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Dentistry

Commentary

The Efficiency of a Standard Propolis Extract in Non-Surgical Periodontal Therapy

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ABOUT THE STUDY

The inflammatory response caused by periodontitis, a chronic condition brought on by dental biofilm (a polymicrobial community), is controlled by the host's immune system and results in the loss of periodontal attachment. As a result, it can no longer be understood as a straightforward bacterial infection and is now best understood as a complicated illness with a multiple origin. The microorganisms found in subgingival zones were grouped into five complexes. One of these, the so-called "red complex" which is made up of *Tannerella forsythensis*, *Porphyromonas gingivalis*, and *Treponema denticola*, is closely linked to increased bleeding upon probing and deeper periodontal and peri-implant pockets.

The purpose of treating periodontal disease is to eradicate the subgingival bacteria. The most popular therapy strategy is root debridement, Scaling and Root Planing (SRP). Deep periodontal pockets make total mechanical removal challenging to do. Due to the location of the bacteria in soft tissues or in places that are inaccessible to periodontal devices, it cannot completely eradicate the pathogenic microflora when used exclusively. The combination use of mechanical instrumental therapy and antibacterial medicines has been advocated to lessen the need for surgical treatment of the periodontal pockets because of the intricate ecology that exists within the subgingival pocket. The benefit of local antimicrobial therapy is that there is little to no chance of bacterial resistance while yet delivering good, effective medication concentrations at the infection site.

As a result, numerous studies have been done on the clinical use of antibiotics and other antimicrobial drugs as adjuvants for the treatment of periodontitis. There are already a number of antimicrobials available on the market, but research is shifting toward natural therapies as a result of the desire to find goods without the negative effects of synthetic medications. Propolis has received a lot of attention for its antibacterial, anti-inflammatory, and antioxidant properties. Bees gather propolis, a sticky material, from the buds and bark of plants, particularly poplar and birch in Europe. Even though the bees add wax, pollen, and enzymes from their own bodies to it after gathering it and use it to build, adapt, and protect colonies, the substance is only of pure vegetable origin. Propolis has a very complicated chemical makeup that is intimately related to its vegetable origin depending on the phytogeographic features of the collecting site and the time of year.

Additionally, the concentration of the constituents and the characteristics of propolis might vary according on the extraction techniques and the various solvents (ethanol, methanol, and water) utilised, resulting in finished products with variable chemical compositions and bioactivities. It should be made clear that propolis used for nutraceutical, medical, and cosmetic purposes cannot contain wood or metal pieces, bee leftovers, parasites, or potentially dangerous elements such as heavy metals and acaricides that are linked to the environment and beekeeping practises. More than 300 different biocompounds may be found in propolis, which can be categorised into four primary big groups: resins (45%-55%), wax and fatty acids (25%-35%), essential oils and volatile chemicals (10%), and pollen (5%).

A special mention should be made of the group of flavonoids that make up up to 20% of the weight of propolis resin and are present in significant amounts. High chemical reactivity, anti-free radical activity, anti-inflammatory, antithrombotic, vaso- and gastro-protective, and immunological activity are all present in them. Thanks to the enzymes produced by their salivary glands, the bee alters the structure of flavonoids that were originally found in plants by eliminating the sugars included in the organic molecules. The synergistic effects of propolis's numerous constituents direct attention away from a single chemical and toward the characteristics of its phytocomplexes. Numerous research have shown how propolis has many biological functions and emphasised its benefits for tooth health.

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In fact, research has shown that propolis has significant antibacterial action against a number of periodontal infections, such as *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans*, *Fusobacterium nucleatum* and *Prevotella intermedia*. Additionally, propolis samples were found to exhibit a wide range of antibacterial activity against *Streptococcus aureus* and *Enterococcus faecium* that are resistant to vancomycin and methicillin. The flavonone pinocembrina, the flavonol galangin, and the Phenethyl Ester Caffeic Acid (CAPE) are responsible for propolis' antibacterial activities against oral infections, with the mechanism of action likely dependent on the inhibition of bacterial RNA-polymerase.