

GOOD NEWS FOR BAD BREATH: A Paradigm Shift for Dentistry

By Anne Bosy R.D.H, M.Ed, M.Sc.

References to bad breath have been recorded as early as 1550 B.C. – a thousand years before Hippocrates prescribed a mouthwash of dill seeds, myrtle and wine to produce more pleasant breath, and a Roman cosmetics manufacturer named Cosmus became immensely wealthy by producing and selling aromatic pastilles which he claimed would turn unpleasant breath into the fragrance of violets. Unfortunately, neither the mouthwash nor the pastilles solved the problem of bad breath. Today, billions of consumer dollars are spent annually on rinses, mints and gum, but just as in the days of Hippocrates and Cosmus, the pleasant aroma of normal breath evades millions of individuals. Those that have bad breath or halitosis confide that it affects personal relationships and workplace interactions. The result is a severely reduced quality of life.

In the dental practice, bad breath has been primarily associated with poor oral hygiene, periodontal disease and cavities. Physicians link stomach problems such as acid reflux and ulcers as the cause of bad breath. Ear, Nose and Throat specialists will examine tonsils and sinuses for signs of infection that may explain the oral malodour. Yet, despite successful treatment of the systemic or underlying cause, there is little change in the breath odour. Chronic bad breath continues to elude treatment. We know that the odours on the breath are a combination of gases produced by bacteria as they break down proteins and use them for nutrients. Using microbiology to determine which microorganisms are present on the teeth and tongue will clearly show whether there is an overgrowth of odour-causing bacteria. Overgrowths are infections that can be treated successfully.

Can the food that we eat give us bad breath? Of course - garlic is a well-known example. An excellent food with natural antimicrobial properties, garlic can have a powerfully negative effect on your breath. Garlic odours can last for several days while the pungent oil that gives garlic its flavour goes through stages of digestion and breakdown. Other foods such as cabbage, onion and cheese can also linger on your breath. Even coffee may cling to the tongue and tissues, especially if there is insufficient saliva to wash it away.

But can the food that we don't eat give us bad breath?

One of the most popular weight-loss diets in recent years is the high protein diet that allows for very few or no carbohydrates at all. While many people have used this diet with some success in weight loss, they have also suffered an interesting side effect – the persistent bad breath of halitosis. In these high protein diets, fats and proteins are used as the main source of energy. Burning body fat for energy production without carbohydrates creates naturally smelly chemical by-products called ketones. One of the ways that ketones are eliminated from the body is through the lungs, resulting in a very unpleasant breath odour.

Skipping meals or waiting too long between meals can also produce this unpleasant effect. So can exercising for long periods of time without supplementing with carbohydrates. Once the body's glucose supply is depleted, proteins and fats are used by the cells to provide the energy required by the body. A common name for this breath odour is "hunger breath". This is not an oral hygiene problem, so brushing, flossing, and tongue scraping will not eliminate it. The best way to "cure" this type of bad breath is to have a snack of healthy carbohydrates that are rich in vitamins, minerals and in fibre. Complex carbohydrates such as those found in a whole wheat



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bagel, an orange or a bag of carrot sticks will do the trick for both good health and good breath.

Another healthy snack idea is a handful of mixed nuts. Not only will nuts prevent hunger odour, but also have many essential nutrients to contribute. Almonds contain Vitamin E, magnesium and calcium; peanuts are a good source of Vitamin E, niacin and folate; brazil nuts contain selenium and potassium. Hazelnuts are a good source of magnesium and the B vitamins. The bonus is that nuts are rich in antioxidants, fibre and Omega 6 oils.

There is an important difference between the complex carbohydrates in natural grain products and fruits and vegetables, and the refined carbohydrates in commercially-produced cookies, candies and muffins. Refined carbohydrates not only help us put on weight but are broken down and used as nutrients by oral bacteria. As the bacteria digest the sugary and sticky foods, they release an acid strong enough to destroy the enamel of the teeth, resulting in cavities. Brushing your teeth right away after eating these sticky foods will stop this process.

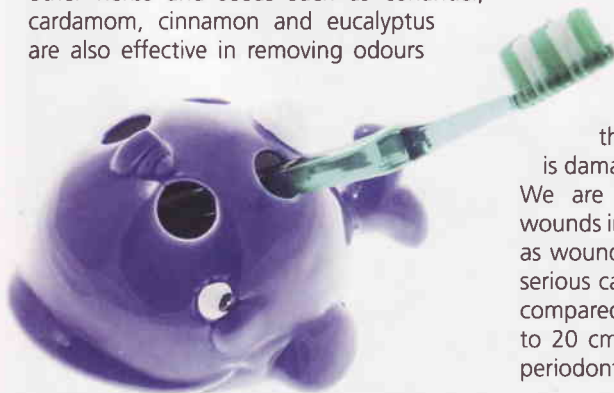
Some foods are nature's helpers for decreasing bacteria levels and maintaining good oral health. For example, natural sweet substances called sugar alcohols are found in fruits, vegetables and even birch bark. Examples of sugar alcohols are mannitol, sorbitol and xylitol and these are often used as sweeteners in gum, candies and some mouthwashes. Xylitol, the most commonly used sugar alcohol, is effective in decreasing cavity-causing bacteria because they cannot digest it. Both black and green teas help to prevent bacteria from attaching to the teeth and building harmful biofilms. Parsley is often recommended as a deodorizer for the mouth and is effective in removing bacterial odours for short periods of time. Various other herbs and seeds such as coriander, cardamom, cinnamon and eucalyptus are also effective in removing odours

from the mouth. Yogurt contains live bacteria that reduce disease producing bacteria and help keep the mouth healthy. Drinking fluids, especially water, helps to keep wash away any free-floating bacteria out of the mouth.

A healthy diet is important to good oral health and fresh breath. However, it is just as important to control the bacteria that live around the teeth and tongue. What we used to call dental plaque – the sticky, hard coating composed of bacteria and cellular material attached to the surface of our teeth – is now known as a biofilm. Biofilms present in the mouth can cause cavities, periodontal diseases and bad breath. What is even more unsettling is that research shows an association between these localized oral infections and systemic diseases such as diabetes, pneumonia and heart disease. Bacteria commonly found in the mouth are appearing in the lining of major blood vessels. Periodontal disease in pregnant women can contribute to premature delivery or low birth weight. The reaction is complicated and includes the immune system as well as the chemical by-products that the body produces as a result of inflammation. Called the oral-systemic link, there is increasing evidence that infections in the mouth can affect other areas in the body.

The concept that there is a connection between periodontal disease and systemic health is not a new one. This was recognized as early as 1891 and outlined in a book called *The Dental Cosmos* by Dr. Willoughby Miller. Miller described the mouth as a "focus of infection" through which "microorganisms or their waste products obtain entrance to parts of the body adjacent to or remote from the mouth." During the 1930's and 1940's this idea was overshadowed by other emerging dental research. Researchers are now studying the oral-systemic link and attempting to determine the routes that oral bacteria use to enter the body.

One route of entry would be through inflamed gums where the protective lining of these tissues is damaged and open to entry by bacteria. We are not accustomed to thinking of wounds in the oral cavity in the same manner as wounds anywhere else on the body. In a serious case of gingivitis, this wound can be compared to an area of approximately 10 to 20 cm² (square centimetres). In cases of periodontal disease where the attachment of



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the gums to the root has been destroyed by 50%, the wound is even more serious – the equivalent of about 30 cm²! If this was a wound on your arm or your thigh, it would be treated immediately to prevent infection and to promote healing. Unfortunately, this type of wound is not given the importance that it deserves. Not only is this a serious strain on the repair capacity of the body, but it is an entry point for oral bacteria to other systemic locations. Similarly, bad breath is another indication that bacteria are breaking down the tissues. This forms an open pathway for microorganisms to enter the underlying tissues and the blood stream to other areas of the body.

So far there has been minimal success in the treatment of both bad breath and periodontal diseases. Perhaps now is the time for a paradigm shift. Rather than treating only the result of the infection, we need to understand and treat the cause of the infection. Before a diagnosis is made, a physician will order tests to look at the underlying causes. For example, prior to treating strep throat, a physician will prepare a microbial swab of the area and send it to

a laboratory for analysis. Using this medical model, if a patient has gums that bleed when flossed, would it not be useful to determine if certain bacteria could be causing these symptoms? If biofilm imbalance is the cause, treatment would include both medication to rebalance the bacteria and a maintenance system to keep the biofilm under control.


Since it is also possible to have the same symptoms when there is a lack of Vitamin C, a dietary assessment to determine meal patterns and nutrient intake would be prudent. Treatment in this case would be entirely different.

Once the data is collected, selection of treatment would follow. This is a 180 degree shift, as the focus would now be on the cause of the problem and not just the symptoms. A rebalancing of the biofilm along with a healthy diet with essential nutrients for tissue rebuilding and healing could become a standard method of treatment.

It is refreshing to note that there is an interest in this model of practice, and that some dental practitioners have already

incorporated these methods as a standard component within their practices. Through the use of tests to establish the cause before treatment, recommendations for a healing diet of essential nutrients and antioxidants together with good oral care, we can actually achieve that elusive prize of healthy oral tissues and fresh breath. ▣

Anne Bosy R.D.H., M.Ed., M.Sc (Oral Malodour) is an internationally recognised and published researcher, presenter & innovator in the science of bad breath. Her baseline research established that halitosis and periodontal disease can be unrelated conditions. As a founder and director of the Fresh Breath Clinic in Toronto, Anne continued to research and document the bad breath condition while developing a system that incorporates microbial testing and nutritional assessment prior to non-surgical treatment of periodontal disease and bad breath in dental clinics. Anne is currently the Chief Scientist and Founder of OraFresh Enterprises. You can email Anne at: anne.bosy@orafresh.ca



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Fresh Breath Tips:

- Most importantly** – your mouth has to be clean for your breath to be fresh! Brush, floss and clean your tongue daily.
- Drink lots of water** to keep hydrated. This will help keep your mouth clean and reduce unattached bacteria.
- Dry mouth?** Add lemon juice to water to stimulate saliva flow.
- Eat at regular intervals** to prevent hunger breath. Small snacks of carrots, nuts and fruits are healthy and satisfying.
- Have several servings** of fruits and vegetables daily. They will provide the antioxidants that you require.
- If your meal was spiced with garlic**, chewing a sprig of parsley will help to freshen your breath.
- Need to freshen your breath?** Use xylitol-sweetened gum or chew on a clove. Both will give you a sweeter, cleaner taste and breath.
- If you have gingivitis** or periodontal disease, discuss the steps for eliminating the infection with your dentist.