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## **Bee Propolis in Oral Health: A Comprehensive Review of Its Chemical Composition, Biological Activity and Therapeutic Benefits**

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### **Structured Abstract**

**Background:** Bee propolis is a resinous hive product that has therapeutic benefits for oral health. It is produced by bees using resins derived from plants and trees, combined with beeswax. The chemical composition of propolis is complex and varies depending on the species and region of origin. The bioactive chemicals in propolis have significant impacts on its biological activity. There has been a growing global concern regarding the prevalence and escalation of oral diseases, such as dental caries, periodontal disorders, and mouth cancer. Propolis has been shown to possess unique bioactive compounds that are known for their antioxidant, anti-microbial, and anti-inflammatory properties. However, the mechanism by which propolis works to maximise safety and efficacy is not yet fully understood. Therefore, a better knowledge of the relationship between propolis' chemical compounds and its method of action is vital for reducing the risk of oral disease.

**Literature Review:** The study offers a comprehensive review of bee propolis, emphasizing its potential benefits for oral health. Propolis has antibacterial, anti-inflammatory, and wound-healing properties that may help treat oral diseases, which is attributed to its bioactive components such as flavonoids, phenolic acids, and terpenoids. These components can interact with microbial membranes, alter their permeability, and exhibit significant antioxidant activity, shielding cells from oxidative stress. Propolis exhibits significant antioxidant activity because of the presence of phenolics and flavonoids. The antibacterial characteristics of these chemicals make propolis highly effective against microbes often found in the mouth. The flavonoids in propolis help it retain its antioxidant qualities by scavenging free radicals, which are harmful to cells since they are unstable molecules. The review also underscores the potential therapeutic benefits of propolis for oral health and the need for further research to develop evidence-based propolis uses. Moreover, it discusses the various forms in which propolis has been used to address oral health issues, including mouthwash, toothpaste, and dental materials.

**Conclusion:** The study concludes that propolis has the potential to provide therapeutic benefits for oral health, and further research is needed to advance evidence-based propolis uses that address unmet needs in oral disease prevention and management.

**Keywords:** Bee Propolis, Oral Health, Chemical Composition, Biological Activity, Therapeutic Benefits

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