**A satisfying rinse?**

Deborah Lyle discusses the benefits and limitations of mouth rinses as an adjunct to conventional home-based cleaning, and whether using a water jet is a better option.

**When it comes to preventive oral health-care, or tackling periodontal disease, dental professionals are in some ways restricted by what can be achieved in the appointments they have with the patient. Educating patients on efficient strategies for home-based oral healthcare can ensure greater success in not only treating their oral disease, but preventing the disease from occurring.

The use of mouth rinses as a means of controlling supragingival plaque and gingivitis, as an adjunct to conventional mechanical cleaning, has been in existence for approximately 40 years, and numerous clinical studies have sought to establish the effectiveness of anti-plaque agents such as chlorhexidine (CHX), cetylpyridinium chloride (CPC) and essential oils.

**Gold standard?**

Mouth rinses containing CHX have been shown to be most efficacious in reducing supragingival plaque and gingivitis when compared with other anti-microbial agents. Although it is admitted that there are “gold standards” of chemical anti-plaque agents, there are some limitations and drawbacks.

For instance, CHX was found not to be as effective with pre-existing plaque and gingivitis and where no oral hygiene instruction or professional cleaning was undertaken. The other main disadvantages for CHX are the established side effects, including discoloration of the pellicle, especially in the interproximal areas, caused by a precipitation reaction between tooth-bound CHX and chromogens from food or beverages.

In an attempt to rectify this, studies have examined the effectiveness of various formulations of agents alongside CHX (such as sodium fluoride and cetylpyridinium chloride) as well as examining whether removing the alcohol content has an adverse effect on inhibiting plaque re-growth and gingivitis.

One long-term study sought to examine the antibacterial capacity and side effects of an ethanolic lower concentration of CHX (0.05 per cent), combined with 0.05 per cent CPC, and found it had an anti-plaque effect comparable with that of a 0.2 per cent CHX + alcohol solution, but with reduced subjective side effects; slightly less staining and better taste.

**Alcohol presence**

The presence of alcohol in mouth rinses has become somewhat of a contentious issue. Besides known side effects, the alcohol can provide a cooling sensation and irritation of soft tissue (unpleasant especially for patients with mucositis or recurrent oral ulcerations), there has been debate over wider health and social concerns. Some of the ‘cosmetic’ over-the-counter brands cannot contain anywhere between 18 per cent and 26 per cent alcohol.

While there have been suggestions of a link between the alcohol content and oral cancer, a critical analysis of literature concluded that establishing a direct causal relationship is so far unsubstantiated. Interestingly, the same study also concluded that there is no evidence that alcohol increases the effects of the anti-plaque agents. The demand for effective non-alcohol mouth-washes has increased and products containing different active ingredients, such as CPC, need to be studied further for efficacy.

Another chemical plaque-control agent studied was essential oils. In a six-month randomised controlled trial, a commercially available mouth rinse containing essential oils (Listerine) was compared with an experimental mouth rinse containing 0.07 per cent CPC (Crest Pro-Health) and found both to be effective in reducing gingivitis and the proportions of periodontal pathogens. Furthermore, a meta-analysis of six-month studies found six studies that showed essential oils to be effective as both an anti-plaque and anti-gingivitis agent, comparable with the results achieved by 0.12 per cent CHX. Essential oils do have their disadvantages, such as low substantivity and, in some cases, an unpleasant bitter taste and burning sensation.

**Main drawbacks**

Regardless of the active ingredients of the mouth rinses, there are always two fundamental drawbacks to the efficacy of its delivery interdentally and to the sub-gingival areas. One way in which delivery can be improved is through using a dental water jet and several studies have examined the efficacy.

For instance, one study concluded that using a subgingival irrigation tip ( Pik Pocket Tip ) was effective in delivering a solution to 90 per cent of a six mm pocket, whilst rinsing only achieved 21 per cent. This is supported by an earlier study which noted that penetration of the periodontal pocket by supragingival irrigation tip with a powdered device ranged from 44 per cent to 71 per cent.

Having the ability to penetrate subgingivally helps to reduce plaque biofilm and the pathogens that can cause gingivitis, calculus and bleeding. Using mouth rinses in conjunction with a dental water jet has been shown to more effectively remove plaque than rinsing alone, as the irrigation device provides better interdental and subgingival penetration.

A six-month clinical observation of 222 patients sought to assess the efficacy of supragingival irrigation with 0.06 per cent CHX when compared against water irrigation and CHX rinsing. After six months, researchers found that all treatment groups:

- Had a significant reduction in the Gingival Index and the greatest reduction (42.5 per cent) occurred in the CHX irrigation group
- Demonstrated significant reductions in the per cent of marginal ginginal bleeding sites, with the greatest reduction in the CHX irrigation group (46.5 per cent)
- Significantly reduced the percent of Bleeding on Probing (BOP) with the CHX irrigation group reducing by 55.4 per cent.

The study concludes that a low concentration of CHX irrigation with the a dental water jet was the most effective regimen for reducing the Plaque Index, Gingival Index, BOP, and marginal gingival bleeding. Significantly, the report also noted that water irrigation was equally effective as CHX rinsing in reducing gingivitis and was 37.5 per cent better in reducing gingival bleeding.

**The best option?**

While it is clear that mouth rinses provide an effective adjunct to mechanical cleaning, there are significant disadvantages with the chemical agents being used. Although CHX is the “gold standard” of antimicrobial rinses, it isn’t considered appropriate for long-term use and the documented side effects, such as staining and altered taste sensations, are likely to make patient compliance problematic.

Alternatives such as essential oils and CPC also have their drawbacks in terms of efficacy and all mouth rinses suffer the disadvantage of being unable to reach subgingival and interdental areas. It is also worth considering the long-term cost implications of having to use mouth rinses as a daily adjunct to mechanical cleaning.

Although it has been shown that irrigation with a CHX solution of a lower dosage can still have a significant impact on plaque and gingivitis, it has been demonstrated that irrigation with water alone is highly effective in removing plaque biofilm and reducing gingival inflammation.

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**About the author**

Deborah Lylye received her BS in Dental Hygiene and Psychology from the University of Bridgeport and her DMD degree from the University of Missouri – Kansas City School of Dentistry. Deborah has 18 years’ clinical experience in dental hygiene and maintains an emphasis in periodontal therapy. Deborah has written and presented numerous evidence-based articles on the incorporation of water jets, professional debridement, risk factors, diabetes, systemic disease and therapeutic devices. Deborah is an editorial board member for the Journal of Dental Hygiene, Modern Hygiene, RDH, and Journal of Practical Hygiene. Currently, Deborah is the director of Professional and Clinical Affairs for Water Pik, Inc.