



APRC
Aromatic Plant Research Center

LABORATORY REPORT

SAMPLE NAME: Frankincense

Botanical Name: *Boswellia carterii*

COMPANY NAME: ACHS

COMPANY LOT #: 38127R

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 expected profile of *Boswellia carterii*.

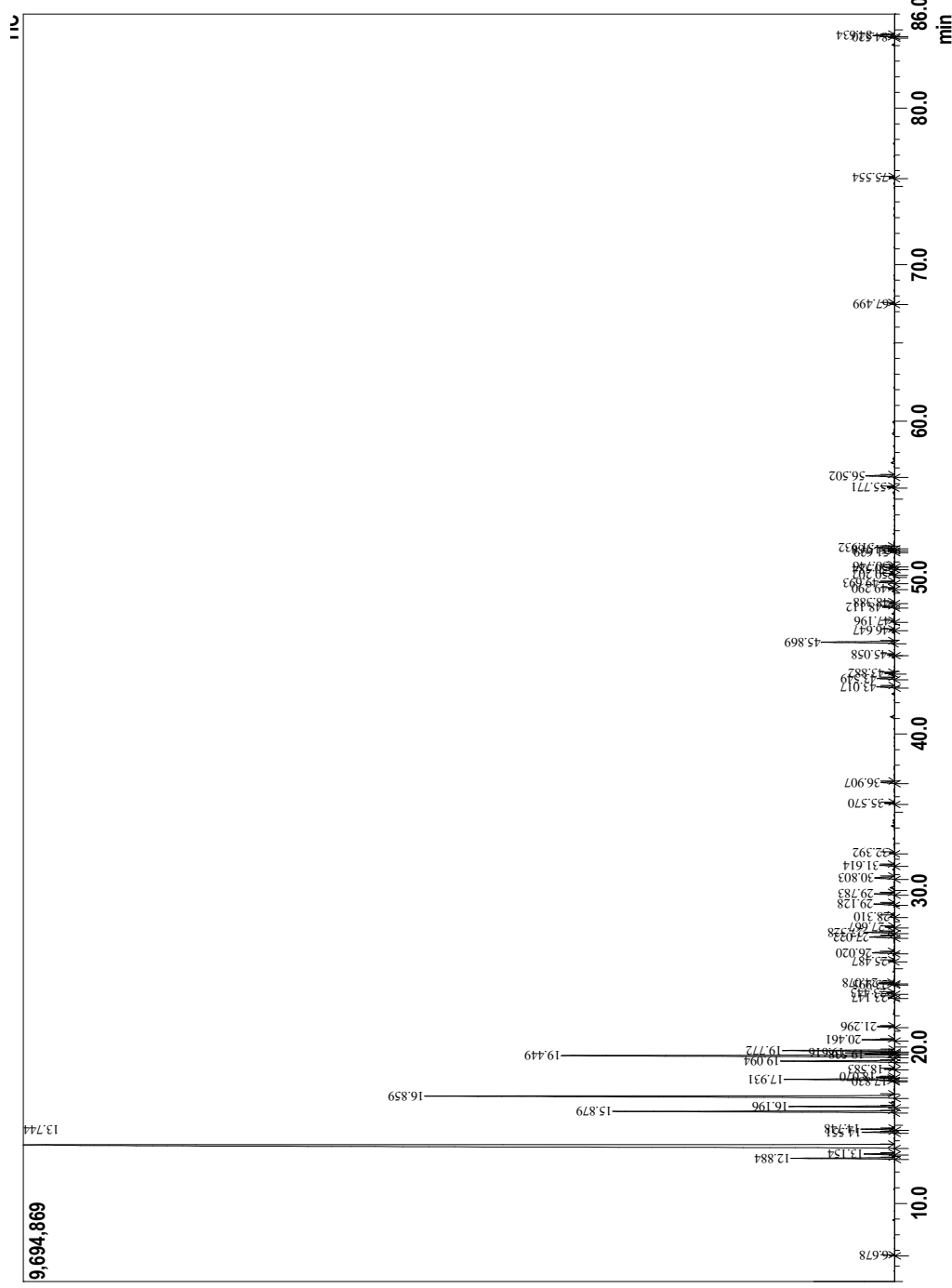
Analyzed by: Dr. Prabodh Satyal

Reviewed by: Ambika Poudel

Issued Date: 5/6/2019

Sample Information

Analyzed by : Dr. Prabodh Satyal
 Analyzed : 5/4/2019 6:28:22 AM
 Sample Type : Essential Oil
 Sample Name : Frankincense
 Lot# : 38127R
 Injection Volume : 0.30



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Reviewed by: Ambika Poudel

Peak Report TIC

R.Time	Area%	Peak Name
6.678	0.06	Toluene
12.884	1.97	Pinene isomer
13.154	0.69	Thujene <alpha>
13.744	42.69	Pinene <alpha>
14.551	0.58	Camphene
14.748	0.62	Thuja-2,4(10)dien
15.879	5.90	Sabinene
16.196	2.05	Pinene <beta>
16.859	12.88	Myrcene
17.830	0.10	1,4-Cyclohexadiene, 3-ethenyl-1,2-dimethyl-
17.931	2.37	Phellandrene <alpha>
18.070	0.33	Carene <delta-3->
18.583	0.20	Terpinene <alpha>
19.094	2.55	Cymene <para>
19.449	8.98	Limonene
19.538	0.52	Phellandrene <beta>
19.616	0.91	1,8-cineole
19.772	2.40	Ocimene <Z>-beta>
20.461	0.65	Ocimene <E>-beta>
21.296	0.34	Terpinene <gamma>
23.147	0.19	Terpinolene
23.443	0.20	Cymenene <p>+Nonanone<2>
23.995	0.11	Perillene
24.078	0.34	Linalool
25.487	0.12	Myrcenol
26.020	0.53	Campholenal <alpha>
27.022	0.73	Pinocarveol <trans>
27.328	0.71	Verbenol <trans>
27.667	0.21	a-Felandren-8-ol
28.310	0.11	Chrysanthenol
29.128	0.47	Mentha-1,5-dien-8-ol <para>
29.783	0.49	Terpinen-4-ol
30.803	0.68	Terpineol <alpha>
31.614	0.32	Verbenone
32.392	0.11	Carveol <trans>
35.570	0.22	Toluene <3,5-dimethoxy>
36.907	0.33	Bornyl acetate
43.017	0.46	Copaene <alpha>
43.549	0.43	Bourbonene <alpha>
43.882	0.18	Elemene <beta>
45.058	0.17	Gurjunene <alpha>
45.869	1.91	Caryophyllene <trans>
46.647	0.11	Bergamotene <trans>-alpha>
47.196	0.08	Gualadiene <6,9->
48.112	0.30	Humulene <alpha>
48.388	0.10	Alloaromadendrene
49.290	0.14	Cadina-1(6),4-diene <trans>
49.693	0.39	Germacrene D
50.202	0.11	Selinene <beta>
50.584	0.19	Cubebol <ep>+Bicyclogermacrene
50.746	0.13	Murolene <alpha>
51.639	0.08	Amorphene <delta>
51.768	0.14	Cubebol
51.932	0.47	Cadinene <delta>
55.771	0.16	Caryophyllene oxide
56.502	0.78	Viridiflorol
67.499	0.11	Phellandrene <alpha>-dimer >
75.554	0.14	Cembrene A <3E->
84.520	0.16	Incensole
84.634	0.61	Serratol
	100.00	

AROMATIC PLANT RESEARCH CENTER PHYSICAL CONSTANTS REPORT

Oil Name: Frankincense

Botanical Name: *Boswellia carterii*

Lot #: 38127R

Organoleptic Information	
Appearance	Clear liquid
Colour	Hint of yellow
Odour	Smooth

Physical Constants Information (at 20 °C)			
Tests	Observed	ISO Ranges	Comments
Specific Gravity	0.85591	N/A	
Refractive Index	1.47212	N/A	
Optical Rotation	2.16	N/A	

N/A: Not Available

Comments:

- ISO Standards for *Boswellia carterii* is not available.

Analyzed by : Ambika Poudel
Reviewed by : Dr. Prabodh Satyal

Date: 05/06/2019
Date: 05/06/2019



PACIFIC AGRICULTURAL LABORATORY

A MATRIX SCIENCES COMPANY

21830 S.W. Alexander Ln. • Sherwood, OR 97140 • Ph 503.626.7943 • pacaglab.com

American College Of Healthcare Sciences
5940 SW Hood Ave
Portland, OR 97239

Report Number: P190791
Report Date: May 28, 2019
Client Project ID:

Client Sample ID: Frankincense essential oil 38127R
PAL Sample ID: P190791-01

Sample Date: 05/14/2019
Received Date: 05/15/2019
Extraction Date: 05/16/2019

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 multiple rows of chemical analysis results.

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)									
05/23/2019	p,p'-DDD	ND	0.50		05/23/2019	p,p'-DDE	ND	0.50	
05/23/2019	p,p'-DDT	ND	0.50		05/23/2019	Parathion-methyl	ND	0.50	
05/23/2019	PCA	ND	0.50		05/23/2019	PCB	ND	0.50	
05/23/2019	PCNB	ND	0.50		05/23/2019	Pendimethalin	ND	0.50	
05/23/2019	Pentachlorophenyl methyl sulfide	ND	0.50		05/23/2019	Permethrin	ND	2.5	
05/23/2019	Procymidone	ND	0.50		05/23/2019	Prodiamine	ND	0.50	
05/23/2019	Pronamide	ND	0.50		05/23/2019	Propachlor	ND	0.50	
05/23/2019	Pyriproxyfen	ND	0.50		05/23/2019	Quinoxifen	ND	0.50	
05/23/2019	Spirodiclofen	ND	0.50		05/23/2019	Tetraconazole	ND	0.50	
05/23/2019	Tetradifon	ND	0.50		05/23/2019	trans-Nonachlor	ND	0.50	
05/23/2019	Trifluralin	ND	0.50		05/23/2019	Vinclozalin	ND	0.50	
Modified EPA 8321B (HPLC MS-MS)									
05/18/2019	3-Hydroxycarbofuran	ND	0.50		05/18/2019	Abamectin	ND	0.50	
05/18/2019	Acephate	ND	0.50		05/18/2019	Acetamiprid	ND	0.50	
05/18/2019	Acibenzolar-S-methyl	ND	1.0		05/18/2019	Aldicarb	ND	0.50	
05/18/2019	Aldicarb Sulfone	ND	0.50		05/18/2019	Aldicarb Sulfoxide	ND	0.50	
05/18/2019	Allethrin	ND	0.50		05/18/2019	Ametoctradin	ND	0.50	
05/18/2019	Atrazine	ND	0.50		05/18/2019	Azinphos-ethyl	ND	0.50	
05/18/2019	Azinphos-methyl	ND	1.0		05/18/2019	Azoxystrobin	ND	0.50	
05/18/2019	Bendiocarb	ND	0.50		05/18/2019	Bensulide	ND	0.50	
05/18/2019	Bifenazate	ND	0.50		05/18/2019	Bitertanol	ND	0.50	
05/18/2019	Boscalid	ND	0.50		05/18/2019	Bromacil	ND	0.50	
05/18/2019	Carbaryl	ND	0.50		05/18/2019	Carbendazim	ND	0.50	
05/18/2019	Carbofuran	ND	0.50		05/18/2019	Carfentrazone-ethyl	ND	0.50	
05/18/2019	Chlorantraniliprole	ND	0.50		05/18/2019	Clethodim	ND	1.0	
05/18/2019	Clofentezine	ND	0.50		05/18/2019	Clothianidin	ND	0.50	
05/18/2019	Cyanazine	ND	0.50		05/18/2019	Cyantraniliprole	ND	0.50	
05/18/2019	Cyazofamid	ND	0.50		05/18/2019	Cycloate	ND	1.0	
05/18/2019	Cyflufenamid	ND	0.50		05/18/2019	Cyflumetofen	ND	0.50	
05/18/2019	Cymoxanil	ND	0.50		05/18/2019	Cyprodinil	ND	0.50	
05/18/2019	Cyromazine	ND	0.50		05/18/2019	DCPMU	ND	0.50	
05/18/2019	Diazoxon	ND	0.50		05/18/2019	Difenoconazole	ND	0.50	
05/18/2019	Diflubenzuron	ND	0.50		05/18/2019	Dimethoate	ND	0.50	
05/18/2019	Dimethomorph	ND	0.50		05/18/2019	Dinotefuran	ND	0.50	
05/18/2019	Disulfoton sulfone	ND	0.50		05/18/2019	Diuron	ND	0.50	



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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 two columns of data under the heading 'Modified EPA 8321B (HPLC MS-MS) (Continued)'. The first column lists various pesticides and their detection results (ND) and LOQ values. The second column lists other pesticides and their detection results (ND) and LOQ values.



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Notes and Definitions

Table with 2 columns: Notes, Definition. Includes 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