

Chapter 8

Microbiological Diversity and Properties of Stingless Bee Honey

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ABSTRACT

*The study was to compare and evaluate the performance of stingless bee honey (*Heterotrigona itama* spp.) with ordinary honey in terms of proximate composition as a comparison. Both honeys have shown diverse application and importance either traditionally and scientifically. However, due to the heightened interest on stingless bee honey, antimicrobial tests were also performed to determine the inhibition activity of stingless bee honey against food-borne pathogens using agar well diffusion assay. All three honey samples showed very good inhibitory activities (measured by*

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inhibition zone) against Salmonella typhimurium (25-33 mm), Escherichia coli (17-33 mm), Pseudomonas aeruginosa (15-25 mm), and Staphylococcus aureus (25-29 mm). As for resistance to bile salts, pH tolerance was done and indicated the Lactic acid bacteria was able to survive the human digestive system. The haemolytic study shows that the LAB used was not virulent when introduced to red blood cells, which is important for any bacterium to be classified as safe.

INTRODUCTION

Just by mentioning honey, our thoughts will be directed to the difficult process of obtaining the honey, whether it is a Tualang honey or a stingless bee honey. The challenge of obtaining the honey is what makes it one of the most valuable commodities. Around the world, the use of bee honey is very widespread, especially in traditional medicine and is used as a method to replace the use of sugar that is widely associated with diabetes. As a result of the increase in consumption and high demand, artificial bee honey is made using sugar and a mixture of other ingredients which can lead to health problems. However, as a result of the advances in beekeeping programs and the improvement of the industry, this problem is slowly diminishing.

In general, the beekeeping system in Malaysia, whether the common honeybees or stingless bee, has been progressing and is increasingly in line with more productive neighboring countries such as Thailand and Vietnam which utilizes intensive bee keeping systems. Therefore, various parties have conducted several attempts to promote the beekeeping industry to ensure increased honey production to the Malaysian market in recent years. This is carried out through attempts by a more structurally and modern system and by identifying the variety of bees and suitable areas for the bee keeping project. Demand for honey slowly began to increase since the beginning of 1984. This in turn have a positive effect and raised the honey industry to a higher platform. The honey industry was further strengthened and intensified due to the overwhelming demand as more benefits of the honey was discovered and published.

According to Ndubisi et al. (2008), several government agencies have taken steps to ensure honey production in Malaysia increases such as the Department of Agriculture (DOA), Malaysian Rubber Research Institute (RRIM), Rubber Industry Small Development Authority (RISDA) Institute Malaysian Agricultural Research and Development (MARDI), Universiti Putra Malaysia (UPM) and Universiti Malaysia Terengganu (UMT). All these agencies have run special area extension services for bee breeding to ensure more efficient production of honey resources.

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