

Oral antioxidants: a weapon in wound healing

By Jamie White, RDH

Following surgical or periodontal procedures, the oral surgeon and dental hygiene team — not to mention the patient — turn their focus to wound healing. During the healing process, we address infection by using antibacterial agents. But healing also depends on controlling inflammation, and in the fight against inflammation, antibacterials are only one weapon in the arsenal. Antioxidants are another important weapon.

Oral inflammation, a concern for wound healing, has also been documented as a factor in an ever-growing list of systemic diseases, including cardiovascular disease, diabetes, rheumatoid arthritis, Alzheimer's, obesity, erectile dysfunction, fertility, and complications with pregnancy.

Much of the warfare against oral inflammation is carried out by the body's natural defense system in the saliva. Recent scientific articles have explored the presence of natural antioxidants in the saliva and their role in oral health and protection against diseases, including oral cancer, periodontitis, xerostomia, TMJ, and OLP. Some of the findings in recent studies include:

- Research has found reduced salivary antioxidant activity in patients suffering from periodontal disease.¹
- Saliva could constitute a first line of defense against free radical-mediated oxidative stress.²
- Salivary oxidative stress levels are increased and salivary antioxidant levels are decreased in cancer patients.³
- Salivary TAC [total antioxidant capacity] activities were significantly lower in periodontitis, OLP, and smoker patients compared with controls, this representing a significant oxidative process that occurs in the oral cavity.⁴
- Administration of local therapeutic agents (i.e., antioxidants) to the oral cavity should be considered.⁵

It is essential to maintain sufficient levels of salivary antioxidants in the oral cavity. Although the body takes in antioxidants through good nutrition, many people do not maintain a healthy, antioxidant-rich diet. Pills and other supplements are not a reliable source of antioxidants. Moreover, ingested antioxidants circulating in the bloodstream may or may not be effective in enhancing the salivary antioxidants in the oral cavity.

An emerging means of augmenting the natural salivary antioxidants is topical application of antioxidants on oral tissues. A recent product, AO ProVantage, from Dallas-based [PerioSciences](#), LLC, is an aqueous gel containing antioxidants that is applied directly to the gums. It is distributed through professional dental offices and is best used as part of a comprehensive oral hygiene program.

AO ProVantage uses two powerful antioxidants: phloretin and ferulic acid. In the early 1990s, compounds of these same antioxidants were clinically proven to counteract free radicals that caused damage in skin cells, so using them in healing oral cells is a logical extension. More recently, laboratory studies at Texas A&M University Baylor College of Dentistry have shown that combinations of phloretin and ferulic acid may actually promote cell proliferation and healing in oral cells.⁶

Although AO ProVantage only claims to help improve the appearance of gum tissue, its antioxidant properties have caught the attention of dentists, periodontists, dental hygienists, and other medical and dental professionals. The product has been in clinical use since 2010.

Many practitioners, including myself, have used AO ProVantage with patients presenting with inflammation of the oral tissues. I have also used it on patients with molar extractions, lesions from smokeless tobacco, mouth ulcers, and following surgical and periodontal procedures. The results have been excellent over a wide range of uses for healing.

Here are some additional case studies with photographs that demonstrate enhanced healing with the use of AO ProVantage.

Case 1: Following the baseline photo, the patient completed six sessions of scaling and root planing over 180 days. The patient was instructed to use AO ProVantage twice daily. The second photo, taken during week three, shows enhanced reduction of gingival swelling and inflammation. [*Photo and case study courtesy of Dr. Allen, Dallas, TX.*]



Case 2: Photo 1 shows geographic tongue. Photos taken at week two, week six, and after six months show visible improvement. Over this period, the patient used AO ProVantage twice daily and experienced fewer episodes of geographic tongue, as well as a reduced area of involvement and more rapid resolution of recurrences. [*Photo and case study courtesy of Dr. Allen, Dallas, TX.*]

Geographic Tongue
Patient 35 Years-Old

Dr. Allen
Dallas, Texas

Week 0 Photo: Geographic Tongue

Weeks 2, 6 and Month 6 Photos: Patient experienced fewer episodes, reduced area of involvement and more rapid resolution of recurrences using AO ProVantage two times per day.



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Case 3: Laser gingival recontouring. This 27-year-old female had short-term orthodontia. Her treatment plan consisted of esthetic gingival recontouring of teeth No. 8, 9, and 20 with diode laser along with porcelain veneers for teeth Nos. 7 through 10. The first preoperative photo is followed by postoperative photos from days one through five. The patient applied AO ProVantage twice daily after the laser contouring procedure. She reported no postop pain, and her tissue healed rapidly in the predicted locations. [*Photo and case study courtesy of Dr. Lynch, McKinney, TX.*]

Gingival Re-Contouring

Dr. Lynch
McKinney, Texas

Pre-Op: Laser Gingival Re-Contouring
27 year old female had short term ortho, and upon completion, her treatment plan consisted of aesthetic gingival re-contouring of teeth #’s 8, 9 & 10 with Diode Laser and porcelain veneers for teeth 7-10.

Day 1-5 Photos: Post operatively from the contouring, she applied AO ProVantage twice daily. She experienced no post op pain, and her tissue healed rapidly and in the predicted locations.



Pre-Op



Day 1 AO ProVantage



Day 2 AO ProVantage



Day 3 AO ProVantage



Day 4 AO ProVantage



Day 5 AO ProVantage

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Case 4: A 68-year-old female complained of an ill-fitting bridge that caused her gums to swell, and persistent discomfort that intensified with eating and brushing. Clinical and radiographic examination confirmed the bad fit, including open margins in the bridge that resulted in severe gingival inflammation. A new bridge was applied and the patient was given AO ProVantage for use twice daily. At the one-week follow-up appointment, the reduction in gingival inflammation was significant. The patient reported that her gums felt much better and no longer ached. [*Photo and case study courtesy of Dr. Abbott, Garland, TX.*]

Gingival Inflammation Around a Failed Bridge Patient 68 Years-Old

Dr. Abbott
Garland, Texas

A 68 year-old female presented with the chief complaint, "I don't like this bridge. I think it has twisted and made my gums swollen." Clinical and radiographic examination revealed an ill-fitting bridge with open margins resulting in severe gingival inflammation. The patient reported persistent discomfort which intensified upon brushing and eating.

The decision was made to remake the bridge at a subsequent appointment. The patient was given AO ProVantage and instructed to use morning and evening each day until returning to the office. When the patient presented one week later for her bridge appointment, the reduction in gingival inflammation was significant. The patient reported that her gums felt "much better" and "didn't ache like before".



Baseline Photo



Week 1 AO ProVantage

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Laboratory research and clinical experience have shown that topical antioxidants are helpful in wound healing in the oral cavity. In the battle against inflammation, antioxidants are proving to be a formidable weapon.

Author bio

Strategic Hygiene Solutions provides educational-based programs designed to provide the highest standard of care with the highest profitability, most comprehensive care, and thorough documentation in dental hygiene. Throughout Jamie White's 14 years of diverse dental experience, she has gained the insight and experience that has allowed her to design a comprehensive, quality-driven, insurance- and legal-compliant Dental Hygiene Management Program that puts emphasis on profitability and dental health excellence. She is the author of "A Clinician's Guide to Comprehensive Periodontal Management with Detailed Dental Insurance Coding & Fraud Prevention." PerioScience® is an emerging antioxidant therapy that assists in management of inflammation. This emerging science offers research that broadens treatment options in managing inflammation, promoting healing, xerostomia, among many other oral conditions, and is diverse enough to be used in dental or medical settings.

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