



SUNSTAR Spotlight

BIOFILM BARRIER

A NEW INGREDIENT AVAILABLE IN A THERAPEUTIC MOUTHRINSE CAN HELP PATIENTS IMPROVE THEIR PLAQUE CONTROL REGIMEN.

By Ann M. Bruhn, BSDH, MS



INTRODUCTION

Brushing twice a day for 2 minutes and flossing once daily are the traditional recommendations made by oral health providers. Despite the simplicity of these instructions, patients often fail to comply. This lack of adherence to self-care and treatment recommendations is not atypical. Research conducted by DiMatteo, Giordani, Lepper, and Croghan found that approximately 30% to 60% of health information provided during the clinician/patient encounter is forgotten within an hour, and 50%

of health recommendations are not followed at all.¹

Because the removal of plaque biofilm from teeth and interproximal spaces is a significant challenge for patients, dental professionals are now customizing the home care samples provided at each appointment. Sample selection is based on the efficacy of a product as well as the likelihood of patient compliance. Mouthrinses can be an effective tool because they are easily dispensed throughout the oral cavity and they provide additional cleaning beyond mechanical plaque removal. Patients may also be more compliant with a product that only requires swishing.

Sunstar recently launched a unique mouthrinse with delmopinol—GUM® PerioShield™ Oral Health Rinse, an innovative aid for the prevention and treatment of gingivitis, which can lead to periodontitis. With 29 scientific studies backing the product, this launch further establishes Sunstar's role in providing clinically-proven solutions for today's dental professionals. Please read on to learn more about this new product.

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GUM BUTLER GUIDOR

struggle with biofilm control and may benefit from mouthrinses' ease of use.² Selecting the appropriate rinse can be a challenge with the variety of products available today. Clinicians need to be knowledgeable about the mouthrinses they recommend to ensure efficacy and to educate patients about any side effects or contraindi-

Therapeutic mouthrinses are an important factor in the alleviation and prevention of many oral health problems including gingivitis, caries, and dental hypersensitivity.² In gingivitis, plaque acts as a toxin causing inflammation in the gingiva that can lead to periodontitis if left untreated (Figure 1). Evidence shows that untreated gingivitis may lead to the development of systemic health problems, including diabetes mellitus, cardiovascular disease, and preterm low birth weight.³ Patients with increased plaque accumulation or those who have difficulty manually removing plaque biofilm are ideal candidates for anti-gingivitis therapeutic mouthrinses.

Research shows that patients will use therapeutic mouthrinses in their plaque-prevention regimens.⁴ Clinicians should recommend therapeutic mouthrinses to patients who



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IMAGE: STOCKBYTE



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Figure 1. Bacterial plaque on tooth a surface.

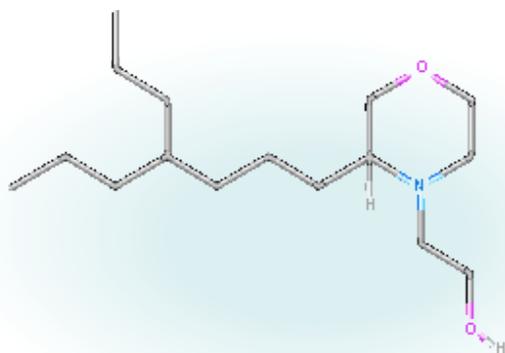


Figure 2. The chemical compound of delmopinol.

ocations. Evidence-based decision-making should be implemented when making these recommendations and selecting a therapeutic mouthrinse for individualized patient needs.

WHAT IS NEW IN MOUTHRINSES?

A new mouthrinse with delmopinol as the active ingredient was recently introduced. Delmopinol is a third-generation anti-plaque, morpholinoethanol derivative and tertiary amine surfactant (Figure 2). It acts differently than other anti-gingivitis agents, including chlorhexidine (CHX).⁴ Delmopinol's mechanism of action breaks down plaque and makes it less adhesive—forming a barrier that prevents plaque biofilm from sticking to teeth and gingiva. CHX is effective in reducing plaque by the destruction of bacteria (bactericidal) and inhibition of bacterial growth (bacteriostatic). Delmopinol inhibits plaque by interfering with the enzymes responsible for biofilm formation.⁴⁻⁸ Delmopinol is able to reduce plaque and treat gingivitis through its bilayer barrier formation.^{4,5,7} Because delmopinol is neither bactericidal nor bacteriostatic, it

assists in maintaining a balanced oral flora. Delmopinol mouthrinse is indicated in the treatment of gingivitis where the benefits of CHX are not yet required. Dental professionals also recommend delmopinol as a follow-up to CHX treatment.

WHAT THE RESEARCH SAYS

The safety and efficacy of delmopinol have been well researched over many years. In 1995, an early clinical study looked at the effects of delmopinol on plaque flora. The study had 450 participants who were divided into three groups: control (placebo), those rinsing with 0.1% delmopinol, and those rinsing with 0.2% delmopinol. The participants used their assigned rinse twice daily for 24 weeks.⁹ Out of all the participants, 141 were chosen at random for microbiological sample. Results indicated that at 24 weeks dextran-producing *Streptococci* were significantly increased within the placebo group compared to the groups using 0.1% and 0.2% delmopinol rinses.⁹ At 12 weeks, the group using the 0.2% delmopinol had significantly lower dextran-producing *Streptococci* than both the placebo and 0.1% rinse groups.⁹ The groups using the delmopinol rinses also experienced a reduction in *Fusobacterium nucleatum* (Figure 3). Since *F. nucleatum* is a key component in the formation of plaque, this finding is critical to delmopinol's mechanism of action. This research, along with additional study, concluded that delmopinol does disrupt the plaque formation process by reducing the necessary dextran-producing *Streptococci* and altering the plaque matrix.^{9,10}

GINGIVITIS REDUCTION

According to the Third National Health and Nutrition Examination Survey, 52.9% of Americans over the age of 20 have gingivitis, which is defined as the presence of one or more gingival bleeding sites.¹¹ Delmopinol has proven efficacy in the reduction of gingival bleeding and plaque reduction.

Swedish research demonstrated a 33% reduction of bleeding and plaque when participants rinsed with 0.2% delmopinol and found no difference between 0.2% CHX and 0.2% delmopinol in the reduction of gingival bleeding when measured by the gingival bleeding index and plaque index. The 64 male participants ages 18 years to 40 years did not undergo any additional oral hygiene while participating in the study.⁵

The efficacy of adsorption and the level of reduction of bleeding are increased with higher concentrations of delmopinol.^{5,12} At lower concentrations of delmopinol (0.05% and 0.1%), gingival bleeding was reduced by 20% to 23% and plaque was reduced by 17% to 21%.⁵ This is a significant percentage reduction, and verifies the efficacy of the 0.2% concentration of delmopinol in reversing gingivitis and reducing plaque biofilm.

A meta-analysis was conducted on eight well-constructed double-blind, parallel group studies using 0.2% delmopinol mouthrinse. Five of the studies were supervised and had 913 participants, while the remaining three studies were un-



TABLE 1. Summary of differences between the effects of delmopinol 0.2% and placebo on plaque, bleeding on probing, and modified gingival index in three unsupervised and five supervised studies.⁴

	Number of Patients		Adjusted Mean		Mean Difference Between Placebo and Delmopinol
	Delmopinol	Placebo	Delmopinol	Placebo	
Plaque	614	622	1.32	1.66	0.34*
Bleeding on Probing	665	674	32.3	35.1	2.80*
Modified Gingival Index	613	622	1.61	1.71	0.10*

* $p < 0.00001$.

supervised and conducted with 467 participants.⁴ In both the supervised and unsupervised studies, participants were required to rinse for 1 minute, twice daily, and were instructed to continue with their regular oral home care routine. Participants were instructed to brush before rinsing. All participants had active gingivitis and received professional dental cleanings after baseline measurements. The studies were conducted from 2 months to 6 months.⁴ Overall, both the unsupervised and supervised rinsing studies with 0.2% delmopinol showed statistically significant improvements and surpassed results for the placebo rinses when used as an adjunct to daily brushing (Table 1).

Hase and colleagues performed a clinical study on 14 dental students with no other oral hygiene practices allowed except for the use of 0.2% delmopinol rinse twice daily for 1 minute over 2 weeks. After assessments, the delmopinol experimental group resulted in significantly lower plaque scores compared with placebo.⁷ A similar study design performed by Moron and colleagues studied plaque regrowth in 12 participants over 4 days with no other oral hygiene performed and used CHX and delmopinol rinses to compare results.⁶ Participants rinsed with either 0.2% delmopinol, 0.2% CHX, or a placebo twice daily for 1 minute, and plaque was measured. Plaque was effectively removed from the participants using delmopinol 0.2% compared to the control rinse. CHX effectively removed slightly more plaque when compared to delmopinol, although two participants in the delmopinol rinse group had greater plaque reduction than CHX.⁶ These clinical studies adequately demonstrate the ability of delmopinol mouthrinse in reducing plaque when no other oral care mechanisms were used in conjunction with rinsing.

PATIENT COMPLIANCE

Meta-analysis results indicated no differences between the supervised and unsupervised rinsing groups in the reduction of plaque and reversal of gingivitis. This indicates ease of use and reassurance that rinsing at home will be just as effective as rinsing under supervision in the clinical operator.⁴ The studies included in the analysis were of short duration, yet still demonstrated efficacy and practical improved results for those patients who did not continue with recommended protocol.³ This is critical for clinical practice because research indicates that patients incorporate therapeutic rinsing into

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their self-care routine consistently for less than 6-month durations.⁴

SIDE EFFECTS

CHX and delmopinol mouthrinses have minimal side effects but they should be understood. Some tooth and tongue staining was reported with use of 0.2% delmopinol, yet the stain was typically not strongly adherent to tooth structure and was easily removed by mechanical brushing.¹³⁻¹⁵ This staining is not comparable to the staining commonly associated with CHX usage, which is more difficult to remove.^{13,14} A few clini-



Figure 3. *Fusobacterium nucleatum*, a key component in the formation of plaque.





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cal studies reported that tooth and tongue staining doubled with the use of CHX over delmopinol.^{13,14}

Transient anesthesia of the tongue and mild taste disturbances have been reported in some clinical studies with the use of delmopinol and CHX mouthrinses. These complaints are the most commonly reported in those using delmopinol rinses.^{4,7} Participants in studies who noted transient anesthesia of the tongue and/or taste disturbances after using CHX and delmopinol mouthrinses were more likely to discontinue the use of the CHX mouthrinse than the delmopinol mouthrinse.⁴ In most cases, transient anesthesia dissipates with repeated use of the delmopinol mouthrinse.

CONCLUSION

Clinical studies have proven the effectiveness of 0.2%

delmopinol when coupled with regular oral hygiene techniques in the reduction of plaque and gingivitis.⁴ The meta-analysis, which incorporated eight well-designed clinical studies of delmopinol-containing mouthrinses, demonstrated that delmopinol 0.2%-containing rinses should be recommended to patients who could benefit from their use.⁴ Therapeutic mouthrinses are proven adjunct treatments in the improvement of oral health, and their use results in significant plaque reduction and decreased gingival inflammation when combined with regular brushing and flossing.^{3,4} The delmopinol mouthrinse is recommended for treating gingivitis and early periodontal diseases among patients who do not yet require the use of CHX. ■

PRODUCTS IN PRACTICE

GUM® PerioShield™ Oral Health Rinse

Sunstar Americas Inc has introduced GUM PerioShield Oral Health Rinse, which contains the proprietary ingredient delmopinol hydrochloride 0.2% (Figure 3). PerioShield provides patients with delmopinol's plaque-blocking technology that forms a shield to help prevent biofilm from adhering to teeth and gingival tissue. The product is designed for patients with heavy plaque and chronic tissue inflammation.

PerioShield Oral Health Rinse not only prevents bacteria from forming but also disrupts existing plaque biofilm, making it easier to remove. The rinse creates a protective barrier around the teeth and gingiva to continually deflect plaque and pathogenic bacteria.

The rinse should be used twice per day for 30 seconds for optimal efficacy. PerioShield has a low alcohol content (1.5%), making it appropriate for patients who desire or need a low-alcohol oral rinse.

GUM PerioShield Oral Health Rinse is currently available to all dental professionals. Beginning in October, it will also be purchasable over the counter. Circle 100 on the card found at page 30 for more information.



Figure 3. GUM PerioShield Oral Health Rinse contains 0.2% delmopinol and is available over the counter.

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