0.04
27.576	Isopulegol	0.04
29.090	Terpineol <delta->	0.16
29.240	Borneol	0.04
29.672	1,8-menthadien-4-ol <para->	0.06
29.834	Terpinen-4-ol	0.95
30.241	Cymen-8-ol<para->	0.04
30.928	Terpineol <alpha->	8.30
32.992	2-hydroxycienole<exo->	0.03
34.537	Geraniol	0.04
37.708	Methyl thiobenzoate	0.04
38.890	Terpinyl acetate<delta->	0.03
39.538	Myrtenyl acetate<z>	0.03
41.099	Terpinyl acetate<alpha->	1.49
41.372	Eugenol	0.04
43.080	Ylangene <alpha->	0.14
45.114	Curjumenene <alpha->	0.21
45.928	Caryophyllene <trans->	2.16
47.097	Aromadendrene	0.04
47.193	Bourb-11-ene	0.17
47.299	Guaiene<alpha->	0.04
48.179	Humulene <alpha->	0.44
48.448	Alloaromadendrene	0.54
49.238	Chamigrene<beta.>	0.06
49.348	Cadina-1(6),4-diene <trans->	0.04
50.252	Selinene <beta->	0.42
50.373	Viridiflorene	1.53
50.687	Selinene <alpha->	0.25
50.801	Murolene <alpha->	0.07
51.702	Amorphene <delta->	0.21
51.992	Cadinene <delta->	0.30
54.510	Nerolidol <trans->	0.50
55.146	Palustrol	0.22
55.837	Caryophyllene oxide	0.21
56.056	Globulol	0.09
56.614	Viridiflorol	5.83
57.170	Ledol	1.05
57.456	Humulene epoxide-II	0.03
59.252	Cadinol <epi-alpha->	0.07
60.014	Eudesmol<alpha->	0.13
		100.00



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Reviewed by: Ambika Poudel

AROMATIC PLANT RESEARCH CENTER PHYSICAL CONSTANTS REPORT

Oil Name: Nialouli

Botanical Name: *Malaleuca quinquenervia*

Lot #: 13118R

Organoleptic Information	
Appearance	Clear
Color	Pale
Odour	Strong, earthy

Physical Constants Information (at 20 °C)			
Tests	Observed	ISO Range	Comments
Specific Gravity	0.91221	N/A	
Refractive Index	1.46731	N/A	
Optical Rotation	-2.08°	N/A	

N/A: Not Available

Comments:

ISO Standards for Nialouli not available.

Analyzed by: Coraima Calderon
Reviewed by: Dr. Prabodh Satyal

Date: 2-13-19
Date: 2-13-19



American College Of Healthcare Sciences

5940 SW Hood Ave
Portland, OR 97239

Client Sample ID: Niaouli essential oil 13118R

PAL Sample ID: P190256-01

Report Number: P190256

Report Date: February 27, 2019

Client Project ID:

Sample Date: 02/14/2019

Received Date: 02/15/2019

Extraction Date: 02/20/2019

Certificate of Analysis

Table with 10 columns: Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes, Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes. Includes a section for Modified EPA 8270D (GC-MS/MS) with 40 rows of pesticide data.

Handwritten signature of Rick Jordan



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Certificate of Analysis (Continued)

Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes	Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes
Modified EPA 8270D (GC-MS/MS) (Continued)									
02/22/2019	Oxadiazon	ND	0.50		02/22/2019	Oxyfluorfen	ND	0.50	
02/22/2019	p,p'-DDD	ND	0.50		02/22/2019	p,p'-DDE	ND	0.50	
02/22/2019	p,p'-DDT	ND	0.50		02/22/2019	Parathion-methyl	ND	0.50	
02/22/2019	PCA	ND	0.50		02/22/2019	PCB	ND	0.50	
02/22/2019	PCNB	ND	0.50		02/22/2019	Pendimethalin	ND	0.50	
02/22/2019	Pentachlorophenyl methyl sulfide	ND	0.50		02/22/2019	Permethrin	ND	2.5	
02/22/2019	Procymidone	ND	0.50		02/22/2019	Prodiamine	ND	0.50	
02/22/2019	Pronamide	ND	0.50		02/22/2019	Propachlor	ND	0.50	
02/22/2019	Pyriproxyfen	ND	0.50		02/22/2019	Quinoxifen	ND	0.50	
02/22/2019	Spirodiclofen	ND	0.50		02/22/2019	Tetraconazole	ND	0.50	
02/22/2019	Tetradifon	ND	0.50		02/22/2019	trans-Nonachlor	ND	0.50	
02/22/2019	Trifluralin	ND	0.50		02/22/2019	Vinclozalin	ND	0.50	
Modified EPA 8321B (HPLC MS-MS)									
02/21/2019	3-Hydroxycarbofuran	ND	0.48		02/22/2019	Abamectin	ND	0.50	
02/21/2019	Acephate	ND	0.48		02/21/2019	Acetamiprid	ND	0.48	
02/21/2019	Acibenzolar-S-methyl	ND	0.97		02/21/2019	Aldicarb	ND	0.48	
02/21/2019	Aldicarb Sulfone	ND	0.48		02/21/2019	Aldicarb Sulfoxide	ND	0.48	
02/21/2019	Allethrin	ND	0.48		02/21/2019	Ametoctradin	ND	0.48	
02/21/2019	Atrazine	ND	0.48		02/21/2019	Azinphos-ethyl	ND	0.48	
02/21/2019	Azinphos-methyl	ND	0.97		02/21/2019	Azoxystrobin	ND	0.48	
02/21/2019	Bendiocarb	ND	0.48		02/21/2019	Bensulide	ND	0.48	
02/21/2019	Bifenazate	ND	0.48		02/21/2019	Bitertanol	ND	0.48	
02/21/2019	Boscalid	ND	0.48		02/21/2019	Bromacil	ND	0.48	
02/21/2019	Carbaryl	ND	0.48		02/21/2019	Carbendazim	ND	0.48	
02/21/2019	Carbofuran	ND	0.48		02/21/2019	Carfentrazone-ethyl	ND	0.48	
02/21/2019	Chlorantraniliprole	ND	0.48		02/21/2019	Clethodim	ND	0.97	
02/21/2019	Clofentezine	ND	0.48		02/21/2019	Clothianidin	ND	0.48	
02/21/2019	Cyanazine	ND	0.48		02/21/2019	Cyantraniliprole	ND	0.48	
02/21/2019	Cyazofamid	ND	0.48		02/21/2019	Cycloate	ND	0.97	
02/21/2019	Cyflufenamid	ND	0.48		02/21/2019	Cyflumetofen	ND	0.48	
02/21/2019	Cymoxanil	ND	0.48		02/21/2019	Cyprodinil	ND	0.48	
02/21/2019	Cyromazine	ND	0.48		02/21/2019	DCPMU	ND	0.48	
02/21/2019	Diazoxon	ND	0.48		02/21/2019	Difenoconazole	ND	0.48	
02/21/2019	Diflubenzuron	ND	0.48		02/21/2019	Dimethoate	ND	0.48	
02/21/2019	Dimethomorph	ND	0.48		02/21/2019	Dinotefuran	ND	0.48	



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Certificate of Analysis (Continued)

Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes	Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes
Modified EPA 8321B (HPLC MS-MS) (Continued)									
02/21/2019	Disulfoton sulfone	ND	0.48		02/21/2019	Diuron	ND	0.48	
02/21/2019	Dodine	ND	0.48		02/21/2019	d-Phenothrin	ND	0.48	
02/21/2019	Emamectin Benzoate	ND	0.48		02/21/2019	Ethion	ND	0.48	
02/21/2019	Famoxadone	ND	0.48		02/21/2019	Famphur	ND	0.48	
02/21/2019	Fenamidone	ND	0.48		02/21/2019	Fenamiphos sulfone	ND	0.48	
02/21/2019	Fenamiphos sulfoxide	ND	0.48		02/21/2019	Fenazaquin	ND	0.48	
02/21/2019	Fenbuconazole	ND	0.48		02/21/2019	Fenbutatin oxide	ND	0.48	
02/21/2019	Fenhexamid	ND	0.48		02/21/2019	Fenobucarb	ND	0.48	
02/21/2019	Fenpropathrin	ND	0.48		02/21/2019	Fenpyroximate	ND	0.48	
02/21/2019	Fenuron	ND	0.48		02/21/2019	Flonicamid	ND	0.48	
02/21/2019	Fluazinam	ND	0.48		02/21/2019	Flubendiamide	ND	0.97	
02/21/2019	Flumioxazin	ND	0.48		02/21/2019	Fluometuron	ND	0.48	
02/21/2019	Fluopicolide	ND	0.48		02/21/2019	Fluopyram	ND	0.48	
02/21/2019	Fluoxastrobin	ND	0.48		02/21/2019	Flupyradifurone	ND	0.48	
02/21/2019	Fluridone	ND	0.48		02/21/2019	Flutriafol	ND	0.48	
02/21/2019	Fluvalinate	ND	0.48		02/21/2019	Fluxapyroxad	ND	0.48	
02/21/2019	Fonofos	ND	0.97		02/21/2019	Formetanate HCl	ND	0.48	
02/21/2019	Hexaconazole	ND	0.48		02/21/2019	Hexazinone	ND	0.48	
02/21/2019	Hexythiazox	ND	0.48		02/21/2019	Imazalil	ND	0.48	
02/21/2019	Imidacloprid	ND	0.48		02/21/2019	Indaziflam	ND	0.48	
02/21/2019	Indoxacarb	ND	0.48		02/21/2019	Iprodione	ND	2.4	
02/21/2019	Isoxaben	ND	0.48		02/21/2019	Linuron	ND	0.48	
02/21/2019	Malaoxon	ND	0.48		02/21/2019	Mandipropamid	ND	0.48	
02/21/2019	Metconazole	ND	0.48		02/22/2019	Methamidophos	ND	1.0	
02/21/2019	Methidathion	ND	0.48		02/21/2019	Methiocarb	ND	0.48	
02/21/2019	Methomyl	ND	0.48		02/21/2019	Methoxyfenozide	ND	0.48	
02/21/2019	Metrafenone	ND	0.48		02/21/2019	Metribuzin	ND	0.48	
02/21/2019	Mevinphos	ND	0.48		02/21/2019	Norflurazon	ND	0.48	
02/21/2019	Novaluron	ND	0.48		02/21/2019	Omethoate	ND	0.48	
02/21/2019	Oryzalin	ND	0.48		02/21/2019	Oxadixyl	ND	0.48	
02/21/2019	Oxamyl	ND	0.48		02/21/2019	Oxydemeton-Methyl	ND	0.48	
02/21/2019	Penthiopyrad	ND	0.48		02/21/2019	Phorate Sulfone	ND	0.48	
02/21/2019	Phorate Sulfoxide	ND	0.48		02/21/2019	Phosalone	ND	0.48	
02/21/2019	Phosmet	ND	0.48		02/21/2019	Phosphamidon	ND	0.48	
02/21/2019	Piperonyl Butoxide	ND	0.48		02/21/2019	Pirimicarb	ND	0.48	
02/21/2019	Pirimiphos-methyl	ND	0.48		02/21/2019	Prometon	ND	0.48	



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Certificate of Analysis (Continued)

Table with 10 columns: Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes, Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes. Contains data for Modified EPA 8321B (HPLC MS-MS) with various pesticides and their detection results.

Notes and Definitions

Table with 2 columns: Notes, Definition. Includes definitions for LOQ (Limit of Quantitation), ND (Not Detected), and * (Not included under current scope of accreditation).

The results contained in this report relate only to the items tested. The results reflect the condition of the samples as received by PAL. Samples will be stored for a minimum of 60 days after the final report is issued, as described in our Quality Manual. Reports should not be reproduced, except in full, without written approval from PAL. PAL is accredited to ISO/IEC 17025:2017 Standard, by PJLA, Accreditation #64422, Testing.

Handwritten signature of Rick Jordan