



Certificate of Analysis

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Client:	Midlands Apiaries Limited	Lab No:	2033512	SPv2
Contact:	Hamish Finnie C/- Midlands Apiaries Limited PO Box 65 Ashburton 7740	Date Received:	17-Aug-2018	
		Date Reported:	22-Aug-2018	
		Quote No:	70096	
		Order No:		
		Client Reference:	Larnac	
		Submitted By:	Lily Zhao	

Sample Type: Honey

Sample Name:	13818B1				
Lab Number:	2033512.1				
Individual Tests					
Non Peroxide Activity (NPA)*	% Phenol Equivalent	8.8	-	-	-
Aerobic Plate Count 35°C	cfu / g	1,160	-	-	-
Yeasts	cfu / g	< 50 #2	-	-	-
Moulds	cfu / g	< 50 #2	-	-	-
Yeasts & Moulds	cfu / g	< 50	-	-	-
MPI 5 Attributes Tests					
MPI Manuka Honey Classification	Monofloral Manuka Honey	-	-	-	-
Manuka Honey Chemistry Profile					
3-Phenyllactic acid	mg/kg	580	-	-	-
2'-Methoxyacetophenone	mg/kg	9.6	-	-	-
2-Methoxybenzoic Acid	mg/kg	7.8	-	-	-
4-Hydroxyphenyllactic acid	mg/kg	5.1	-	-	-
Manuka Honey PCR Profile					
Manuka Cq	Cq	21.04 #1	-	-	-
3-in-1 Honey Analysis					
Dihydroxyacetone (DHA)	mg/kg	600	-	-	-
5-hydroxymethylfurfural (HMF)	mg/kg	15.6	-	-	-
Methylglyoxal (MGO)	mg/kg	212	-	-	-
C-4 Sugars Analysis					
δ ¹³ C Honey (Whole)	‰	-25.1	-	-	-
δ ¹³ C Honey (Protein)	‰	-26.6	-	-	-
Difference (Whole - Protein)	‰	1.5	-	-	-
C-4 Sugar Content	%	8.9	-	-	-

Analyst's Comments

#1 Report Signatory for this analysis is Kevin Wang.

#2 Statistically estimated count based on the theoretical countable range for the stated method.

Sample 1 Comment:

C-4 Sugar Content:

As reported in AOAC method 998.12, pure honey (free of corn or cane sugars) with an exception of a few unusual varieties, yields a C-4 Sugar Content value of less than or equal to 7%. Some unusual varieties may slightly exceed this value, but will have a δ ¹³C for honey which is in the normal range (more negative than -24.0‰).



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
C-4 Sugars Analysis (AOAC Method)	Methodology was performed in accordance with AOAC Official Method 998.12 (Revised First Edition 2013), C-4 Plant Sugars in Honey, using Internal Standard Stable Carbon Isotope Ratio Analysis (ISCIRA). All isotope ratios are reported as 'per mil' i.e. parts per thousand (‰), and are reported relative to the international standard for Carbon, V-PDB.	-	1
Non Peroxide Activity (NPA)*	NPA is calculated from methylglyoxal using a correlation curve based on published data for NPA and the primary active ingredient, methylglyoxal. (1,2). (1) Isolation by HPLC and characterisation of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey. C. J. Adams, et al. Carbohydrate Research 343 (2008) 651-659. (2) Corrigendum to "Isolation by HPLC and characterization of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey" [Carbohydr. Res. 343 (2008) 651]. C. J. Adams, et al. Carbohydrate Research 344 (2009) 2609.	1.0 % Phenol Equivalent	1
Aerobic Plate Count 35°C	Count on APC Petrifilm, Incubated at 35°C for 48 hours. APHA 8.82 5 th Ed.	10 cfu / g	1
Yeasts & Moulds	Spread plate, Count on DRBC agar, Incubated at 22-25°C for 5 days. APHA 21.5 5 th Ed.	50 cfu / g	1
3-in-1 Honey Analysis	Aqueous extraction, derivatisation. Analysis by UPLC-UV (dihydroxyacetone, 5-hydroxymethylfurfural, methylglyoxal).	1.0 - 10 mg/kg	1
MPI 5 Attributes Tests			
MPI Manuka Honey Classification	Evaluation of results against Ministry of Primary Industries (MPI) criteria for classification of monofloral and multifloral Manuka honey, as per 'General Export Requirements for Bee Products - 29 January 2018.	-	1
Manuka Honey Chemistry Profile			
3-Phenyllactic acid	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	10 mg/kg	1
2'-Methoxyacetophenone	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
2-Methoxybenzoic Acid	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
4-Hydroxyphenyllactic acid	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
Manuka Honey PCR Profile			
Manuka Cq	Quantification of Manuka DNA by real time PCR (Method version 1.05). RLP Official Test 10.04.	1.00 Cq	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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