UNIVERSITI TEKNOLOGI MARA

POLLEN ANALYSIS OF *Geniotrigona thoracica* HONEY

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ABSTRACT

Melissopalynology is a microscopic analysis of the pollen contents and is used to investigate the botanical and geographical origins of honey. In addition, it also largely contributes in sustaining development of industrial meliponiculture which includes the practice of stinglessbees keeping as well as manufacturing of honey and beewax product. Therefore, the aim of this study is to determine the botanical origins of *Geniotrigona thoracica honey* by tracing the pollen sources of the plants foraged by *G. thoracica.* Briefly, the honey was dissolved in distilled water in 1:5 ratio and filtered to obtain the pollens. Subsequently, the pollen was viewed under scanning electron microscope (SEM) to observe the morphology of the pollens. Each pollen found in the sample was counted and calculated as frequency classes of species used for the classification of "uni-floral" or "multi-floral" honey. Based on the analysis of pollen contents, *G. thoracica* honey was demonstrated to be a multi-floral honey indicated by the pollen species involved was less than 45%. A total of 12 types of pollens were observed in *G. thoracica* honey in which 8 of them were identified with the aid of pollen atlas and other published floras while another 4 of them were from unorigin species. This study has identified the plant species foraged by *G. thoracica* and thus potentiate in increasing the growth of meliponiculture in Malaysia.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Honey is a food produced by nature and dominantly composed of sugars and other constituents such as enzymes, amino acids, organic acids, carotenoids, vitamins, minerals, and aromatic substances such as flavonoids and phenolic acids (Alqarni et al., 2014). These compunds contribute to the high nutritional value of honey which allow it to displays extensive biological effects in human body (Alqarni et al., 2014). Hence, honey has been approved not only as food but also medicine by all generations, traditions and civilizations since ancient time until today in modern era (Ajibola, Chamunorwa, & Erlwanger, 2012). Based from previous studies, honey shown various beneficial effects such as elevating rate of wounds healing, cancer "vaccine", immune booster, prevention of obesity (Othman, 2012) and also used in treatment of irritative cough (Peixoto et al., 2015). Honeys that derived from the stingless bees (Meliponini) can be found in the tropical and subtropical parts of the world such as South America, Africa, Asia, and Northern Australia (Peng, Ling, Aniza, Wei, & Suan, 2014).

Stingless bees is a member of *Meliponini* tribe which belongs to family of Apidae are consist of a various and extremely abundant group of eusocial bees (Slaa et al., 2006). Stingless bee colonies are active all year round and they do not sting but