

Pucker Up, or Not

Walk down any convenience or grocery store candy aisle today and take a look at the extensive and colorful array of candy on the shelves. In contrast to the traditional concoctions of chocolate, caramel, and nuts, lately there has been a distinct shift in preference toward “extreme” or “intense” sour fruit flavor experiences. The marketing of these sour fruit candies to children uses very enticing packaging and labeling, such as brightly colored plastic baby bottles filled with citric acid-laced powder, which has increased their appeal and led to a popular new source of dietary acid, and, unfortunately, a new contributing factor in the increasing prevalence of dental erosion.

An article in the March/April 2008 issue of *Northwest Dentistry*, the Minnesota Dental Association’s dental journal, introduces new information about the specific risks of sour candy consumption. Although numerous studies have shown the erosive potential of soft drinks, fruit juices, and sports drinks, the authors believe that there should be growing concern over the preponderance of low pH candies marketed toward children and the candies’ potential for contributing to a pattern of occlusal enamel erosion, particularly on posterior teeth.

John Ruby, DMD, PhD, a pediatric dentist and associate professor at the University of Alabama Birmingham School of Dentistry, believes that the combination of extremely low pH candies, immature tooth enamel, and a high frequency of ingestion are causing serious harm to children’s teeth. Dr. Ruby recently tested the pH levels of many popular sour candies, and the results were startling. Most of the fruit-flavored candies had lower pH levels than any of the soft drinks previously studied. The common “sour” flavoring agent in these products is citric acid, the most erosive dietary acid.

Erosion from acidic solids, such as candy, manifests mainly on the occlusal surface of posterior teeth with smooth, glazed enamel, “cupping” of cusp tips on posterior teeth and the impression of “raised” restorations from a loss of the surrounding enamel. The critical pH for enamel dissolution is 5.5; however, due to the modifying effects of the oral cavity, exposure to acidic foods and beverages with pH values below 4 can result in dental erosion. Each of the tested candies fell below this critical value.

In addition to a low pH level, the consistency of a candy substance also contributes to the erosive potential of a product. For instance, insoluble starchy “gummy” candies, thick sticky gels, and citric acid powders all particularly are harmful due to the candies’ prolonged clearance times and abrasiveness.

Not only are extremely sour candies prevalent and readily available at grocery and convenience stores and at movie concession stands, the marketing strategy of confection companies, directing these products at very young children, should be particularly disturbing to dentists and parents.

Children’s increasing preference for “extreme” sour candy and the industry’s response (in the variety of sour candies marketed to children) have created a new twist on the dental erosion front. Additional research is needed to test the actual erosive potential of sour candies in vivo and the modifying effects of other factors, such as salivary buffering capacity. However, a simple awareness of the potential for increased erosion from extrinsic food sources and an understanding of the mechanism of demineralization are essential to early detection and intervention, not to mention in the prevention of invasive restorative procedures.

For more information, visit www.mndental.org to read the article published in the March/April 2008 issue of *Northwest Dentistry*, as well as “The Power of Sour on Your Teeth” educational materials, which include a chart showing the specific pH values of popular candies.