



## Certificate of Analysis

Lab Reference: 21-24625  
Date Received: 01/06/2021  
Testing Initiated: 1/06/2021  
Date Completed: 1/06/2021

### Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.  
Specific testing dates are available on request.

### Results Summary

#### 3in1

Laboratory ID	Sample ID	Dihydroxyacetone (DHA)	Methylglyoxal (MG)	Non-Peroxide Activity* (NPA)	Hydroxymethylfurfural (HMF)
	<i>Units Reporting Limit</i>	mg/kg 40	mg/kg 8	%w/v phenol eq. 1.3	mg/kg 1
21-24625-4	213005	1,020	583	16.2	29

3in1 Approver:

Kasey Calvert, B.Sc.  
Technician

#### Leptosperin

Laboratory ID	Sample ID	Leptosperin
	<i>Units Reporting Limit</i>	mg/kg 20
21-24625-4	213005	518

Leptosperin Approver:

Kasey Calvert, B.Sc.  
Technician

## Method Summary

<b>3in1</b>	Determination of Dihydroxyacetone (DHA), Methylglyoxal (MG) and Hydroxymethylfurfural (HMF) by aqueous extraction, derivatisation, and UPLC analysis in accordance with in-house procedures.
<b>NPA</b>	<p>Non-Peroxide Activity (NPA) values are not directly measured by the laboratory, but are calculated from the measured methylglyoxal concentration in the honey according to the requirements of the client. The calculation is based on published data<sup>(†)</sup> comparing the NPA and methylglyoxal concentration measured in a range of honey samples. These calculated values are not accredited by IANZ and do not imply that the honey is or is not manuka honey. NPA values less than 5 are an estimate based on extrapolation of the relationship between methylglyoxal and NPA</p> <p><i>(†) 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. And, Corrigendum to "Isolation by HPLC and characterization of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey" [Carbohydr. Res. 343 (2008) 651]. Carbohydrate Research 344 (2009) 2609. C. J. Adams, et al.</i></p>
<b>Leptosperin</b>	Aqueous extraction, dilution, analysis by UPLC in accordance with in-house procedures.



### Certificate of Analysis

		<b>Lab No:</b> 2622491	HMM5ASP-2v1
		<b>Date Received:</b> 27-May-2021	
		<b>Date Reported:</b> 28-May-2021	

#### Sample Type: Honey

<b>Sample Name:</b>	213005	
<b>Lab Number:</b>	2622491.2	
<b>MPI Manuka 5 Attributes Analysis</b>		
MPI Manuka Honey Classification	Monofloral Manuka Honey	
3-Phenyllactic acid (3-PA) mg/kg	930	
2'-Methoxyacetophenone (2'-MAP) mg/kg	23	
2-Methoxybenzoic acid (2-MBA) mg/kg	8.3	
4-Hydroxyphenyllactic acid (4-HPA) mg/kg	8.6	
Manuka DNA Cq	25.11	

**Supplementary Report:** This report is a supplement to an earlier report. It may represent a subset of the requested tests.

### 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 simple 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. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. 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
<b>MPI 5 Attributes Tests</b>			
MPI Manuka Honey Classification	Evaluation of results against Ministry of Primary Industries (MPI) criteria for classification of monofloral and multifloral Manuka honey. General Export Requirements for Bee Products - 29 January 2018.	-	2
<b>Manuka Honey Chemistry Profile</b>			
3-Phenyllactic acid (3-PA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. <b>RLP Official Test 10.05.</b>	5 mg/kg	2
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MSMS analysis. <b>RLP Official Test 10.05.</b>	0.5 mg/kg	2
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. <b>RLP Official Test 10.05.</b>	0.5 mg/kg	2
4-Hydroxyphenyllactic acid (4-HPA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. <b>RLP Official Test 10.05.</b>	0.5 mg/kg	2
<b>Manuka Honey PCR Profile</b>			
Manuka DNA	Quantification of Manuka ( <i>Leptospermum scoparium</i> ) DNA by real time PCR. MPI Technical - Paper No: 2017/31 <b>RLP Official Test 10.04.</b>	1.00 Cq	2



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

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

Testing was completed on 28-May-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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

A handwritten signature in blue ink, appearing to read 'Helen McGowan', with a long horizontal flourish extending to the right.

Helen McGowan BSc (Tech)  
Operations Support - Food & Bioanalytical