

A review on the association of bacteria with stingless bees

ABSTRACT

Most cultivable microbes associated with stingless bees are bacteria. Studies about bacteria related to stingless bee colonies were only limited to bacterial isolation and identification, while a few studies consider their potential applications. Information on their biological roles and functions are scarce. Bacteria classified under the genera *Bacillus*, *Streptomyces*, and *Lactobacillus* are commonly associated with stingless bee colonies. They have been hypothesized to contribute to the formation and enhancement of antimicrobial activities of bee products such as honey and bee bread. There is now sizeable evidence that the microflora of bees can be used as biocontrol agent, potential probiotic, as well as producer of antimicrobial compounds and enzymes. The aim of this review was to stimulate a generation of further research on the enormous potential of the bacteria associated with stingless bees, their contributions and potential applications especially in medical and pharmaceutical uses.

Keyword: Bacteria; Bee bread; Bees and bacterial interaction; Honey; Stingless bee