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Sugar substitute appears to prevent early-childhood cavities

Children given an oral syrup containing the naturally occurring sweetener xylitol may be less likely to develop decay in their baby teeth, according to a report in the July issue of *Archives of Pediatrics & Adolescent Medicine*, one of the JAMA/Archives journals.

Early childhood caries (cavities), also called baby bottle tooth decay or nursing caries, continue to increase in prevalence, according to background information in the article. "Poor children experience rates twice as high as those of their more affluent peers, and their disease is more likely to be untreated," the authors write. "Poor oral health affects diet and nutrition and significantly diminishes quality of life. However, tooth decay is a disease that is largely preventable."

Xylitol, approved in the United States for use in food since 1963, has been shown to effectively prevent tooth decay by acting as an antibacterial agent against organisms that cause cavities. These previous investigations have primarily involved chewing gum or lozenges used in school-age children with permanent teeth. Peter Milgrom, D.D.S., of the University of Washington, Seattle, and colleagues evaluated the effectiveness of applying oral syrup containing xylitol among 94 children age 9 to 15 months in the Republic of the Marshall Islands, where early childhood tooth decay is a serious health care problem.

Two active treatment groups received 8 grams per day of xylitol syrup divided into two (33 children) or three (32 children) doses per day. A third, control group of 29 children received a small amount (a single 2.67-gram dose) of xylitol syrup per day because the internal review committee appointed by the secretary of health of the Republic of the Marshall Islands did not permit the use of a placebo.

After an average of 10.5 months, eight of 33 children (24.2 percent) receiving two doses of xylitol per day and 13 of the 32 children (40.6 percent) receiving three doses of xylitol per day had tooth decay, compared with 15 of the 29 children (51.7 percent) in the control group. The

average numbers of decayed teeth were 0.6 in the two-dose xylitol group, one in the three-dose xylitol group and 1.9 in the control group.

"Our results suggest that exposure to xylitol (8 grams per day) in a twice-daily topical oral syrup during primary tooth eruption could prevent up to 70 percent of decayed teeth," the authors write. "Dividing the 8 grams into three doses did not increase the effectiveness of the treatment. These results provide evidence for the first time (to our knowledge) that xylitol is effective for the prevention of decay in primary teeth of toddlers." More research is needed to develop vehicles and strategies for optimal public health, but in populations with high rates of tooth decay, xylitol is likely to be a cost-effective preventive measure, they conclude.

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Editorial: Xylitol Could Help Solve Problem of Early-Childhood Tooth Decay

"Early childhood caries is well understood by microbiologists and research dentists—if not by the general public and their health care providers—as ordinary tooth decay run amok," writes Burton L. Edelstein, D.D.S., M.P.H., of the College of Dental Medicine, Columbia University, in an accompanying editorial.

"It most commonly manifests as extensive tooth destruction and associated pain, with or without infection, by age 22 months and sometimes much earlier," Dr. Edelstein continues. "The Centers for Disease Control and Prevention reports that more than one-quarter of all U.S. toddlers and preschoolers (28 percent) are affected."

"Findings reported herein by Milgrom and colleagues that xylitol application holds strong promise to significantly dampen early childhood caries occurrence are encouraging and suggest the addition of this approach to pharmacologic management in public health and individual care settings. Xylitol application, like fluoride varnish application, will likely become a routine

element of early childhood caries control. The finding, however, that early childhood caries prevalence remained at 24 percent to 41 percent among treated children at the close of the trial in a high-caries-experience population reminds us that no single 'silver bullet' is going to solve the problem of early childhood caries."

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