# Studies on the Effect of Propolis on Cutibacterium Acnes in Overcoming Bacterial Resistance and Reducing Environmental Pollution Caused by Overuse of Antibiotics

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The overuse of antibiotics in medicine is a growing problem, as it leads to an increase in the number of drug-resistant strains of bacteria. According to the WHO, this is one of the greatest threats to humanity. Infections caused by antibiotic-resistant bacteria kill more people each year than malaria or AIDS. Antibiotics have many side effects. Their excessive use in topical therapy may also contribute to environmental pollution by drug residues. According to medical literature, acne is the eighth most common disease worldwide. The most commonly used drugs in its treatment are also antibiotics. The aim of this study is to investigate the effects of propolis, a natural substance produced by honeybees, devoid of the above side effects - on Cutibacterium acnes, a bacterium long linked to the pathogenesis of acne. The idea for the study arose from observations made about the beneficial properties of propolis and the need to verify them scientifically. A strain of C. acnes bacteria was isolated under anaerobic conditions. The effect of propolis extracts at different concentrations on the growth of this bacteria was then investigated. Using the disc diffusion test, their efficacy was compared with that of the antibiotics used. The observations were repeated seven times. The results indicate that ethanolic extracts of propolis have statistically comparable efficiency in inhibiting the growth of C. acnes with the antibiotics used. Their use in therapy would make it possible to limit the use of antibiotics to necessary cases, prevent bacterial resistance and reduce environmental pollution from drug residues. There're substances with therapeutic potential in nature that can be used for the benefit of humans and the environment, one of which is propolis.

**Awards Won:**