

Bioactive Compounds and Therapeutic Properties of Stingless Bee Propolis

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Abstract

Stingless bees (*Meliponines*) belong to the genus *Apidae* that naturally spread throughout tropical and sub-tropical ecosystems. The morphological characteristic of the sting is the marked difference between stingless bees and honeybees (*Apis*). Propolis, which is made up of plant resins mixed with salivary enzymes and wax, is the major product of stingless bees and has long been used in traditional medicines and food industries. However, the studies of stingless bees have been less reported than honeybees. This study aimed to evaluate bioactive compounds and therapeutic properties of stingless bees propolis, as well as to compare its efficiency to other products from stingless bees and honeybees. Almost all studies used ethanol to extract propolis because it can easily dissolve phenolic compounds, which are the main bioactive compounds found in stingless bees propolis, leading to higher positive effects. Several studies also used DPPH (2,2-diphenyl-1-picryl-hydrazyl-hydrate) radical scavenging assay as the main method for determining antioxidant activity. When stingless bee propolis was compared to other products, some studies found that stingless bee propolis has higher antioxidant and antiproliferation activity than honey and bee bread. Similar to the finding that stingless bee propolis was better than propolis produced by honeybees. Regarding antimicrobial activity, stingless bee propolis can be against both gram-positive and gram-negative bacteria. In conclusion, numerous studies have proven that the propolis of stingless bees has many therapeutic properties such as antioxidant, antimicrobial, antiproliferation which could be a therapeutic alternative for human health.

Keywords: stingless bee, *Meliponines*, propolis, therapeutic properties, bioactive compounds

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