

HighBeam Research

Title: A chewing gum sweetener dentists love: long-term University of Michigan research study finds xylitol twice as effective at preventing cavities.

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Researchers at the University of Michigan School of Dental Research have discovered that xylitol, a sweet bulk sugar substitute, actually prevents cavities when chewed. Xylitol chewing gum apparently fights against harmful plaque acid that usually remains in the mouth after eating. Xylitol is a five-carbon sugar alcohol that occurs naturally in many fruits and vegetables and is also produced in the human body. Because xylitol metabolizes independent of insulin, it can be used in food products for diabetics. Additional applications for xylitol are given.

Long-term University of Michigan research study finds xylitol twice as effective at preventing cavities.

The sweetest of all bulk sugar substitutes - xylitol - has recently been reported to be not only sugar-free, fat-free and cholesterol-free, but cavity-free. That claim must be qualified on a comparison basis, but the new clinical study results by the University of Michigan's School of Dental Research are good news for both consumers and food formulators.

The research study - sponsored by Leaf, Inc. - examined 1,227 schoolchildren in Belize, Central America, over a 40-month period and was the first such long-term, large-scale clinical proof of the superior cariostatic effects of xylitol over sorbitol in gum. The team, led by Dr. Kauko Makinen, presented its findings at a recent dental research association meeting in Chicago.

Participants in the study regularly chewed gum sweetened either with sucrose, sorbitol (the main bulk sweetener used in sugar-free gums in the United States), xylitol/sorbitol blends, or xylitol. Results showed that children who chewed gum sweetened predominantly with xylitol were two times less likely to develop cavities than those who chewed other sugar free gums. Secondly, the more xylitol in the gum, the lower the rate of cavities among the children.

Makinen explained, "Chewed after meals and snacks, gum sweetened predominantly with xylitol combats the harmful plaque acid left in the mouth after eating. It is this acid that can cause tooth decay. Chewing xylitol-sweetened gum also promotes the natural re-mineralization process that helps reverse cavities beginning to develop."

What is xylitol?

Xylitol is a naturally occurring, 5-carbon sugar alcohol found in many fruits and vegetables, as well as produced by the human body. Commercially, it is made from xylan hemicellulose sources such as birch, other hardwoods and fibrous vegetables. The major supplier of xylitol in the United States is American Xyrofin, Inc., Schaumburg, Ill.

This sweetener is as sweet as sucrose and tastes as good as sugar, but has no aftertaste. Because xylitol has a negative heat of solution, it creates a pleasant cooling effect when dissolved in the mouth. It has a low melting point (94 C), high thermal stability, moderate hygroscopicity, rapid crystallization, high microbiological stability, no reaction with amino acids (no Maillard reaction), high solubility (similar to sugar), and is an effective bulking agent.

In addition to the dental benefits that have been demonstrated in tests throughout the world, xylitol is metabolized independent of insulin. This makes it a useful ingredient in foods for diabetics. Besides application in chewing gums and diabetic foods, it is also suggested for formulation of chocolate and other confectionery, compressed candy mints and dietetic foods.

Xylitol is formulated into jelly beans, mints, hard candies, chocolates, throat lozenges, cough syrups and children's chewable vitamins in more than 35 countries worldwide. Xylitol has been used widely in Europe and Canada in confectionery products - especially chewing gums - and is being utilized on an expanding basis in the United States in products ranging from chewing gum, chocolate and other confectionery to oral hygiene and pharmaceutical products.

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