Antibacterial Activity of Texas Honey Against Streptococcus oralis

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Abstract

The use of honey for medicinal purposes has been dated back to 2600-2000 BCE. Within its medicinal properties, honey offers a source of antiseptic and antimicrobial applications for wounds, ulcers, and to generalize, any site vulnerable to infection via present properties from flavonoids, phenolics, sugars, acidity, and glucose oxidase production of hydrogen peroxide. In this study, Streptococcus oralis, a Streptococcus viridans responsible for oral disease and systemic disease, is experimented against honey and its antimicrobial property. The study focuses on a group of local Texan honey and their potency against S. oralis using agar well diffusion assay. Minimal Inhibitory Concentration (MIC), and Minimal Bactericidal Concentration (MBC). Groups tested consisted of Texan honey dilution samples, Manuka honey dilutions, 2% and 4% Phenol, and control blanks. Antibacterial activity of local Texan honey averaged 16.59 mm when placed directly in agar well diffusion wells without dilution. For values of MIC, the generalization among honey dilutions was a decrease in potency of honey to combat the present bacteria. What allows honey to be used as a treatment is its combination of low pH, high concentration of sugars, and low moisture and others that allow it to be used as an efficient antiseptic and antimicrobial substance. In terms of oral health, this study will focus on the bacteria, Streptococcus oralis, an initial colonizer in oral disease through creation of biofilm, and the potency of honey to combat the present bacteria.

Materials and Methods

Introduction

In recent years, the development of bee products for use outside of consumption just as food has been growing within the U.S. This development has been eagerly in the medical field within the properties that honey has to offer. In the past, the utilization of honey for its medical purposes was well known and it wasn’t until the development of antibiotics like penicillin that the usage of honey for wounds, burns, and chronic diseases decreased. One of honey’s greatest attributes when it comes to its medical purposes is the preventive care it can offer for oral health. What allows honey to be used as a treatment is its combination of low pH, high concentration of sugars, and low moisture and others that allow it to be used as an efficient antiseptic and antimicrobial substance. In terms of oral health, this study will focus on the bacteria, Streptococcus oralis, an initial colonizer in oral disease through creation of biofilm, and the potency of honey to combat the present bacteria.

Objective

This research aimed to assess the antimicrobial activity of selected local Texas honey against Streptococcus oralis, a common pathogen found in dental diseases.

Results

The TX honey and Manuka honey samples presented mild, moderate to strong antimicrobial activity against Streptococcus oralis tested in this study. Dotted lines represent the strong susceptibility of bacteria.

Conclusions

TX Honeys present:
• Strong antimicrobial potential against Streptococcus oralis
• All samples have bactericidal activity against Streptococcus oralis
• Superior activity seen for zone of inhibition in Texas honey sample 23H-50 for treatment of Streptococcus oralis
• Texas honey samples 23H-74 and 23H-91 showed lowest minimum bactericidal concentration at 12.5%

References


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