A Review of different Honey from Indonesia and Malaysia

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Abstract. Indonesia and Malaysia share contiguous territories and are renowned for their honey production. In addition, they possess extensively published studies on honey. This study aims to present a comprehensive analysis of the many types of honey found in Indonesia and Malaysia, as well as their health-promoting components. The employed methodology entails conducting a comprehensive review of both primary and secondary literature. The literature search employed online tools, including NCBI-PubMed, Google Scholar, and Elsevier. Indonesia and Malaysia share similar species of bees, including Apis Dorsata, Apis Mellifera, Apis Trigona, and Apis Cerana. The phenolics and antioxidants have garnered the most focus among the components. Notable health advantages encompass the facilitation of diabetic wound healing, enhancement of reproductive health, and promotion of mental well-being.

1 Introduction

Honey is a bee product with nutraceutical and medicinal properties and is known worldwide [1]. Honey is a natural sweetener containing monosaccharides, disaccharides, water, and various minor constituents such as vitamins, minerals, proteins, amino acids, enzymes, and phytochemicals. Its composition varies depending on its botanical and geographical origin and environmental conditions. The energy value and physicochemical features of honey are determined mainly by its sugar component, which plays a crucial role in its technological function. Honey's distinctive taste, color, and bioactivity are primarily influenced by phytochemicals, particularly phenolic acids and flavonoids, which are present in lower quantities. Phenolic chemicals provide additional and intersecting mechanisms of action through their antioxidant, antibacterial, and antiviral properties. They also have the ability to regulate detoxification enzymes, enhance the immune system, decrease platelet aggregation, regulate cholesterol synthesis, and lower blood pressure.

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Therefore, their inclusion in the composition is linked to the significant health advantages of honey. [2,3]. Indonesia and Malaysia are two well-known honey-producing countries in Asia and are geographically close to each other. Both countries also have an interest in honey product development, both commercially and in research.

The components of honey are strongly influenced by the geography where the bees live and the climate. Indonesia and Malaysia are in the tropics, with rainfall and dry seasons [4]. Honey from stingless bees in Malaysia and Indonesia is still difficult to meet Codex Alimentarius for physicochemical properties [5]. Stingless bee. Trigona honey, in particular, has a high moisture content and acidity and is very different from honey produced by Apis Mellifera and Apis Dorsata. The Indonesian national standard (SNI) sets the maximum moisture content for honey at 22%, without intervention to reduce the moisture content, for example, by evaporation or humidifiers; this figure is difficult to achieve.

Indonesia and Malaysia have many honey varieties derived from the same bee species but labeled differently. For instance, honey produced in Malaysia by the bee species Apis Dorsata is referred to as Tualang Honey. Sialang honey is found in Indonesia because to the typical occupation of Sialang trees by Apis Dorsata [6]. The main content of honey between Malaysia and Indonesia is also relatively similar, although there are differences in the composition and some components characteristic of each type of honey.

Researchers reviewed the types of honey from the bee species Apis Dorsata, Apis Mellifera, Apis Trigona, and Apis cerana from Indonesia and Malaysia to give an insight the differences and similarities of honey in Indonesia and Malaysia and research findings on its health benefits.

2 Materials and methods

The literature study method is used, both from primary and secondary libraries. The library search used online-based search instruments such as NCBI-PubMed, Google Scholar, and Elsevier.

This literature review was conducted in five stages, including developing research questions, searching and extracting related articles, selecting relevant studies, tabulating and summarizing data, and reporting results.

2.1 Research question development

The main research questions addressed in this review study are as follows:
What types of honey are found in Indonesia and Malaysia from the bee species Apis Dorsata, Apis Mellifera, Apis Trigona, and Apis Cerana?

2.2 Extraction of articles that meet the inclusion criteria

The following were inclusion criteria for this structured review: clinical trials and quasi-experimental studies with control and intervention groups published from 2018 to 2024, studies with a given sample size, articles focused on Comparison of honey across countries (no pharmacological interventions were included in this study), and research that describes the results of the review. It should be noted that articles that did not meet the inclusion criteria, full-text studies in languages other than English and Indonesian, and summary articles presented at conferences that did not have full-text and case-control or cross-sectional studies were excluded.

The databases used for the search are NCBI-PubMed, Google Scholar, and Elsevier, which are considered relevant for health research worldwide. It adopts a search strategy:

Honey, Indonesian "AND" Honey, Malaysia. Two reviewers were selected to carry out a systematic search for articles. Studying in English and Indonesian is considered relevant to the topic included.

2.3 Search And Extract Related Articles

The researchers used the following keywords or their English equivalents in the search strategy in this study: Honey, Indonesia, and Honey, Malaysia. Searches were also conducted in international (Google Scholar, PubMed, Scopus, and Elsevier) and national databases to identify all articles published online. In addition, the retrieved article references were searched manually in journals to extract studies on related topics.

After the search was completed, the researchers prepared a list of articles. Then, by studying and reviewing the articles at each stage of title screening, abstracts and the full text of the research related to the research question were entered into the final list.

3 Results

During the initial screening and search phase of articles, 65 related articles were obtained. After that, the full texts of 40 articles were examined, and 19 studies were deleted because they did not meet the inclusion criteria. Finally, twenty articles were included in this review.

4 Discussion

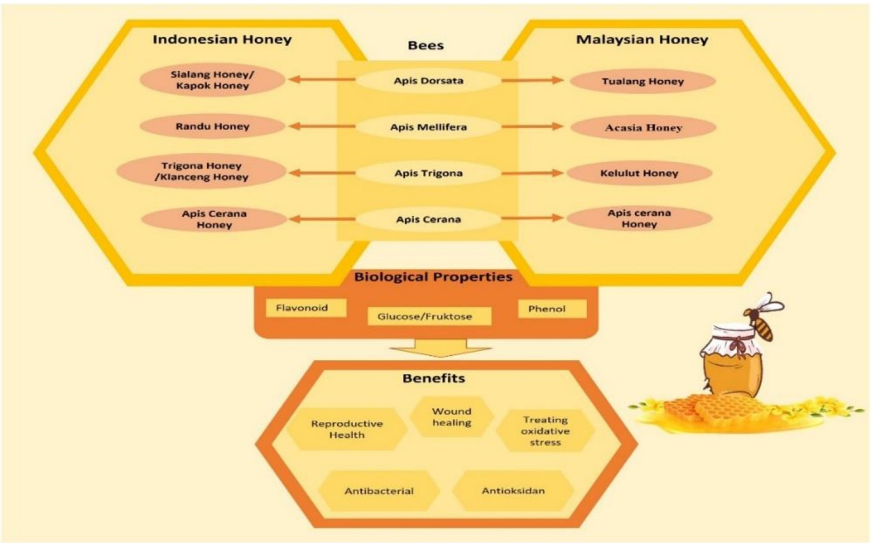

Fig. 1. Honey in indonesian and malaysian: biological properties and benefit.

4.1. Honey from apis dorsata

Sialang Honey is a variety of honey produced by the Apis dorsata bee species in Indonesia. Extensive research has been conducted on this honey, confirming its positive effects on diabetic foot ulcers. This honey, sourced from Apis dorsata bees in Indonesia, is not cultivated but rather classified as wild or forest honey. In addition to Sialang Honey, there is also Kapok Honey, which has been scientifically studied and found to be effective in

alleviating pain after a tonsillectomy. Certain areas lack distinct names for its honey and simply refer to it as forest honey. Alternatively, individuals knowledgeable about bees may refer to it as Apis dorsata honey. These types of honey have been studied and shown to be useful for various purposes. [7–10]. Honey from Apis Dorsata is distributed in several provinces, such as Sumatra, Kalimantan, West Nusa Tenggara, Sulawesi, and Banten [8]. Apis Dorsata honey has also been given many different names according to the type of industry or factory that processes the honey. Many cannot even list the bee species of honey production.

Tualang Honey, derived from Apis dorsata bees, is widely recognized as the most renowned honey in Malaysia. Extensive study has unequivocally demonstrated its efficacy in alleviating oxidative stress and addressing mental health concerns. The Apis dorsata honey is typically sourced from jungle and forest environments [6,11,12]. Tualang Honey has the highest number of publications compared to other forms of honey.

4.2. Honey from apis mellifera

Honey obtained from bees of the Apis mellifera species is referred to as randu honey due to the bees' consumption of nectar from the randu tree (*Ceiba pentandra*). Research has shown that this honey possesses a significant amount of phenols and flavonoids, making it an excellent choice for healing diabetic wounds. Certain regions lack a distinct appellation for honey derived from the Apis meliifera species.[10,13]. Honey derived from Apis Mellifera in Malaysia is Acacia Honey; this type of honey is the same as honey in Indonesia, which is farmed, and the antioxidant content is not inferior to Apis Dorsata honey [14]. Honey from the Apis Mellifera species is the most widely farmed honey in Indonesia and Malaysia due to its higher honey production and sweeter flavor that consumers favor.

4.3. Honey from stingless bee apis trigona

Honey derived from Apis Trigona is one of the most researched honey in Indonesia, and in general, people and researchers call it Trigona honey. However, there is another name, namely klanceng honey. Researchers also call it a stingless bee, although Trigona is not the only stingless bee. Trigona honey is widely studied for reproductive health, oxidative stress, and wound healing[15–17]. Some consumers favor this type of honey less because of its bitter and sour taste.

Malaysian honey derived from the Apis Trigona species is Kelulut Honey; this type of honey is also the same as in Indonesia, widely referred to as stingless bee. Medically, it is used for wound healing in general and diabetic wounds[10,18]. Trigona honey contains a lot of trehalulose and antioxidants, such as phenolics and flavonoids, which are very beneficial in wound healing [18]. The flavor of Malaysian and Indonesian Trigona honey is unique in that it is sour and tends to be slightly bitter.

Research in Malaysia has tried to prove the difference in biological properties between honey produced from Apis Trigona and Apis Dorsata; the results are quite surprising because the polyphenol content of Apis Trigona honey, known as Kelulut Honey, is higher than Tualang Honey. However, the hydroxylmethylfurfural of Tualang Honey was higher than Kelulut Honey's [14,19].

4.4. Honey from apis cerana

Apis cerana honey in Indonesia is still under-researched. However, findings prove that its phenols and antioxidants have excellent antibacterial effects, even though the honey is taken from different places. The amount of phytochemicals may differ according to the region

where the honey is collected [20]. Apis cerana honey in Malaysia is known as multi-floral honey, and an attempt was made to make Apis cerana honey mixed with ginger, proving that research on Apis cerana is also being done, although not as popular as Tualang Honey [21].

5 Conclusion

Malaysia and Indonesia both produce honey from the Apis Dorsata bee species, but they have distinct names for their honey. It is called Tualang Honey in Malaysia, whereas in Indonesia, it is known as Sialang Honey and Kapok Honey. In Indonesia, Apis Mellifera Honey is referred to as randu honey, while in Malaysia, it is known as Acacia Honey. In Malaysia, honey produced by stingless bees is referred to as kelulut honey, whereas in Indonesia, it is commonly known as Trigona or Klanceng honey. Apis cerana is commonly known as Apis Cerana honey in research publications in both nations. The commonly reported health benefits in articles include accelerated wound healing in diabetic patients, improved reproductive health, and enhanced mental well-being. The most popular components of honey are phenol and flavonoids.

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