

Exploring Microbial Diversity in Green Honey from Pulau Banggi Sabah: A Preliminary Study

ABSTRACT

The microbiological composition of honey can include microorganisms that are beneficial or harmful to human health. Therefore, it is essential to investigate the microbiological quality of different honey types available in the market. However, there is limited information available on the analysis, isolation, and characterization of honey associated microbes, especially for green honey from Banggi Island. Green honey is sourced from underground areas within the island's forest. This study aimed to assess the microbiological quality of raw (freshly collected) and processed green honey by examining the presence of bacteria, yeast, molds, and pathogens. The results revealed that raw green honey had a slightly higher total plate count (770 ± 0.03 cfu/g) compared to processed green honey (640 ± 0.02 cfu/g). Both raw and processed green honey contained *Lactobacillus* spp. with counts of 350 ± 0.02 cfu/g and 160 ± 0.02 cfu/g, respectively. *Bacillus* count was higher in raw green honey (110 ± 0.01 cfu/g) compared to processed green honey (5 ± 0.01 cfu/g). Molds were only detected in raw green honey, while osmophilic yeast counts were higher in raw green honey (16000 ± 0.03 cfu/g) compared to processed green honey (120 ± 0.02 cfu/g). Mesophilic bacteria, thermophilic bacteria, coliforms, *E. coli*, and *Staphylococcus aureus* were not detected in either raw or processed green honey. Furthermore, green honey was free from pathogenic bacteria such as *Salmonella* spp., *Listeria* spp., and *Shigella* spp. Bacteria isolated from green honey included *Lysinibacillus macrolides*, *Lysinibacillus boronitolerans*, *Paenibacillus cineris*, *Paenibacillus favisporus*, and *Bacillus oleronius*, none of which were pathogenic. This study identified important microorganisms present in green honey, which have the potential to provide beneficial effects without posing any harm to human health.