

UNIVERSITI TEKNOLOGI MARA

**THE ANTIBACTERIAL ACTIVITY OF HONEY
AGAINST BACTERIA**

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ABSTRACT

Samples of natural pure honey from two different plants were studied for their antimicrobial activities against bacteria strains isolated from human pathology obtained from Hospital Kuala Lumpur. The plants were: 2 samples from Tualang tree and 1 sample from multifloral sources. All samples were obtained from different places in Pahang, Malaysia. Honeys with different concentrations (100% v/v, 50% v/v, 25% v/v, 12.5% v/v and 6.25% v/v) were tested on the bacteria strains using the disc diffusion method and the agar well diffusion method. The bacterial strains that were used are, *Staphylococcus aureus*, Methicillin Resistant *Staphylococcus Aureus* (MRSA), *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. Results revealed that in disc diffusion assay, *S. aureus* and *E. coli* were inhibited by honey at 50% v/v and 100% v/v concentration for all honey samples. In agar well diffusion assay, *S.aureus*, *E. coli* and MRSA were sensitive to honey. For *S.aureus* and *E. coli*, all the strains were inhibited by all honey samples at, 25% v/v, 50% v/v and 100% honey concentration. For MRSA, only one honey samples show inhibition zone, honey samples from Tualang tree and got inhibited by 12.5% v/v, 25% v/v and 50% v/v honey concentration. When compared to the inhibition zones produced by the commercial antibiotics, the antibiotics were still greater than the honey in terms of clear visible inhibition zone produced. The results also showed that there was a difference in terms of antibacterial activities to different bacterial strains among the different origin of honey (plants).

CHAPTER 1

INTRODUCTION

Recently, extensive research and investigation for new antimicrobial compounds of biological origin has gained popularity with increased problem of the overprescription and misuse of traditional antibiotic. Continued use of systemic and topical antimicrobial agents has provided the selective pressure that has led to the emergence of antibiotic resistant which in turn has driven the continued search for new agents. These include antimicrobial compounds from wide variety of organisms and many natural habitats.

Honey has been known to have antibacterial properties and their usage as a medicine since ancient times in many cultures. However there was no recognition of its antibacterial properties and was just known to be an effective remedy. In c.50 AD, Dioscorides described honey as being “good for all rotten and hollow ulcers” (Gunther, 1959). Allen *et al.*, (1991) reported the use of honey as a therapeutic substance has been rediscovered by the medical profession in more recent times and has been reported as antibacterial agent for the treatment of ulcers and bed sores and other skin infections resulting from burns and wounds (cited by Malika *et al.*, 2004).

The antibacterial property of honey was first recognized in 1982 by van Ketel (Molan, 1992). Honey has been reported to have an inhibitory effect to around 60 species of bacteria including aerobes and anaerobes, gram-positive and gram-negatives