



## Certificate of Analysis

Bees & Trees Honey  
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Lab Reference: 17-16623  
 Submitted by:  
 Date Received: 13/07/2017  
 Date Completed: 17/07/2017  
 Order Number:  
 Reference:  
 New Zealand date  
 format dd/mm/yyyy

### Report Comments

Samples were received by Analytica Laboratories 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</i> mg/kg	mg/kg	%w/v phenol eq.	mg/kg
		<i>Reporting Limit</i> 10	4	0.8	1
17-16623-1	2015 Batch 20	1,210	556	15.7	16

#### 3in1 Honey Analysis Approver:

Michael Hutcheson, B.Sc.  
 Senior Technologist

### Method Summary

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

**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.*