

Title : Bacterial communities in honey and environment association of stingless bee (*Heterotrigona itama*)

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ABSTRACT

Wildflower honey, such as the emerald-colored white Samet (*Melaleuca cajuputi*) honey, is produced by stingless bees and has become increasingly popular in Thailand's honey market. *Heterotrigona itama*, a common species of stingless bee, is known for its ability to produce this honey. However, the quality of honey can be influenced by microbial associations, including bacteria. This study aimed to investigate and compare the bacterial communities associated with stingless bee honey and its environment using Illumina sequencing. Samples of bees (*H. itama*), flowers (*M. cajuputi*), pollen, and honey were collected from Narathiwat Province. The results revealed that the highest number of observed features was found in pollen samples, followed by flower, honey, and bee samples, respectively. Pollen samples also showed the highest Shannon index, with bee, honey, and flower samples following in that order. Notably, honey sample H3 exhibited both the highest observed features and Shannon index values. In terms of taxonomic composition, most bacteria belonged to the phyla Firmicutes and Proteobacteria. Bacteria in bees were mainly from these two phyla, while bacteria in flowers were predominantly Proteobacteria, and those in pollen and honey were primarily Firmicutes. At the genus level, the predominant genera included *Lactobacillus* and *Bifidobacterium* in bees, *Neokomagataea* in flowers, and *Lactobacillus* in both pollen and honey. The findings of this study contribute valuable insights into the microbial environment of stingless bee honey production, which could be important for future hygienic practices in the industry.

Keywords: Honey, Stingless bee, Bacteria

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