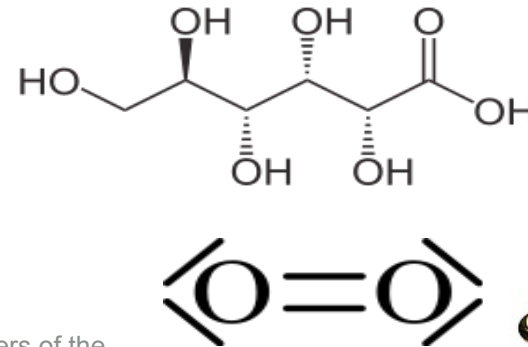


Historical use of topical O₂ in Medicine

Function of honey:

- It draws fluid away from your wound
- The high sugar content suppresses microorganism growth
- Worker bees secrete an enzyme (glucose oxidase) into the nectar, which then releases low levels of hydrogen peroxide when the honey makes contact with your wound
 - Glucose oxidase (Gox)
 - Gluconacid and oxygen



Clinical trials have found that honey, made with pollen gathered from the flowers of the Manuka bush (a medicinal plant), can effectively eradicate more than 250 clinical strains of bacteria, including resistant varieties such as:

- MRSA (methicillin resistant Staphylococcus aureus)
- MSSA (methicillin sensitive Staphylococcus aureus)
- VRE (vancomycin-resistant enterococci)
- Helicobacter Pylori (which can cause stomach ulcers)



Honey, an additional ingredient in Bluem

A Comparative Evaluation of the Antibacterial Efficacy of Honey and Anti plaque Efficacy in a 4-Day Plaque Regrowth Model: J Periodontol • September 2012

A Comparative Evaluation of the Antibacterial Efficacy of Honey In Vitro and Antiplaque Efficacy in a 4-Day Plaque Regrowth Model In Vivo: Preliminary Results

S. Aparna,* S. Srirangarajan,* Veena Malgi,* Krishnanand P. Setlur,¹ R. Shashidhar,¹ Swati Setty,² and Srinath Thakur³

Results:

- The honey mouth rinse effectively inhibited the six tested microorganisms*. The in vivo results revealed that plaque formation was inhibited/reduced by chlorhexidine and honey rinses.

Conclusion:

- Honey has antibacterial action against tested oral microorganisms and also has anti plaque action. J Periodontol 2012;83:1116-1121.

Background: Honey has a potent broad-spectrum antibacterial action that may make it suitable for "anti-infective" treatment of periodontal disease. The aims of this study are as follows: 1) to evaluate the antibacterial efficacy of honey against oral bacteria and compare the same with 0.2% chlorhexidine; and 2) to compare antiplaque efficacy in vivo with chlorhexidine.

Methods: The study was conducted in two parts. In the in vitro part, the inhibitory effects of three test agents, 0.2% chlorhexidine gluconate, honey mouthwash, and saline, against six oral bacteria at concentrations of 1, 2, 4, 8, 16, 32, 64, 128, 256, and 512 µg/mL, were tested in duplicate. The minimum inhibitory concentration (MIC) was set as the lowest concentration of the agent that completely inhibited the growth of the test species. The in vivo part consisted of a double-masked parallel clinical trial based on a 4-day plaque regrowth model. Sixty-six volunteers, 20 to 24 years of age, participated in the study, and the plaque scores were compared at baseline and at the end of 4 days. The Kruskal-Wallis test was used for significance, and the Mann-Whitney U test was used for pairwise comparison of the groups. The mean plaque scores were 1.77 ± 0.86, 1.64 ± 0.90, and 3.27 ± 0.83 for groups 1, 2, and 3, respectively.

Results: The honey mouthrinse effectively inhibited the six tested microorganisms. The chlorhexidine gluconate rinse had the lowest MICs compared with honey and saline rinses for all test species examined. The in vivo results revealed that plaque formation was inhibited/reduced by chlorhexidine and honey rinses.

Conclusion: Honey has antibacterial action against tested oral microorganisms and also has antiplaque action. J Periodontol 2012;83:1116-1121.

KEY WORDS

Antibacterial agents; chlorhexidine; dental plaque; honey; mouthwashes; minimum inhibitory concentrations.

Periodontitis is an inflammatory disease, associated with pathogenic microorganisms colonizing tooth surfaces in a susceptible host. Understanding that specific oral microorganisms are the cause of periodontitis, antimicrobials have been used to treat periodontitis in the past and at present. Several reviews¹⁻⁴ have concluded that antimicrobial agents as adjuncts to mechanical therapy improve therapeutic outcome. However, the emergence of antibiotic-resistant microorganisms is compelling researchers to look for alternative means to destroy these microorganisms. Although some success has been reported with antibiotic therapy, several limitations have become evident. Most of these limitations are attributable to the fact that periodontal infections result from the formation of a biofilm.⁵

Mouthrinses have been used for centuries for medicinal and cosmetic purposes and have gained popularity worldwide. The advent of mouthrinses containing chlorhexidine was a major breakthrough in the search for a chemical means to prevent periodontal disease. Since then and especially in the past 10 years, the number of formulations that claim to have antiplaque, anticalculus,

* Predominant oral bacterial species oral bacterial species	Classification	Periodontitis	Peri-implantitis	Dental Plaque	Caries
<i>Eubacterium nodatum</i>	Anaerobic	X			
<i>Streptococcus mutans</i>	Anaerobic				X
<i>Campylobacter rectus</i>	Anaerobic	X			
<i>Streptococcus sanguinis</i>	Aerobic			X	
<i>Aggregatibacter actinomycetemcomitans</i>	Anaerobic	X			
<i>Porphyromonas gingivalis</i>	Anaerobic	X	X		

* Department of Periodontology, Bangalore Institute of Dental Science and Post Graduate Research Centre, Bangalore, India.
¹ Department of Oral Microbiology and Oral Pathology, Srinivas Institute of Dental Science, Bangalore, India.
² Department of Oral Microbiology and Oral Pathology, Coorg Institute of Dental Science, Virajpet, India.
³ Department of Periodontology and Oral Implantology, SDM College of Dental Science and Hospital, Suttur, Dharwad, India.