



Certificate of Analysis

Page 1 of 2

Client:	Midlands Apiaries Limited	Lab No:	2274578	HGSP-1v1
Contact:	Claudine McCormick C/- Midlands Apiaries Limited PO Box 65 Ashburton 7740	Date Received:	13-Nov-2019	
		Date Reported:	18-Nov-2019	
		Quote No:	70096	
		Order No:		
		Client Reference:	Larnac	
		Submitted By:	Lily Zhao	

Sample Type: Honey

Sample Name:		111119 B2-1 111119 B2-2	
Lab Number:		2274578.1	
MPI Manuka 5 Attributes Analysis			
MPI Manuka Honey Classification		Monofloral Manuka Honey	
3-Phenyllactic acid (3-PA)	mg/kg	550	
2'-Methoxyacetophenone (2'-MAP)	mg/kg	16.0	
2-Methoxybenzoic acid (2-MBA)	mg/kg	10.8	
4-Hydroxyphenyllactic acid (4-HPA)	mg/kg	7.3	
Manuka Cq	Cq	23.02 #1	
Manuka Honey Analysis			
Dihydroxyacetone (DHA)	mg/kg	610	
5-Hydroxymethylfurfural (HMF)	mg/kg	17.8	
Methylglyoxal (MGO)	mg/kg	333	
Non Peroxide Activity (NPA)*	% Phenol Equivalent	11.6	
Tutin Analysis			
Tutin Result Evaluation	Pass/Fail	PASS	
Tutin	mg/kg	< 0.010	
MRL as per Tutin in Honey Food Standard 2016	mg/kg	0.70	
Microbiological Analysis			
Aerobic Count 35°C	cfu / g	21	
Yeasts & Moulds	cfu / g	< 10	

Analyst's Comments

#1 The Key Technical Personnel for this analysis is Eilidh Mowat.

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. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
3-in-1 Honey Method	Aqueous extraction, derivatisation. Analysis by UPLC-UV (dihydroxyacetone, 5-hydroxymethylfurfural, methylglyoxal).	-	1



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
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
Tutin Analysis in Honey	Solvent extraction, SPE cleanup. Analysis by LCMSMS. Results are representative of the liquid honey, not the sample as a whole. RLP Official Test 8.42 <i>Please note the Pass/Fail criteria is for extracted honey only. For comb honey tutin criteria please refer to the MPI Food Standard: Tutin in Honey.</i> <u>Tutin Result Evaluation (PASS/FAIL)</u> The PASS/FAIL result is based on comparison of the tutin result with the "Food Standard: Tutin in Honey (2016)". A result that falls at or BELOW the maximum permitted tutin level will give a PASS result. A result that falls ABOVE the maximum permitted tutin level will give a FAIL result. <u>Individual Sample Testing Recommended?</u> Where a tutin result for a composited sample is above the maximum permitted level, it is recommended that the individual samples are retested. Please contact the laboratory to arrange for individual sample retesting.	-	1
Aerobic Count 35°C	Automated MPN count on TEMPO AC, Incubated at 35°C for 22-28 hours. bioMérieux, TEMPO.	10 cfu / g	1
Yeasts & Moulds	Automated MPN count on TEMPO YM, Incubated at 25°C for 72-76 hours. bioMérieux, TEMPO.	10 cfu / g	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 (3-PA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	10 mg/kg	1
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
4-Hydroxyphenyllactic acid (4-HPA)	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.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Shaun Clay BSc
Senior Technologist - Food and Bioanalytical