

LE Magazine August 2007

## REPORT

### Novel Ways to Achieve Optimal Oral Health

By Debora Yost



Neglecting one's oral health not only leads to gum and enamel erosion, but also a wide range of life-threatening diseases.<sup>1</sup>

A recent study found that diabetics with gum disease had more than twice the risk of premature death due to kidney or heart disease, compared to diabetics with good oral health.<sup>2</sup> And earlier this year, the American Dental Association (ADA) declared that the death of a 12-year-old boy from severe brain infection "may have resulted from his deplorable degree of untreated dental disease."<sup>3</sup>

In fact, C. Everett Koop, MD, the former Surgeon General of the United States, noted years ago, "You're not healthy unless you have good oral health."<sup>4,5</sup>

Given the potentially devastating consequences of poor oral hygiene, averting gingivitis and periodontitis through proper daily dental care is an essential cornerstone of a comprehensive wellness program.<sup>1,5</sup> Research demonstrates that natural ingredients such as coenzyme Q10, lactoferrin, squalene, folic acid, hydrogen peroxide, and tea tree oil offer advanced support against periodontal disease.

Exciting new findings show remarkable benefits with oral use of pomegranate extract.<sup>6</sup> In this article, we'll explore the latest research linking dental disease and bodily illness, and how you can use natural agents<sup>6-11</sup> to protect your dental and whole-body health.

#### THE EPIDEMIC OF PERIODONTAL DISEASE

The most recent American Dental Association poll reported that only 25% of adults brush their teeth after each meal, while only 49% of men and 57% of women brush their teeth twice daily.<sup>12</sup> It is therefore not surprising that up to 75% of Americans are affected by chronic inflammatory periodontal diseases such as gingivitis or periodontitis.<sup>13</sup> Given studies showing how poor oral hygiene markedly increases degenerative disease risk, taking assertive steps to optimize oral health is imperative.<sup>14-16</sup>

#### PERIODONTAL DISEASE LINKED TO DEADLY ILLNESSES

While serious in itself, the trouble of periodontal disease doesn't stop at the gum line. Researchers have observed that people with poor oral health have other medical problems.<sup>17</sup> Scientists know that periodontal disease contributes to pathologic inflammatory processes throughout the body. Since chronic inflammation has been linked with a host of problems including cancer and heart disease, it is easy to see the connection between periodontal inflammation and the chronic diseases of aging.<sup>3,14,18,19</sup>

#### HOW PERIODONTAL DISEASE CONTRIBUTES TO HEART DISEASE AND STROKE

Evidence continues to support the association between cardiovascular disease and periodontal infection. According to researchers from the Mailman School of Public Health at Columbia University, periodontal disease is a risk factor for cardiovascular disease.<sup>20</sup> Similarly, individuals suffering from documented periodontal infection demonstrate an increased risk for stroke.<sup>21</sup>

Several species of bacteria that cause periodontitis have been found in the atherosclerotic plaque in arteries in the heart and elsewhere.<sup>22</sup> In addition, researchers from the State University at Buffalo found that people with periodontal disease have elevated blood levels of C-reactive protein, an inflammatory marker associated with heart disease and stroke.<sup>23</sup>



## GUM DISEASE WORSENS BLOOD SUGAR CONTROL IN DIABETES

More and more research shows that diabetes and dental disease are closely linked. In fact, diabetics who do not control their blood sugar develop periodontal disease more often and more severely than diabetics who keep their disease in check.<sup>24</sup> Further, periodontal disease can predispose individuals to developing diabetes, or exacerbate the condition in those with existing diabetes.<sup>25</sup>

In one study of people with type 2 diabetes, severe periodontitis was strongly associated with an increased risk of poor blood sugar control.<sup>26</sup> In another investigation, scientists found that a measure of long-term blood sugar control, hemoglobin A1c, was elevated in people with type 2 diabetes and severe periodontal disease. Further, eliminating periodontal infection and reducing periodontal inflammation in diabetic patients led to significant improvements in their hemoglobin A1c levels, suggesting that ensuring optimal dental health could be crucial to prevent the damaging consequences of diabetes.<sup>27</sup>

### UNDERSTANDING PERIODONTAL DISEASE

The pathway to gum disease begins when the starches and sugars in the food you eat interact with the bacteria in your mouth and form a bacteria-harboring sticky film of plaque on your teeth and gums. If not properly removed through brushing, plaque hardens into tartar, which clings so tightly to the teeth and under the gum line it can only be removed through professional cleaning.

There are two different types of periodontal (gum) disease: gingivitis and periodontitis. Gingivitis is an inflammation of soft tissues surrounding the tooth. This is a direct immune response to microbial plaque attached to the surface of the tooth. The clinical manifestations of gingivitis are redness and swelling of the gums and bleeding upon soft touching or probing. Gingivitis in the early stages does not significantly affect deeper structures such as the periodontal ligaments and alveolar bone.

Left untreated, gingivitis can lead to periodontitis. Periodontitis occurs when pathogenic gram-negative bacteria destroy the dental supportive structures of the teeth, leading to progressive destruction of periodontal ligaments and alveolar bone. The result is tooth loss.

### POOR ORAL HEALTH INCREASES RISK OF PNEUMONIA

A common consequence of poor oral health in older adults is an increased risk of a particular type of pneumonia. This form of pneumonia occurs when periodontal bacteria in the secretions of the mouth and pharynx are aspirated into the lungs,<sup>28,29</sup> where they take hold and establish an infection. The risk of this type of pneumonia is greatest when periodontal disease, dental cavities, and poor oral hygiene are compounded by swallowing disease, feeding problems, or poor functional status.

One study that followed the rate of respiratory illness among a group of older adults in Japan demonstrated the importance of thorough oral hygiene as the best prevention strategy. During a six-month period, only one in 98 aging adults who had their oral health cared for by dental hygienists came down with respiratory infections, compared to nine out of 92 people who did not get the same dental care.<sup>30</sup>

### PREMATURE LABOR AND LOW BIRTH WEIGHT ASSOCIATED WITH GUM DISEASE

For decades, doctors have observed that about half of low-birth-weight babies are delivered to women with periodontal disease. They believe that the womb's protective environment may be compromised by the cascading effect of inflammation that begins in the mouth.<sup>31,32</sup> The evidence is strong enough that researchers from Singapore recommend early intervention to arrest periodontal disease as a measure to reduce the risk of pre-term labor.<sup>31</sup>

### OSTEOPOROSIS AND PERIODONTAL DISEASE

Osteoporosis is a potential risk factor in periodontal disease, so strategies for reducing osteoporosis risk—such as ensuring optimal intake of calcium and vitamin D—can also help retard alveolar bone loss.<sup>33</sup> In a recent research review, scientists noted that treatment with bisphosphonate drugs such as Boniva® and Fosamax®, which are widely used to prevent and treat osteoporosis, may offer benefits for periodontal tissues. Further, these medications could provide an alternate treatment strategy when periodontal therapy is not convenient. Bisphosphonate drugs are associated with a rare but serious possible side effect of osteonecrosis (death) of the jaw bone, so further research may be needed to develop safer strategies that support both periodontal and body-wide bone health.<sup>34</sup>

While scientists are still investigating whether preventing or treating periodontal disease may offer benefits for optimal bone density throughout the body,<sup>17</sup> a just-released review of the scientific literature relating to osteoporosis and periodontal disease published in the Journal of the American Dental Association concluded, “a healthy lifestyle has multiple benefits for the mouth

and throughout the body.”<sup>3</sup>

# REPORT

## Novel Ways to Achieve Optimal Oral Health

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### NOVEL WAYS OF PROTECTING ORAL HEALTH

Your smile is a mirror to your health—and it has nothing to do with the brightening strips you slide on your teeth at night. Oral health is about wearing a smile free of what you can't see—inflammation and infection of the gum tissue that can contribute to dangerous inflammatory processes throughout the body.

The key to exceptional oral health is to clean your teeth morning, night, and after meals with a toothpaste containing the most powerful and effective ingredients that have been shown to destroy bacteria and fight inflammation. This is the type of toothpaste that Don Poster, MD, an oncologist from Miami, Florida, was looking for several years ago after his dentist warned him that about the deteriorating condition of his teeth and gums, despite Dr. Poster's vigilant attention to his oral health.

### ORAL HEALTH: WHAT YOU NEED TO KNOW

- There is a vast body of evidence linking the gum diseases gingivitis and periodontitis to a variety of other diseases in the body, some of which are life-threatening.
- Significant findings support the association between periodontal (gum) disease and systemic conditions such as cardiovascular disease, type 2 diabetes mellitus, adverse pregnancy outcomes, and osteoporosis.
- The surest way to prevent oral disease is by regularly brushing with toothpaste containing advanced ingredients that help kill bacteria, reduce inflammation, and promote tissue healing.
- Pomegranate extract is the newest addition in the arsenal of natural substances that kills bacteria associated with dental plaque.
- Other ingredients that promote optimal oral health include coenzyme Q10, lactoferrin, squalene, tea tree oil, hydrogen peroxide, and folic acid.
- Protecting your oral health is essential to maintaining the health of your whole body.



*"I've always been interested in natural health and, of course, I'm familiar with medical research, so I investigated the best natural substances that have been proven to kill the type of bacteria that cause plaque," recalls Dr. Poster. "Commercial toothpastes contain a lot of artificial ingredients, especially sweeteners, and I couldn't find any that contained the key active ingredients I discovered from reviewing the literature about what's good for oral health. Commercial toothpaste wasn't doing a good enough job, so I decided to make my own."*

After using his natural toothpaste preparation, Dr. Poster stated, "On my next visit to the dentist, he noticed a significant improvement in the state of my teeth and gum health." Dr. Poster's personal preparation—emphasizing coenzyme Q10, lactoferrin, squalene, xylitol, folic acid, hydrogen peroxide, and tea tree oil—was formulated into a toothpaste in 2003 that is now used by many Life Extension members. With exciting new findings about the dental health benefits of orally applied pomegranate, this fruit extract has been added to Dr. Poster's already successful toothpaste formula.

### POMEGRANATE IMPROVES PERIODONTAL HEALTH

Pomegranate has been making a lot of news lately as a major protector of the arterial system. One of the active constituents in pomegranate is a group of polyphenols called anthocyanins that are reported to possess strong anti-bacterial properties.<sup>6</sup>

In 2003, preliminary research in Thailand found that local application of potent extracts, including pomegranate fruit extract, produced significant improvement in 20 patients with advanced periodontitis.<sup>35</sup> This treatment also produced a significant reduction in the inflammatory mediator interleukin-1b, and a modest decrease in pro-inflammatory interleukin-6.<sup>36</sup>

Since then, much research on pomegranate and its anti-inflammatory abilities has taken place. Last year, Brazilian scientists put pomegranate to the ultimate test in fighting dental disease.<sup>6</sup> The scientists wanted to find out how effective pomegranate extract would be at killing the type of organisms that resist routine brushing and can lead to difficult-to-remove tartar. They enlisted 60 healthy people between the ages of 9 and 25 and had them abstain from brushing their teeth for 24 hours. The participants were divided into three groups, and were instructed to spend one minute rinsing their mouth with one of three mouth washes: distilled water; a rinse containing chlorhexidine, a chemical considered to be the gold standard in fighting oral bacteria; or a rinse containing pomegranate extract. Dental plaque samples were collected immediately before and after using the mouthwash, and the samples were grown in the laboratory to determine how many bacterial colonies would grow. As expected, rinsing with the chlor-hexidine solution greatly inhibited bacterial growth by 79%. Remarkably, the pomegranate extract rinse was even more effective against dental plaque microorganisms, decreasing bacterial growth by 84%. By contrast, distilled water had a minimal effect on oral bacteria, inhibiting growth by only 11%.<sup>6</sup> By fighting the microorganisms that contribute to dental plaque, pomegranate offers tremendous benefits for those seeking to safeguard their oral health.

### **XYLITOL**

Xylitol is a natural sweetener that has been shown to inhibit the formation of plaque. In a double-blind, controlled study, Swedish researchers had 128 children chew either xylitol-containing gum or one containing the sweeteners sorbitol and maltitol, three times daily for four weeks. While both were effective against the buildup of dental plaque, only the xylitol-sweetened gum eliminated microbes found in saliva, particularly a strain of bacteria implicated in tooth decay.<sup>7</sup> Xylitol could thus be an essential ingredient in a targeted strategy to avert dental disease.

### **COENZYME Q10**

This naturally occurring compound is integral to the health of body cells. An important antioxidant, coenzyme Q10 is well-known for its ability to help decrease the depth of periodontal pockets and heal gums in people with periodontitis. In one experiment, one week of treatment with coenzyme Q10 helped heal diseased gums so effectively that the researchers had difficulty finding the areas of diseased gum tissue.<sup>8</sup> Coenzyme Q10 may thus offer important healing support for those affected by periodontal disease.

### **LACTOFERRIN**

This protein is a well-known immune system booster involved in the body's responses to infection, trauma, and injury.<sup>37</sup> Lactoferrin has been shown to halt the growth of periodontitis-causing bacteria.<sup>11</sup> Lactoferrin thus provides a multifaceted approach to fighting infection and tissue damage associated with periodontal disease.

### **SQUALENE**

An extract of shark liver oil, squalene is used to help support immune health and boost the body's resilience to challenges such as infections and cancer.<sup>38</sup> Squalene has a smooth, emollient texture that is ideal for dental-care products.

### **TEA TREE OIL**

Tea tree oil (*Melaleuca alternifolia*) is known for its antiseptic, antibacterial, and fungicidal effects, and has shown efficacy in inhibiting oral bacteria.<sup>9</sup> In people with severe gingivitis, topically applied tea tree oil gel significantly reduced gingivitis and bleeding of the gums.<sup>39</sup>

### **HYDROGEN PEROXIDE**

Hydrogen peroxide is a well-known antiseptic that can be used to fight plaque formation and to reduce gingivitis.<sup>40</sup> Its bubbling action exposes oral bacteria that are difficult to reach with ordinary brushing and flossing, helping produce cleaner teeth and gums.

### **FOLIC ACID**

Folic acid is essential for the integrity of the gingival tissues. A mouthwash containing folic acid has been shown to be effective in treating gingivitis. In people with gum disease, folic acid significantly reduces gingival redness and bleeding of the gums.<sup>10</sup>

## CONCLUSION

Optimal periodontal health is absolutely crucial for anyone who wants to live a long and healthy life. Your mouth deserves the best of care, especially during later life when the risk of gum disease and its systemic effects are the greatest. Natural substances such as pomegranate, lactoferrin, coenzyme Q10, folic acid, squalene, tea tree oil, and hydrogen peroxide offer state-of-the-art natural therapeutic benefits for the teeth and gums, helping fight disease-causing bacteria, promote tissue healing, and relieve inflammation. By helping maintain good dental health, these remarkable agents may help decrease the risk of systemic disease of the whole body.

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