

**THE MICROBIAL COMPOSITION OF RAW AND PROCESSED HONEY
AND ITS ANTIMICROBIAL PROPERTIES AGAINST *Escherichia coli*,
Staphylococcus aureus, AND *Candida albicans*: A REVIEW**

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Structured Abstract

Background: With the emergence of antimicrobial resistance (AMR) among common pathogens, honey emerged as a viable alternative to conventional antibiotics. However, the microbiological composition and antimicrobial activities of raw and processed honey are not yet thoroughly examined. Hence, the objective of this study is to analyse the microbiological composition of raw and processed honey and determine its antibacterial activity against common pathogens (*Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans*). These findings can be useful for further development of the honey-based antimicrobial treatments as well as improving public health.

Methods: A research review framework was used to conduct this paper. A systematic search of peer-reviewed scientific literature was carried out using databases including PubMed, ScienceDirect, Google Scholar, and Web of Science. The search was limited to articles published between 2011 and 2025. Preference was given to studies that directly compared raw and processed honey or examined the metabolic activity of native honey microbes.

Results: The review highlights that raw honey possesses a rich microbial community, particularly beneficial bacteria such as *Lactobacillus* species and certain yeasts, which contribute to its strong antimicrobial activity. In contrast, processed honey has reduced microbial load due to pasteurization and filtration, leading to diminished antimicrobial effects. The enhanced antimicrobial activity is largely attributed to the presence of microbial metabolites like hydrogen peroxide and natural bioactive compounds such as flavonoids and enzymes. Raw honey exhibited strong inhibition against *Escherichia coli*, greater effectiveness against *Staphylococcus aureus*, and notable antifungal activity against *Candida albicans*, while processed honey showed weaker or inconsistent effects.

Conclusion: To conclude, raw honey is more microbiologically rich and contains beneficial microorganisms than processed honey due to minimal processing. Besides, raw honey is more effective against microbial pathogens and offers greater health benefits, while processed honey is more refined, and convenient for commercial uses.

Keywords: Raw honey, processed honey, antimicrobial activity, honey microbiota, bioactive compounds

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