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optimised honey & hive health testing

Report Date 02 Dec 2020

Forecast report
On MGO, NPA and HMF in manuka honey

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SAMPLE NAME
Demonstration Sample [SAMPLE ONLY]

LAB SAMPLE ID / **DUTERK00803704**

Test results

DIHYDROXYACETONE (DHA) mg/kg	METHYLGLYOXAL (MGO) mg/kg	DHA : MGO RATIO	NON-PEROXIDE ACTIVITY (NPA) %w/v phen. eq.	HYDROXYMETHYLFURFURAL (HMF) mg/kg
893	295	3	10.7	10

Forecast up to 12 months

if honey stored at the indicated temperature

CHEMICAL MARKER	UNITS	PRESENT TEST RESULT	20°C			23°C			27°C		
			4 MONTHS	8 MONTHS	12 MONTHS	4 MONTHS	8 MONTHS	12 MONTHS	4 MONTHS	8 MONTHS	12 MONTHS
MGO	mg/kg	295	328	352	369	341	367	380	359	379	372
NPA	%w/v phen. eq.	10.7	11.4	11.9	12.3	11.7	12.2	12.5	12.1	12.5	12.3
HMF	mg/kg	10	13	15	18	15	20	25	22	34	45

Maximum MGO Forecast

if honey stored at the indicated temperature

	UNITS	20°C	23°C	27°C
Maximum MGO	mg/kg	387	385	383
Storage time from present date	weeks	97	64	37
Maximum NPA	%wlv phen. eq.	12.6	12.6	12.6
HMF at the end of storage	mg/kg	24	28	35

Awanui Scientific

Forecast model

This manuka forecast is provided using a kinetic model (Model v1) developed by Ecrotek in partnership with Awanui Scientific. To validate the model, numerous manuka honey samples are incubated at three constant temperatures and tested at regular intervals. It has been shown that maturation of manuka honey is fundamentally regulated by time and temperature (1,2). However, there are other variables such as moisture and a variety of chemicals present in honey that influence how manuka honey matures in a currently unknown mechanism (1,2). Therefore, a particular honey sample may mature at a slightly different rate from what the model predicts. This is a source of error as the model assumes all honey behaves in the same way. It is an inherent problem of any forecasting model at present (3).

Our model strives to provide a reasonable manuka forecast, however Ecrotek - Awanui Scientific cannot guarantee from the above reasons that future test results will be exactly the same as predicted in this report. Furthermore, Ecrotek - Awanui Scientific accept no liability for consequences of decisions made on the basis of these forecasts.

Non-peroxide activity (NPA) is calculated from the methylglyoxal concentration in a honey sample based on published data (4,5,6). It is important to note that an NPA value is not sufficient to qualify a sample to “manuka honey” as it has been defined by MPI’s five manuka attributes (7).

References: (1) Grainger et al. Food Chemistry 202: 484-491, 2016; (2) Grainger et al. Food Chemistry 202: 492-499, 2016; (3) Grainger et al Food Chemistry 202: 500-506, 2016; (4) Adams et al. Carbohydrate Research 343: 651-659, 2008; (5) Adams et al. Carbohydrate Research 344: 2609, 2008; (6) Adams et al. Carbohydrate Research 344: 1050-1053, 2009; (7) https://www.mpi.govt.nz/dmsdocument/17374-manuka-honey-science-definition-infographic