



## Certificate of Analysis

NZ Gold Health Ltd  
 Unit 2-4 72 Dominion Rd  
 Mt Eden, Auckland  
 Attention: Gordon Yang  
 Phone: 021 388 771  
 Email: info@nzgoldhealth.com

Lab Reference: 18-08880  
 Submitted by: Christopher Courage  
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 Order Number: FGOLD-130318  
 Reference: 100318-NZG

### 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.

### Results Summary

#### 3in1 Honey Analysis

Laboratory ID	Sample ID	Dihydroxyacetone (DHA)	Methylglyoxal (MG)	Non-peroxide Activity* (NPA)	Hydroxymethylfurfural (HMF)
	<i>Units Reporting Limit</i>	mg/kg 10	mg/kg 4	%w/v phenol eq. 0.8	mg/kg 1
18-08880-1	B-1-100318-NZG	955	523	15.2	12

#### 3in1 Honey Analysis Approver:

Jacob Jaime, Ph.D.  
 Senior Technologist

#### Leptosperin Analysis

Laboratory ID	Sample ID	Leptosperin
	<i>Units Reporting Limit</i>	mg/kg 20
18-08880-1	B-1-100318-NZG	815

#### Leptosperin Analysis Approver:

Jacob Jaime, Ph.D.  
 Senior Technologist

### Method Summary

**3in1** Determination of Dihydroxyacetone (DHA), Methylglyoxal (MG) and Hydroxymethylfurfural (HMF) by aqueous extraction, derivatisation, and UPLC analysis.

## Method Summary

**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<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

*(†) 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.*

**Leptosperin** Aqueous extraction, dilution, analysis by UPLC.