



More than a
Toothbrush Company



Between Teeth Cleaning



Interdental



Pain Management



Operatory



Dental Kits



Toothbrushes



Crayola™ Products

[Click here to
Subscribe to the
Sunstar E-Briefs
Newsletter](#)



Periodontitis is one of the most prevalent infectious diseases among humans.¹ The widespread appearance of the condition is promoted by biofilms that attach to tooth surfaces that form a slimy, protective sheath around a diverse community of cells. Within biofilms microbes can build resistance to antibiotics used in periodontitis treatment modalities. Antibacterial resistance can be heightened by a microbe's ability to transform its own physiology into a more protected state, as well as its ability to move and communicate in response to changes in environment—including the introduction of therapeutic antimicrobials intended to fight periodontal diseases.²

Since the 1980s, there has been a substantial increase in the ability of harmful bacteria to resist antibiotics. This development has sparked a search for new treatment that overcomes the natural ability of microbes to resist conventional antibiotics or mechanical methods.¹ An alternative modality such as laser light therapy—to which microbes are unlikely to build resistance—may provide a solution.

Breaking Up the Safe Haven

Antibiotics directed at bacteria involved in periodontitis will successfully kill many planktonic microbes that have floated away from the biofilm colony, yet within the biofilm microbes tend to remain relatively undisturbed. Those that survive will live on to become the dominant strain—able to withstand the antibiotic used to eliminate the previously dominant strain.²

Photodynamic therapy (PDT) is designed to use low doses of visible light delivered by diode laser to kill harmful bacteria or reduce their virulence without increasing resistance.¹ Researchers in Europe and North America—including scientists from The Forsyth Institute, Boston, Mass.—are studying PDT as a method to attack the subgingival bacteria involved in periodontitis with lasting effect and without damaging surrounding tissue.

Come Into the Light

The concept behind PDT is built around the application of a medicament delivered into the periodontal sulcus and activated by a specific light wavelength. The reaction between light and medicament releases reactive oxygen that is toxic to the microorganisms. PDT allows the medicament to be applied topically and then become illuminated in a way that neither harms the surrounding tissue nor disturbs the residual bacteria-flora. The use of PDT also avoids problems associated with maintaining proper concentrations of antimicrobial therapies within the oral cavity.³

Whitening Treatment Has a Secret

The idea of light-based antimicrobial therapy gained interest as dental professionals began to realize patients who received light-assisted tooth whitening had healthier gums.⁴ Since then research has been undertaken to study how lasers of different colors affect varied species of harmful bacteria. In the laboratory PDT has been shown to kill free-floating bacteria with up to 63% effectiveness. Used against microbes within biofilm, however, the effectiveness of PDT against those same bacteria fell to 31%.³

Though the microbiocidal effectiveness of PDT was lower against bacteria in biofilm, it is still reported to outperform antibiotic therapy against bacteria in biofilm. Under similar conditions, antibiotics are 250-fold less effective against dental bacteria in biofilm than against free-floating bacteria.³ In contrast, PDT was shown only twofold less effective against biofilm bacteria than against free-floating bacteria.³

New Strength in the Armamentarium

Researchers believe modifications can be made to increase PDT's efficacy. Suggestions range from increasing the number of times the therapy is applied to improvements in the way it is delivered to targeted microbes. Even at its current state of development, laboratory study reveals PDT used in conjunction with root planing or scaling produces significant improvement over either scaling or root planing alone.³

In Canada, where at least one method of PDT is in use, a report indicates the therapy may be highly advantageous as an adjunct to periodontal care, particularly at sites that have not responded according to clinical expectation.⁵ The report further states that PDT reduces probing depths and gingival bleeding, and is able to achieve favorable improvement in clinical attachment levels.

Researchers have characterized light-activated antimicrobial agents such as PDT "promising" in the successful treatment of periodontitis.¹ In the United States clinical testing of PDT moves forward. A news release reported March 17 that the U.S. Food and Drug Administration formally accepted a filing for the pre-market approval application for a laser diode system intended for the treatment of chronic periodontitis as an adjunct to standard care methods.⁶ If the device gains approval, it could open a door to higher levels of effectiveness for antimicrobial therapy in the treatment of periodontal diseases.

REFERENCES

1. Zolfaghari P, et al. In vivo killing of *Staphylococcus aureus* using a light-activated antimicrobial agent. *BMC Microbial*. 2009;9:27.
2. Stewart PS, Costerton JW. Antibiotic resistance of biofilms. *Lancet*. 2001;358:135-38.
3. Fontana CR, et al. The antibacterial effect of photodynamic therapy in dental plaque-derived biofilms. *J Periodontal Res*. 2009;44(6):751-759.
4. [\[Click here for Reference URL\]](#). Accessed June 6, 2010.
5. Galler, C. Driving Towards Periodontal Health. *Oral Health Journal*. [\[Click here for Reference URL\]](#). Accessed June 7, 2010.
6. [\[Click here for Reference URL\]](#). Accessed June 7, 2010



SUNSTAR
Introducing G·U·M TECHNIQUE® DEEP CLEAN
HEALTHY GUMS. HEALTHY LIFE.™

Extremely Tapered Bristles:
Reach 2.8 mm below the gumline and clean interproximally.*

Bi-Level bristles

45°

Supports the Bass Technique:
Patented Quad-Grip® properly positions bristles at the sulcus for optimal subgingival cleaning.

Available in:
S24P - Soft Full
S25P - Soft Compact

Join Gold Plan Plus...
Buy 12 dozen, Get 3 dozen FREE!
Offer valid for Technique® Deep Clean only. Use Promo Code P102A.

Must purchase 12 dozen S24P or S25P to receive 3 dozen of same good as purchased free. Offer valid May 1, 2010 - June 30, 2010. Promo may not be combined with any other offers. Use Promo Code P102A. Free brushes will ship with order. Minimum order quantity 12 dozen for imprinted brushes. New customers sign up for a Gold Plan Plus program to receive promotion and ongoing benefits. Current Gold Plan Plus customers must order qualifying fill-in in order to receive promotion.

ORDER NOW!
Call Sunstar at **1-800-528-8537**

SUNSTAR

© 2010 Sunstar America, Inc. P1021 5827998 *See us often

To order this product, call 1-800-528-8537

SUNSTAR

SUNSTAR

G·U·M
HEALTHY GUMS. HEALTHY LIFE.™

BUTLER

Unsubscribe Information

If you no longer wish to receive these messages from Sunstar, [please click here](#).

This is a post-only email. Please do not reply to this message. For all inquiries, send an email to: ebriefs@us.sunstar.com