

Analytica Laboratories Limited Ruakura Research Centre 10 Bisley Road Hamilton 3214, New Zealand Ph +64 (07) 974 4740 sales@analytica.co.nz www.analytica.co.nz

# Certificate of Analysis

Lab Reference: 21-18993
Date Received: 28/04/2021
Testing Initiated: 28/04/2021
Date Completed: 28/04/2021

## **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)
Units Reporting Limit		mg/kg 40	mg/kg 8	%w/v phenol eq. 1.3	mg/kg 1
21-18993-5	212944	1,340	558	15.8	16

3in1 Approver:

Gurmeet Singh, Dip. Tech. (Sci)

Technician

#### Leptosperin

Laboratory ID Sample ID		Leptosperin
	Units Reporting Limit	mg/kg 20
21-18993-5	212944	465

Leptosperin Approver:

Gurmeet Singh, Dip. Tech. (Sci)

Technician



## **Method Summary**

3in1 Determination of Dihydroxyacetone (DHA), Methylglyoxal (MG) and Hydroxymethylfurfural (HMF) by aqueous extraction,

derivatisation, and UPLC analysis in accordance with in-house procedures.

NPA 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(†) 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

(†) 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.

Aqueous extraction, dilution, analysis by UPLC in accordance with in-house procedures.

Leptosperin



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# Certificate of Analysis

 Lab Reference:
 21-18450

 Date Received:
 23/04/2021

 Testing Initiated:
 23/04/2021

 Date Completed:
 27/04/2021

### **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**

### **MPI Manuka Classification\***

Laboratory ID	Sample ID	MPI Manuka Classification*		
21-18450-1	212944	MONOFLORAL MANUKA		

MPI Manuka Classification\* Approver:

Navuoo Begman, B.Sc.

Technician

### **MPI Manuka DNA**

Laboratory ID	Sample ID	Manuka DNA
	Units Reporting Limit	Cq
21-18450-1	212944	24.97

MPI Manuka DNA Approver:

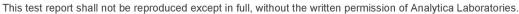
Navuoo Begman, B.Sc.

Technician

#### **MPI Manuka Markers**

Laboratory ID	Sample ID	4-Hydroxyphenyllactic acid (4-HPLA)	2-Methoxybenzoic acid (2-MBA)	2'-Methoxy acetophenone (2'-MAP)	3-Phenyllactic acid (3-PLA)
Units Reporting Limit		mg/kg 0.80	mg/kg 0.80	mg/kg 0.80	mg/kg 20
21-18450-1	212944	9.0	7.9	31	1,100

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation with the exception of tests marked \*, which are not accredited.





#### **MPI Manuka Markers**

Laboratory ID	Sample ID	4-Hydroxyphenyllactic acid (4-HPLA)	2-Methoxybenzoic acid (2-MBA)	2'-Methoxy acetophenone (2'-MAP)	3-Phenyllactic acid (3-PLA)
Units		mg/kg	mg/kg	mg/kg	mg/kg
Reporting Limit		0.80	0.80	0.80	20

**MPI Manuka Markers Approver:** 

Hannah Crossan, M.Sc. (Hons)

Senior Technician

#### **Method Summary**

MPI Manuka Classification

For classification as monofloral manuka, the following chemicals all need to be present and at these levels (Animal Products Notice - General Export Requirements for Bee Products, 2018):

- 4-hydroxyphenyllactic acid at a level greater than or equal to 1mg/kg
- 2-methoxybenzoic acid at a level greater than or equal to 1mg/kg
- · 2'-methoxyacetophenone at a level greater than or equal to 5mg/kg
- 3-phenyllactic acid at a level greater than or equal to 400mg/kg

And the DNA level from manuka pollen is less than Cq 36, which is approximately 3fg/µL.

For classification as multifloral manuka, the following chemicals all need to be present and at these levels:

- · 4-hydroxyphenyllactic acid at a level greater than or equal to 1mg/kg
- 2-methoxybenzoic acid at a level greater than or equal to 1mg/kg
- 2'-methoxyacetophenone at a level greater than or equal to 1mg/kg
- · 3-phenyllactic acid at a level greater than or equal to 20 mg/kg but less than 400mg/kg

And the DNA level from manuka pollen is less than Cq 36, which is approximately 3fg/µL

**MPI Manuka Markers** 

Solvent extraction, LC-MS/MS analysis.

Analytica Laboratories Ltd., is approved by the New Zealand Ministry of Primary Industries to conduct this analysis under the Recognised Laboratory Programme (RLP Method 10.05).

Leptospermum scoparium DNA (PCR)

Samples were analysed as received by the Laboratory for Manuka Pollen DNA by pollen DNA extraction followed by qPCR in accordance with the MPI Technical Paper 2016/74 (modified) (96 well method with magnetic bead extraction). Analytica Laboratories Ltd., is approved by the New Zealand Ministry of Primary Industries to conduct this analysis under the Recognised Laboratory Programme (RLP Method 10.04).

The DNA component of the MPI Manuka Honey Definition requires a Cq value of less than 36 to qualify for either a monofloral or multifloral manuka honey.