



Huntington Village Implant & Oral Surgeons

PETER H. PRUDEN, D.D.S*, P.C. & Associates

*Diplomate of the American Board of Oral and Maxillofacial Surgery

*Fellow of the American Dental Society of Anesthesiology

*Fellow of the American College of Dentists

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PREVENTIVE DENTISTRY: EROSIVE POTENTIAL OF SUGAR FREE PRODUCTS

Shen P, Walker GD, Yuan Y, et al: Food acid content and erosive potential of sugar-free confections. Austral Dent J 62:215-222

Thursday

March 15, 2018

3 CE Credits

"Infection Control - 4 Yr. Re-certification"

Presenter:
Terrence Thines, DDS

Registration/ Dinner
5:30 pm

Lecture
6:00 - 9:00 pm

Knights of Columbus

9A Hewitt Square, East Northport, NY

This course is sponsored by the Suffolk County Dental Society, an ADA-CERP recognized provider of Cont. Ed. (CE) approved by the New York State Dental Association and a designated PACE Program Provider for the Academy of General Dentistry.

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Clinical Significance:

Claims of being "tooth friendly" need to be taken with a grain of salt, obviously. The erosion of tooth enamel is too common already, and now supposedly healthy alternatives to sugar-laden products appear to have enough acid to significantly damage tooth structures. Dentists can help patients out by giving them some guidance on healthy snacks so that they don't turn to products that may have inaccurate claims on their packaging and will turn out to be not so "tooth friendly".



Background:

Acids can erode tooth structure and come from either intrinsic (gastric acid) or extrinsic (soft drinks, sports drinks, food acids) sources. Often manufacturers add food acids to improve organoleptic properties and shelf life. Among the more common ones are acetic, citric, phosphoric, fumaric, lactic, malic, tartaric, and ascorbic acids. Confections often incorporate food acids to give the product a "tangy: or "fruity" taste. Usually confections are considered harmful to oral health because of their sugar content, which has led to the development of sugar-free alternatives. However, the newer versions of these sugar free confections often blend food acids with "fruit" flavors, raising the acid content and making them a potent source for dental erosion. Some carry a "tooth-friendly" message that suggests they are safe for the teeth, but frequent consumption can erode dental structures, especially if the consumer has poor quality saliva, another common problem in our aging population. The erosive potential of various commercially available sugar-free confections was investigated.

Methods:

Thirty sugar-free confections were chosen for evaluation. Extracts were analyzed to determine the pH, titratable acidity (TA), chemical composition, and apparent degree of saturation with hydroxyapatite (HA). An in vitro dental erosion assay was also done. The effect of the sugar-free confections was tested in artificial saliva (AS) on human enamel to reveal any change in enamel surface micro hardness values.

Results:

Nineteen of the confections listed an acid in their ingredients, with 15 listing the acid as one of the top 3 ingredients. Fourteen carried dental messages indicating they were tooth friendly.

For 20 confections the pH was less than 4.5. All contained detectable levels of calcium, but most had undetectable levels of phosphate or fluoride. When citric acid was listed as an ingredient, all but one had substantial levels of citrate. Twenty-eight were considered under saturated with HA.

Mean hardness of the enamel samples before being exposed to the confections was 339.86 gf mm⁻². Seventeen of the confections caused the enamel hardness to diminish by 24% to 52% (signaling high erosive potential), 3 caused moderate erosion of 10% to 17%, and 10 produced no significant change in the surface hardness.

All of the confections containing dental messages indicating they were either safe for teeth or good for teeth in fact had high erosive potential. The range was from a low of 24.40% to a high of 48.68%, but all of these values are considered to indicate a high erosive potential.

Discussion: Of the 30 sugar-free confections tested, 17 contained high concentrations of food acids, exhibited low pH and high TA, and had high erosive potential in AS when enamel erosion was evaluated. Ten had "tooth friendly" indications on their packaging, but in fact had a high erosive potential.