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## The Jameson Files: Reviewing periodontal patient protocol: Featuring Dr. Mike Milligan

*John Jameson*

Dr. John H. Jameson and Dr. Mike Milligan discuss the periodontal patient protocol, and what's available today for dentists who are ready to move ahead.

*Dr. Jameson: As you review the protocol for periodontal patients in your general dental practice, what has been the accepted protocol, and what is new?*

**Dr. Milligan:** I think the protocol for perio patients in my practice has been pretty typical of that practiced in most general dental offices. It includes primarily local therapy, including scaling and root planing, local medicaments such as rinses or locally applied antibiotics, and either minor surgery in my office or referral to a periodontist. Thank goodness for our periodontists. The locally applied antibiotics are fairly new, and now surgery has been greatly enhanced with the use of lasers. But still these are all local therapies, and local therapy is what dentists have been doing for decades.

*Dr. Jameson: Is it true that some of the periodontal tissue damage is a direct result of the bacterial toxins in the perio pockets?*

**Dr. Milligan:** Yes, and that's causing inflammation, cell death, and tissue necrosis (local). Local factors and therapy, such as scaling and root planing, locally applied antibiotics, and surgery are important. But we now know most of the actual periodontal damage results from the major inflammatory and immunopathologic components activated by the host response (systemic).

*Dr. Jameson: So, systemic factors such as bolstering the host immune response and reducing inflammation systemically with high-grade antioxidants of choice such as improved diet and using dietary supplements may be equally important?*

**Dr. Milligan:** Exactly. Antioxidants are key to the host immune system, and can improve periodontal health dramatically. Consider the following:

- In every tissue in your body, there is a battle raging between damaging free radicals versus your protective antioxidant defenders.
- Much of the damage done to periodontal tissues and supporting bone structure is due to "free radicals."
- Free radicals are highly reactive, short-lived molecules that oxidize and damage cells and genetic material (DNA). Thus, they are also known as "reactive oxygen species" (ROS).
- Sources of free radicals include things like smoking, radiation exposure, sunlight, environmental pollution like smog, stress, medications, food additives, pesticides, and herbicides. Even airline travel and our body's metabolism are sources.
- Antioxidants neutralize free radicals. They play a crucial role in fighting many inflammatory chronic diseases including periodontal disease.

- Examples of our antioxidants include carotenoids, Vitamins C and E, glutathione, lipoic acid, bioflavonoids, and CoQ10.

Oxidative damage from free radicals is exemplified by the cutting of an apple, and exposing it to the oxygen in the air. It begins to oxidize and turn brown. But if you paint the other half of the apple with lemon juice, which acts as an antioxidant, that half of the apple stays white and fresh. The same thing happens in every tissue in our bodies, including our periodontal tissues.

The perio-antioxidant link was first discovered in 1999 at the University of Buffalo. More than 200 studies and clinical trials have clearly established the close relationship between antioxidants, free radicals, and periodontal disease.

Dr. Ian Chappel's study done in 2002 was published in "Molecular Pathology," and highlighted in the Journal of the American Dental Association. It showed antioxidant deficiencies - both local in the gingival crevicular fluid, and systemic in the plasma - are directly linked to periodontal disease.

Green tea is a particularly potent antioxidant for periodontal tissues. We know that:

- Green tea has high concentrations of polyphenols known as catechins. As a chemical group, the catechins have significant free radical-scavenging properties and are potent antioxidants.
- Clinical trials have shown that catechin compounds are lethal to the primary bacteria that contribute to periodontal disease.
- In a recent study published in General Dentistry (a peer-reviewed AGD journal), green tea polyphenols have been shown to break down and kill oral cancer cells.

A 60-day, double-blind clinical study was done at Loma Linda University in 2002. Antioxidant vitamin supplements were given to subjects with various levels of periodontitis. The subjects saw 1- to 3-mm pocket-depth reduction in 4- to 7-mm pockets. That is a huge improvement. Bleeding and gingival indices were "clinically significantly reduced."

A second clinical study of 1,596 perio pockets conducted by 20 dentists in private practice in the southwest United States in 2003-04, produced similar results to the Loma Linda study. A different company's high-quality antioxidant supplements were used.

After reviewing the literature, I did a study in my office. This was conducted in my chairs using my perio probes with my eyes for my patients. I used high-quality antioxidant supplements from what I believe is the most scientific nutrition company in the world. From this study:

- I confirmed significant pocket depth improvement, and more than 60 percent bleeding-index improvement. The tissue looked so much better. The results were better than I had expected.
- A typical comment from my hygienists was, "I was skeptical, but this really works. We need to recommend this for many of our patients."
- A typical comment from patients was, "My gums feel healthier, and don't bleed as much. So, how do I order this?"

What I have come to realize is that, without good systemic support, we've addressed only half the battle. I think this is one of the things that has left our patients and us very frustrated.

It appears the best dental nutritional dietary supplement regimen includes a high-quality comprehensive multivitamin/mineral/phytonutrient supplement, plus a high-quality green tea supplement. We are doing many ongoing studies, including the Omega 3 fish oil supplement.

Based on this, the current protocol in my office, and the one I would suggest to any general dentist for ALL patients with gingivitis or early to advanced chronic periodontitis (one bleeding point, or one or more 4-mm pockets) is:

- As an adjunctive therapy to be used with scaling and root planing (SRP), immediately prescribe a pharmaceutical-grade antioxidant supplement - with a proper ratio of vitamins, minerals, bioflavonoids, catechins, and a full complement of antioxidant compounds - which is supported by scientific clinical studies. The clinical studies should verify the product's ability to raise antioxidant levels, and to reduce bleeding index and pocket depth.

*Dr. Jameson: That protocol probably brings up a couple of questions for most general dentists. Questions such as, "One bleeding point or one 4-mm pocket seems early to treat, so why are you so aggressive?" and "I can see from the studies you mentioned that by simply using a perio probe you can test and verify whether a specific antioxidant supplement reduces bleeding index and pocket depth, but how can you measure and verify that it raises antioxidant levels?"*

**Dr. Milligan:** Regarding the first question, I would actually say preventing disease or treating disease early is conservative, not aggressive. The DIAGNOdent is a great example. It is a phenomenal benefit for my patients that I can now diagnose and treat their decay earlier than ever. This allows conservation of tooth structure, earlier reduction of oral sepsis, and - I think - allows much more conservative treatment. It is how I want my mouth and my family's mouths treated.

Similarly, why wouldn't you prevent any perio disease you can, or treat it as early as possible? Just as dentists who use the DIAGNOdent feel it opened up a whole new world for them, I think dentists will feel the same way once they start prescribing systemic antioxidants. Although I haven't yet studied antioxidants for things like reducing inflammation in orthodontic patients or implant patients, I imagine these will soon be standard uses.

Now that periodontal disease has been linked to heart disease, stroke, lung infections, oral cancer, osteoporosis, preterm and low birth weight babies, and other chronic diseases, we are learning it is even more important to prevent and to treat periodontal disease at its earliest stages for oral and total health.

Dr. Ray William, chairperson of the department of periodontology at the University of North Carolina School of Dentistry, was quoted in a January 2005 paper distributed by Colgate with the following:

"In recent years, increasing evidence has supported the concept that the relationship between systemic and oral health is bidirectional. Much research has documented the association between periodontitis and its effects on preterm delivery and low birth weight newborns. Studies have also indicated that periodontal disease can increase the risk for cardiovascular disease, respiratory diseases, osteoporosis, and accelerate the progression of diabetes. The general mechanism behind the systemic effects of periodontitis is thought to involve, in part, a systemic inflammatory response through blood-borne oral lipopolysaccharides and oral bacteria."

Further, he states that "Over recent years, we have increasingly begun to focus on inflammation of the oral cavity, not only as important for disease of the periodontal tissues, but also as a risk factor for systemic diseases. It is evident that we can no longer view gingivitis simply as a precursor of periodontitis, but we should treat it as oral inflammation that needs to be controlled and eliminated for the overall well-being of the individual. Any new treatment strategy that can help in controlling gingivitis should have a beneficial effect both on oral and systemic health."

The link between periodontal disease and cardiac disease, stroke, diabetes, preterm and low birth weight newborns, and other chronic diseases has been reported many times just this year in publications of the American Heart Association, divisions of the National Institutes of Health, the Journal of Periodontology, and others.

So I think it is very important that we pay attention to current research, and attempt to prevent or treat gingival inflammation at its earliest stages.

As for measuring antioxidant level in my office, that has become part of my standard periodontal exam. We accomplish this with a new, highly scientific device that can be easily incorporated into a dental office. In fact, I think the dental office is the perfect place for this service.

Dentists have brought prevention to the world. If we didn't invent it, we certainly perfected it. And we now have the opportunity to take it one step further.

Just like we have the periodontal probe with a mirror or intraoral camera to show patients their pocket depths and bleeding gums, we now have a way to measure and monitor antioxidant levels. The ability to measure is the foundation of science. So this is a very important addition to my dental technology.

*Dr. Jameson: There has been much research reported in the literature on the effect of antioxidants on all tissues of the body. By recommending systemic antioxidants for periodontal health, do you feel your patients' overall health will benefit?*

**Dr. Milligan:** Yes, I am absolutely convinced that we are not only improving the periodontal tissues, but that every tissue in the

body benefits.

In the last 50 years - with greater pollution, greater use of herbicides, pesticides, food additives and medications, and higher stress - we have a greater number of free radicals than ever. So we need more antioxidants than we did in the past.

We have to get antioxidants from food. We don't make our own. But in those same 50 years, we've changed how we grow food. We grow food in big, industrialized farms in demineralized soil. We don't rotate crops, and we spray with herbicides and pesticides. So, the thought is that there is less actual antioxidant power in the food. Thus, we need supplements to counteract the extra number of free radicals.

University of Hawaii cancer researchers have discovered the pigments that give yellow, red, and orange vegetables their color (carotenoids) can stop tumors from growing and prevent cancer by keeping cells "talking" to each other. Age-related macular degeneration (AMD) is the leading cause of vision loss in older people. Many leading ophthalmologists are recommending antioxidant supplements in an attempt to help prevent macular degeneration.

Richard M. Cutler, M.D., who is the director of anti-aging research at the National Institutes of Health, said, "The amount of key antioxidants that many species maintain in their body is directly proportional to their lifespan."

Dr. Lester Packer, Ph.D., UC Berkeley, who is known as the "Father of Antioxidants," and is considered the world's foremost antioxidant research scientist, said, "There is overwhelming scientific evidence demonstrating that those of us who eat a diet rich in antioxidants and take antioxidant supplements will live longer, healthier lives."

An article in the Journal of the American Medical Association (JAMA) in June 2002 said, "Most people do not consume an optimal amount of all vitamins by diet alone"... "Recent evidence has shown that suboptimal levels of vitamins, even well above those causing deficiency syndromes, are risk factors for chronic diseases such as cardiovascular disease, cancer, and osteoporosis. A large portion of the general population is apparently at increased risk for this reason" ... "We recommend that all adults take one multivitamin daily."

I believe we are helping the oral and the overall health of the patient by recommending high-quality antioxidant supplements. With our perio probes to monitor bleeding index and pocket depth, and the antioxidant monitoring device now available to us, we have a very good indication of whether the antioxidant supplements patients are taking are actually doing what they are supposed to do.

*Dr. Jameson: So, please summarize for our readers exactly what dentists can do. Where do they start with an action plan?*

**Dr. Milligan:** In December 2002, David A. Tecosky, DMD, MAGD, said in General Dentistry, "More than 90 percent of systemic diseases reveal signs and symptoms in the mouth. Most patients see their dentist on a regular basis more frequently than they do their physician. We are in a unique position to help our patients. Our mission as general dentists is no longer merely to wipe out dental decay but to correct diseases in the mouth so that the patient's overall health also benefits." I think we have a wonderful opportunity to do this now. I suggest that dentists do a study on the efficacy of high-quality antioxidants in their offices for 10 patients for a period of 60 days. But not just any supplement will do. It must be high quality, and be proven to raise antioxidant levels.

I think once a dentist does this and sees the results, then recommending antioxidant supplements will become a standard protocol for patients.

**Dr. Milligan** graduated first in his class from Southern Illinois University School of Dental Medicine in 1978. Since then, he has accumulated more than 2,000 hours of postgraduate continuing dental education. Dr. Milligan maintains a large, dental practice in which the health and wellness of his patients is always his primary concern. Dr. Milligan is owner and CEO of Scientific Health Products, featuring best-in-class products to treat patients' concerns such as cold sores and canker sores. He is chairperson of the advisory committee of DentalNutrition.com. Dr. Milligan can be reached at [mike@drmikemilligan.com](mailto:mike@drmikemilligan.com), or by phone at (309) 452-0217 or (309) 663-4711.

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