by Linda Douglas, RDH, BSc

Dentaltown’s crucial guide to mouthwashes and mouth rinses

by Linda Douglas, RDH, BSc, graduated as a dental hygienist from the Royal Dental Hospital in London in 1982. After graduation she worked in periodontology before moving to Toronto, where she has worked in private practice since 1990. Douglas’ desire to support patients with xerostomia and eating disorders has instigated her in-depth study of their effect on oral health.
Mouthwashes (or mouth rinses) have been defined as medicated liquids “used to clean the oral cavity and treat disorders of oral mucosa.” Historically, various substances have been used as mouthwash, including brandy, vinegar and even urine.

There are two main types of mouthwash:

- **Therapeutic mouthwashes** contain active ingredients that kill bacteria and can help reduce biofilm, gingivitis, and halitosis, or prevent caries.
- **Cosmetic mouthwashes** may temporarily control or reduce bad breath and leave a pleasant taste, but don’t reduce the risk of caries or gingivitis.
Mouthwashes for gingivitis

Mouthwashes have been shown to reach just 1.5mm subgingivally,\(^5\) which limits their efficacy for treatment of periodontitis, but they are still valuable for treatment of gingivitis.

Ingredients used in mouthwashes for treating gingivitis include:

**Chlorhexidine gluconate.** A 0.12% concentration reduces gingivitis by causing lysis of bacteria. It is effective against a wide spectrum of bacteria, including *Porphyromonas gingivalis*. It is substantive: About 30% is retained in the mouth after rinsing and is slowly released in the oral tissues, extending its action for 8–12 hours.\(^6\) There are several brands of chlorhexidine rinse, including Peridex, Periogard and GUM Paroex, which is alcohol-free. Chlorhexidine is also used postsurgery, and has also proved valuable as a preprocedural rinse to reduce bacteria in aerosols produced during dental treatment.\(^7\)

**Essential oils.** Mouthwashes containing essential oils have demonstrated significant efficacy.\(^8\) Essential oils in combination disrupt bacterial cell walls, impair enzymatic function of bacteria, and may also have antioxidant properties.\(^9\) Mouthwashes with essential oils include Listerine, which contains thymol, menthol and eucalyptol with methyl salicylate; and Tooth and Gums Tonic, which contains deionized water, vegetable glycerine, extracts of echinacea angustofolia, echinacea purpurea, gotu kola, essential oils of peppermint, red thyme, cinnamon bark, eucalyptus globulus and lavender, and plant saponins.

**Hydrogen peroxide.** Hydrogen peroxide is an oral debriding agent and oral wound cleanser. Effective against anaerobic bacteria, it helps to cleanse and promote healing of minor mouth irritations. Peroxyl by Colgate contains 1.5% hydrogen peroxide.

**Chlorine dioxide.** Chlorine dioxide is antibacterial, and also eliminates the volatile sulfur compounds that cause bad breath. Closys and Oracare are two examples of mouthwashes with chlorine dioxide.

**Cetylpyridinium chloride.** CPC is a cationic quaternary ammonium compound with a broad antimicrobial spectrum. It causes growth inhibition, and eventually death of bacterial cells. It is mostly effective against gram-positive bacteria and yeast. When used as an adjunct to mechanical oral hygiene, CPC rinses provide a small but significant additional benefit on reducing both biofilm accumulation and gingival inflammation.\(^10\) Crest Pro Health contains 0.07% CPC; Colgate Total Advanced Pro-Shield and Colgate Hydris also contain CPC.

The new generation of mouthwashes for gingivitis

Until recent years, most mouthwashes for gingivitis have been mainly antimicrobial, but a new generation of mouthwashes offer other modes of action, including anti-inflammatory and antioxidant. These include:

**Hyaluronic acid.** Hyaluronic acid, found naturally in healthy gingival tissue, has been shown to have anti-inflammatory, bacteriostatic and antioxidant properties.\(^11\) It also promotes healing by stimulating fibroblast activity. Gengigel by Oral Science is one example of such a rinse.

**Antioxidant rinses,** such as AO ProRinse by PerioScience, are formulated with the antioxidants curcumin (turmeric), phloretin, ferulic acid and silymarin. Antioxidants have been shown to work together synergistically. Five reviewed studies show that curcumin significantly decreased plaque index and gingival index, and can therefore be used in the prevention and treatment of gingivitis.\(^12\) Phloretin, derived mainly from apples,
is an effective polyphenolic antioxidant specific to the flavonoids subgroup. Ferulic acid, found in the seeds and leaves of most plants, is an effective antioxidant and acts in concert with other antioxidants. Silymarin is one of the active constituents of the milk thistle plant. A powerful antioxidant by itself, it has been shown to boost the synthesis of superoxide dismutase, a biological antioxidant present in our bodies.

Mouthwash formulas for the prevention of caries

Sodium fluoride rinses are available in concentrations from 0.05% to 0.2%. There are several brands, including X-Pur Opti-rinse by Oral Science, CariFree CTx4 Treatment Rinse, Crest Pro-Health Complete rinse and Listerine Total Care anticavity rinse.

Stannous fluoride rinses have been shown to reduce caries risk, dental sensitivity and gingivitis, and stannous fluoride has also been shown to offer added protection against acid erosion. Rinses with stannous fluoride include PerioMed Stannous Fluoride rinse, 0.63%, by 3M.

Nanohydroxyapatite is particularly valuable for patients with hyposalivation because they lack healthy saliva, which is normally saturated with hydroxyapatite. This also facilitates uptake of fluoride into the oral hard tissues, because fluoride requires the correct ratio of calcium and phosphate ion to form fluorapatite. Carifree rinses contain nanohydroxyapatite.

Saliva Flow at Chairside
New Device Diagnoses

Boka Sciences’ new BokaFlo diagnostic tool provides an accurate, objective measurement of patient whole resting salivary flow rates, which allows dentists to create customized adequate care protocols.

Low flow is a primary cause of major dental problems such as gingivitis, periodontal disease and loss of teeth, and chairside diagnosis could help prevent future oral health problems caused by xerostomia. Early diagnosis also saves the patient time and money, while providing an additional stream of revenue to the dentist.

Information: bokasciences.com or 801-441-0748.
Mouthwashes for xerostomia and related conditions

These include products that contain substances to stimulate salivary flow and help to buffer acids, such as xylitol, green tea, and *Spilanthes acmella.* Xylitol also reduces the oral population of cariogenic bacteria, *Porphyromonas gingivalis* and *candida.* Green tea and chitosan are also valuable for reducing inflammation. Mouthwashes for xerostomia may also contain ingredients that lubricate and retain moisture, such as hyaluronate, coconut oil and aloe vera. Examples of rinses for xerostomia include brands such as Spry, Synedent, Moisyn, Hydris, Mighteasflow by Camellex and AO Hydrating rinse by PerioScience.

Rinses with supersaturated calcium and phosphate ion, such as SalivaMax by Forward Science, are valuable for patients with xerostomia and mucositis resulting from radiation therapy or chemotherapy. Fluoride rinses are also valuable for dry-mouth patients, because they are at high risk for caries.

Current research on mouthwash

A recent longitudinal study found that twice-daily use of over-the-counter mouthwash was associated with increased risk of developing prediabetes or diabetes in overweight and obese individuals age 40–65. It’s been proposed that mouthwash has antibacterial effects in the oral cavity, yet oral bacteria play an important role in the salivary nitrate/nitrite/nitric oxide pathway, and reduced levels of nitric oxide are associated with insulin resistance as well as adverse cardiovascular effects such as hypertension and impaired vascular function.

Research has been conducted on the efficacy of mouthwashes with other novel ingredients, such as sea buckthorn oil, honey, coenzyme Q10 and pomegranate extract. Pomegranate extract was tested against *Aggregatibacter actinomycetemcomitans, Porphyromonas gingivalis* and *Prevotella intermedia,* it showed inhibition of all three strains of periodontopathogens. Sunstar has introduced GUM ActiVital Mouthrinse, which contains pomegranate extract and coenzyme Q10.

Conclusion

Mouthwash is a valuable, user-friendly adjunct to brushing and interdental mechanical plaque control that can reduce gingivitis and prevent caries. Rinses for xerostomia can relieve symptoms and have a protective effect, which reduces complications of a dry mouth. Using mouthwash can significantly contribute to achieving and maintaining optimal oral health for a wide range of patients.

References

3. https://www.quarereduction.com/qaq-review/2012/12/the-hi


