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EFFECTS OF KELULUT HONEY ON GRAM NEGATIVE BACTERIA

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ABSTRACTS

Honey has been known since long time ago to possess anti-bacterial properties and used to treat infected wound. But, there was less data reported on anti-microbial of kelulut honey compared with tualang honey. Therefore, this study was designed to investigate anti-microbial activity of kelulut honey against three Gram-negative bacteria; *Escherichia coli, Pseudomonas aeruginosa* and *Salmonella thypi.* The anti-microbial activity of total 13 samples of kelulut honey from two different species of stingless bees [*Hetrotrigona itama* (8 samples) and *Geniotrigona thoracica* (5 samples)] and tualang honey (*Apis dorsata*) was evaluated. Disc diffusion method were used in this study to investigate the susceptibility of honey samples at five different concentration (5%, 10%, 25%, 50% and 75%) per v/v. Tualang honey only inhibits *E. coli* growth at 75% v/v with diameter zone of inhibition of 7 mm but no inhibitory effects against other two bacteria tested. While, kelulut honey produced by *Geniotrigona itama* show varies zone of inhibition against all tested bacteria with diameter range of (6.5-8) mm. One sample of kelulut honey produced by *Hetrotrigona itama* abbreviated as sample M in Table 4.4 was observed not inhibit all three bacteria. There were significant differences for tualang honey and kelulut honey in diameter zone of inhibition of tested Gram-negative bacteria. Mean diameter zone of inhibition of each sample of kelulut honey when compared with tualang honey was significantly different ($p < 0.05$) after analyzed using student sample t-test. The different in anti-

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The importance of medicinal and anti-bacterial properties of honey has been known since long time ago. Honey was used to treat infected wounds 2000 years ago before bacteria were discovered to be the cause of infection. The actual mechanism of anti-bacterial activity of honey was first recognized in 1892, by Dustman (Dustmann, 1979).

Honey demonstrates anti-microbial effects towards fungi and bacteria include Gram-positive and Gram-negative bacteria. It helps to reduce the use of antibiotic in order to avoid antibiotic-resistant. Through this study, efficacy of honey against certain microorganism can be revealed. It was believed that chemical substances present in the tested honey contribute to its anti-microbial activity. The substances may be variable i.e. show different effects, based on honey types. In Malaysia, there are two common types of bees produce honey; stinging bee and stingless bee. Stinging bee produces honey such as tualang honey. Meanwhile, kelulut honey harvested from stingless bee. Many research have been conducted on stinging bee honey. Unfortunately, less data obtained and