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## REPORT

The Dangers of Poor Dental Hygiene  
By Angela Pirisi

A "healthy smile" means a lot more today than simply having white, straight teeth. Oral health is directly related to general health. New findings show that poor dental health, (such as gum disease) is strongly linked to numerous disorders including heart attack, stroke, diabetes and systemic inflammation.

Gum disease is characterized by red, swollen and bleeding gums (gingivitis) in its mildest form and chronic inflammation, infection and bone loss in its advanced stages. Plaque build-up along the gum line causes gingivitis, but when plaque formation is significant, bacteria is allowed to thrive, breeding chronic inflammation and infection. Irritation and inflammation lead to breaking down of gum tissue, which gradually increases the pocket depth (gap where gum meets tooth), allowing more bacteria to get nestled into the widening gap, and passing into the bloodstream where it can contribute to systemic disease. Theory has it that bacteria bred in the oral cavity and related chronic gingival inflammation, once in the bloodstream, can activate immune responses (i.e. white blood cells) capable of provoking systemic inflammation, arterial blockages and infection. Here are a few examples of how gum disease may translate into some chronic, life-threatening conditions.



Recent research has put forth evidence that people with gum disease are more likely to suffer a heart attack than those with healthy gums, 1-2 because oral bacteria and related gum inflammation can cause arterial inflammation, as well as increase plaque build-up and encourage dangerous clotting. Some cardiovascular risk factors, such as C-reactive protein (CRP) and fibrinogen levels seem to correlate with the amount of gum disease present, suggests data from the Third National Health and Nutrition Examination Survey (1989 to 1994), collected from over 10,000 people. Risk patterns with periodontal disease were similar across the age span.<sup>3</sup> Contrarily, treating periodontal diseases successfully lowers levels of C-reactive protein, and may thereby also lower the risk of heart disease.<sup>4</sup>



Another telling study made headlines after reporting that gum disease raises the risk of having a stroke as well. How? Columbia University researchers discovered that the severity of gum disease related proportionally to the amount of arterial plaque found in carotid arteries (in the neck). Presented at the American Academy of Neurology 51st Annual Meeting, April 17-24, 2003 in Toronto, their findings revealed that, among 62 test subjects, arterial plaque was twice as thick in those with the worst cases of gum disease than in those with the least oral damage. The suspicion is that increased blockages of these arteries stemming from gum disease may reduce blood flow to the brain and/or promote blood clots. Harvard researchers confirmed such findings earlier this year, when their 12-year follow-up study of more than 41,000 healthy men, free of cardiovascular disease and diabetes at baseline, showed that those with periodontal disease and fewer than 25 teeth had a higher risk of ischemic (clot-related) stroke.<sup>5</sup>

In addition, a few years ago, dental medicine researchers at the State University of New York found that severe periodontal disease often accompanies severe diabetes mellitus. They also demonstrated that treating gum infection with antibiotics resulted in better blood-sugar control. They recommended that controlling severe gum infection is "essential for achieving long-term control of diabetes mellitus."<sup>6</sup> Not surprisingly, periodontal disease is often considered the sixth complication of diabetes.

Results from a five-year study of more than 800 pregnant women, which was presented at the 80th General Session of the International Association for Dental Research, showed that women with moderate to severe periodontal (gum) disease during pregnancy are at increased risk of having pre-term babies and babies with low birth weight. The investigators, at the University of North Carolina-Chapel Hill, believe that the connection may stem from oral disease triggering increased levels of biological fluids that induce labor.<sup>7</sup>

It's also suspected that periodontal disease may cause respiratory disease, particularly lung infections such as pneumonia, or

exacerbate existing respiratory conditions (i.e. chronic obstructive pulmonary disease or COPD). That's because oral bacteria can be breathed into lungs, particularly in people with periodontal disease.

While much research to date, though, has been tinged with some skepticism regarding whether dental-disease links are just coincidental or if gum disease actually causes or exacerbates certain diseases, evidence is certainly mounting to explain just how a cause-and-effect connection might exist. A recent study in the Journal of Periodontology by Belgian researchers demonstrated how it is quite likely that harmful bacterial components from the oral cavity, by way of the gums and bloodstream, can travel to various organs in the body, such as the heart and lungs and wreak havoc.<sup>8</sup> Researchers found that diseased gums released significantly higher levels of bacterial pro-inflammatory components, such as endotoxins, into the bloodstream in patients with severe periodontal disease (42 patients) compared to healthy patients (25 controls). Test subjects were asked to chew gum 100 times, 50 times per side. Blood samples revealed that while 6% of them had endotoxemia before the chewing, four times as many (24%) did so afterwards, showing that harmful bacterial components can enter the bloodstream from the oral cavity through even normal activity. Moreover, those with periodontal disease had four times the amount of endotoxemia in their blood than those with healthy mouths or moderate gum disease.

### Taking Charge

The American Dental Association reports that gum disease, anywhere from mild to severe, seems to affect half of people over the age of 18, and three out of four adults aged 35 and over. If gum disease is, in fact, a contributing factor to various diseases, is it any wonder that heart disease, stroke and diabetes are problems of epidemic proportions? As Dr. Don Poster, a Florida based oncologist, explains, "Oral care is a very important subject, since it can impact immensely on the overall health of an individual. The reason for this is that the oral cavity is the chief portal into the body." For example, in breathing through our mouths and noses, he says, particulate matter, such as smoke, pollens, bacteria and viruses come to rest on surfaces in the oral cavity. Likewise, via nutritional intake, the mouth interacts with sugars, bacteria, fungi, acids and numerous other components of foods that can spur on gum disease, if they are not promptly removed. "The oral apparatus is very reliable but over time, the constant assault of the food and its contaminants take their toll," says Dr. Poster. "Bacteria are the chief culprits, which attack and coat the teeth with plaque and tartar, causing gingivitis. Should the solids or liquids we eat have a high sugar content, the bacteria become more active and these problems worsen."

In our arsenal are a growing number of weird and wonderful toothbrush designs and toothpaste formulas now available. However, some toothpaste formulas are more complete than others and have not just whitening and breath freshening properties, but health prevention too. Yet Dr. Poster found that many effective ingredients and useful nutrients for oral health are lacking in commercial toothpastes, so he set about inventing his own formula. Poster explains, "I was having some dental problems, yet I was unable to find a toothpaste I felt was adequate to address them." So he made his own, mixing together a few of the ingredients now found in a brand new toothpaste formula. Both he and his dentist noticed an improvement in his teeth and gums after just a few months of use.

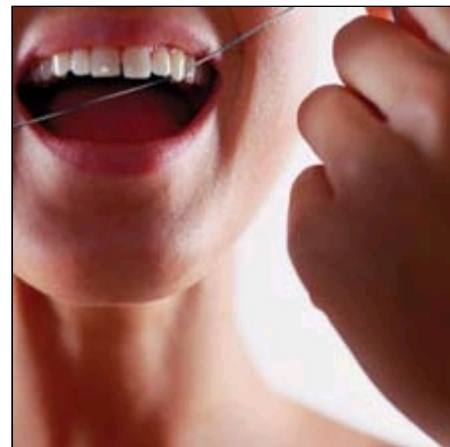
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What makes Dr. Poster's toothpaste unique is a combination of active ingredients that can help promote oral health, and whose benefits are supported by science and experience. These include coenzyme Q10, lactoferrin, squalene, xylitol, folic acid, hydrogen peroxide and tea tree oil. "These active ingredients fight plaque and gingivitis by naturally inhibiting harmful bacterial growth and attachment to teeth and gums," says Dr. Poster. Generally, they work in one of two ways, respectively, by either directly killing plaque and decay-causing bacteria, or by preventing the adhesion of bacteria to teeth and gums so that it can't thrive. Besides the beneficial results on dental health, another distressful oral condition, halitosis is also inhibited. Halitosis or bad breath is often caused by the growth of certain bacteria in the oral cavity. Dr. Poster's novel toothpaste formula inhibits these bacteria also.



Coenzyme Q10 has been studied for decades with regards to helping periodontal disease, while its far-reaching general health benefits are well established. Coenzyme Q10 is a naturally occurring compound that is vital to the energy-producing cores of all the body's cells, namely the mitochondria, as well as acting as an antioxidant. Some eye-opening, positive results were reported from an earlier study, showing that treating gums with 50 mg of coenzyme Q10 topically for six weeks decreased the periodontal pocket depth and helped healing of the gums. The results were so dramatic that the researchers had difficulty locating the disease-affected gums after treatment.<sup>9</sup>

Hydrogen peroxide has long been recognized by dentists as an effective mouthwash that can find and kill bacteria hiding among gingival folds and gaps. By causing a frothing action, hydrogen peroxide exposes anaerobic-type bacteria, which thrive in an airtight environment, to oxygen-rich air in the form of bubbles.

Xylitol, a popular sweetener used in many foods and oral hygiene products, has been shown to reduce tooth decay in numerous clinical studies worldwide. A review of 14 studies weighing the effects of sugar substitutes, xylitol and sorbitol, on tooth decay found a "consistent decrease in dental caries, ranging from 30% to 60%, among subjects using sugar substitutes as compared to subjects in a control group." The highest reduction in cavities was seen with regards to xylitol use in particular.<sup>10</sup> Likewise, a five-year follow-up study by Finnish researchers found that regular xylitol consumption (candy was used) resulted in a "highly significant" reduction of cavities of 35% to 60% at the three-year mark, compared with the control groups. The study looked at xylitol consumption in 740 Estonian 10-year-old schoolchildren who were given xylitol-sweetened candy three times a day, amounting to 5 g per day, excluding weekends and summer holidays.<sup>11</sup>

It's been known for a while that topically applied folic acid is effective in treating gingivitis. Studies indicate that folic acid can aptly battle gingivitis and the accompanying inflammation, and helps to fortify gums, making them more resilient and disease-resistant. As one study showed, and many others like it, four weeks of rinsing with a folic acid mouthwash twice daily (5 ml) significantly improved gingivitis symptoms.<sup>12</sup>

Meanwhile, squalene is a beneficial lipid extracted from shark liver oil, reputed for its potent antioxidant properties, and tea tree oil and lactoferrin (a milk protein) are both effective antibacterial and anti-inflammatory agents. Tea tree oil boasts antiseptic and healing properties. Lactoferrin is known as an immune booster and has been said to interfere with the adhesion of bacteria to gum tissue.

The Ultimate Toothpaste



Unlike many commercial toothpaste formulas that are generally packed with ingredients that may harm both our oral and whole body health, Dr. Poster's toothpaste does not contain artificial sweeteners and colors or fluoride. Sweeteners, such as saccharin and aspartame, have been blacklisted by many natural health advocates.

Fluoride, although widely touted as a cavity fighter for decades, has been earning a spotty reputation, literally and figuratively. Growing evidence suggest that fluoride may even damage dental health. Researchers have also found a high incidence of fluorosis (white spots or blotches on teeth), in children overexposed to fluoride, which has also been linked to prenatal and early childhood exposure.<sup>13-14</sup> Other studies have suggested that too much fluoride from various sources, such as drinking water, toothpaste (when swallowed), and food sources, can promote hypothyroidism (fluoride has been used as a treatment for an overactive thyroid),<sup>15</sup> bone thinning from skeletal fluorosis causing hip fractures,<sup>16</sup> and a depleted immune response (particularly white blood cells).<sup>17</sup>

If anything, though, these suspected and scientifically supported deleterious effects of certain widely used toothpaste ingredients do illustrate the point that what we put in our mouths can have a huge health impact, both on our oral and total health. As Dr. Poster expresses, "While plaque and tartar on teeth are cosmetically unattractive, gingivitis is a serious threat to health."

Hence, it makes sense being armed to the teeth, so to speak, when safeguarding both. "On a daily basis," adds Dr. Poster, "you need to try avoiding bacteria-promoting food and drinks, and brush with the best formulated toothpaste available."

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