THE POTENTIAL OF ANTIBACTERIAL AND ANTIOXIDANT ACTIVITIES OF TUALANG AND KELULUT HONEY

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AUGUST 2022

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Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
in the Faculty of Applied Sciences
Universiti Teknologi MARA

AUGUST 2022

This Final Year Project Report entitled "**The Potential of Antibacterial and Antioxidant Activities of Tualang and Kelulut Honey**" was submitted by Nurul 'Ain binti Mohd. Salim in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

THE POTENTIAL OF ANTIBACTERIAL AND ANTIOXIDANT ACTIVITIES OF TUALANG AND KELULUT HONEY

Tualang honey is a Malaysian wild pure multifloral forest honey named after one of the highest tropical rainforest trees, the *Koompassia excelsa* tree (known locally as the tualang tree). The rock bee (*Apis dorsata*) produces honey by building colonies on branches of towering tualang trees, which are predominantly found in the rainforest of northern region in Peninsular Malaysia. Meanwhile, kelulut honey is produced by *Trigona* spp., a stingless bee that gathers nectar from polyfloral sources. Based on some studies, tualang and kelulut honeys have the potential antibacterial and antioxidant properties. Hence, the objectives of this study are to analyse the antibacterial activity of tualang and kelulut honeys by disc diffusion method and to analyse the antioxidant activity of tualang and kelulut honeys by DPPH radical scavenging assay. In disc diffusion method, the honey saturated filter paper discs were put on the surface of MHA plates that had been inoculated with *E. coli* and *B. licheniformis* respectively. Ampicillin discs were used as positive control and distilled water was used as negative control for every set of MHA plate to ascertain the reliability of the assay. For the DPPH radical scavenging assay, honey with different concentrations were mixed with DPPH and the absorbance readings were taken. Ascorbic acid was used as control in this assay. For the result of antibacterial analysis, the zones of inhibition for both tualang and kelulut honeys showed increasing in diameter with higher concentrations of honey when tested against *E. coli* and *B. licheniformis*. The highest tested concentration of tualang honey (50%) inhibited the largest zone of inhibition of *E. coli*, which is the average diameter of 14.7 mm. In the case of *B. licheniformis*, the average zones of inhibition of tualang honey against this bacteria was 13.3 mm in 50% concentration of tualang honey. Therefore, bacterial response of both *E. coli* and *B. licheniformis* were susceptible in 50% concentration of tualang honey. On the other hand, the average inhibition zones of 50% concentration of kelulut honey against *E. coli* was 12 mm. Meanwhile, 50% concentration of kelulut honey against *B. licheniformis* was 14.7 mm. Hence, bacterial response of *E. coli* and *B. licheniformis* in 50% concentration of kelulut honey showed intermediate resistant in *E. coli* and susceptible response in *B. licheniformis.* This result showed potential of both tualang and kelulut honey having antibacterial properties. Besides, for the result of antioxidant analysis, the graph of percentage of DPPH free radical scavenging activity for both tualang and kelulut honeys showed the increasing trend. The higher the concentrations of tualang and kelulut honeys, the higher the percentage of DPPH free radical scavenging activity in DPPH assay. The highest concentration of tualang honey (80%) scavenged 34.09% of DPPH free radical, meanwhile 80% concentration of kelulut

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