

Q&A: Is xylitol for your teeth a sweet trend or a true cavity blocker?

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At first glance, a claim that a sweetener derived from the bark of birch trees can prevent cavity formation might seem far-fetched. It can't be true, some might reason. Sugar causes cavities.

Not only are they wrong: The sweet compound from birch trees called xylitol does ward off cavities. But they are wrong twice, as it does so by

blocking acid-producing bacteria in the mouth—the real cause of cavities, not sugar.

In this interview, Casey Rhines, DDS, clinical assistant professor in the Department of Restorative Dentistry at the University of Colorado School of Dental Medicine, discusses the buzz around xylitol, a sugar alcohol found in a growing number of products, including toothpastes, gummy bears, mouthwashes and mints.

The interview has been condensed and edited for clarity.

Why are polyols such as xylitol popular as additives to processed foods?

Some of them truly have a lower calorie content, but sometimes it's just purely that you can use less (for desired sweetness). So, thus, you end up reaching a lower calorie content overall. I think a lot of the push has been the idea of reducing calories, battling obesity. And I think, a lot of the time, the benefit to teeth is just a happy accident.

How does xylitol interact with the bacteria and plaque in our mouth?

We always think of sugar as being the way cavities form. But actually, it's not really sugar that causes cavities. It's acid. Sugar is broken down into acid by the bacteria that are naturally present in our mouths. You need three things for a [cavity](#) to happen: a food source, or some sugar; bacteria; and time. If you interrupt any of those three things, you can't get a cavity—or you lessen your chances severely. So, if you brush your teeth right after eating, you're inhibiting time. If you don't have the natural bacteria in your mouth, then you inhibit the bacterial aspect. If you don't eat sugar, then you inhibit that.

So, among these polyols, which are in the sugar alcohol family, xylitol is the best one. Sorbitol can still be broken down by bacteria; they just can't break it down as well. But bacteria cannot ferment xylitol—they cannot produce acid from it. So, when bacteria can't ferment it, they basically starve and the bacteria end up dying. There have been studies that show xylitol decreases acid-producing bacteria in your mouth by up to 90%.

Acid attacks the enamel of the tooth, and once something moves past the enamel into that soft inner layer of the tooth, the dentin, now you have to have a filling. The cavity is no longer able to remineralize after passing through the enamel layer. Xylitol inhibits the demineralization process by stopping the acid from plummeting into the teeth.

These problematic bacteria in the mouth are called streptococcus mutans?

Yes, that's the specific bacteria. There are lots of different bacteria that contribute to the decay process, but that's the number one bacteria that causes cavities.

Where does this bacteria come from?

Strep mutans just naturally occur in our mouth. Not from birth, so newborns do not have them. Typically, we get this bacteria from a caregiver who kisses us on the mouth or tries our baby food to make sure it's the right temperature, or some other saliva-transferring activity. So that's how it ends up getting introduced to babies.

Are there any downsides to taking xylitol?

One thing to be aware of is that it's very toxic to animals. So, if you have

any xylitol products and you have a really curious pet, typically dogs, you've got to keep it stored away in the cupboard. A lot of times xylitol comes in suckers and candy, so you don't want your child leaving it out and the dog getting into it.

Also, if you consume too much of it, there's a chance of gastric side effects such as stomach aches or diarrhea. For the most part, if taken in moderation or even at the recommended dose, it's perfectly safe for humans.

What is the recommended daily dosage of xylitol for oral health?

The recommended amount for cavity protection is 6 to 10 grams. And it's best to spread doses out throughout the day. So, if you want dental benefit from chewing xylitol-added gum, you should chew the gum for at least 20 minutes to extract the xylitol. That can be a lot of stress on the temporomandibular joints (in the jaw), so if you have problems with your TMJ, it's not a good idea to excessively chew gum.

Can xylitol also promote salivary flow? If so, why is that important for oral health?

Great question. Salivary flow is something that we end up talking about a lot in dentistry because as we age, people tend to take more medications and almost every medication has some sort of inhibitory effect on saliva. Saliva basically raises the pH of the mouth, making it less acidic. It lubricates the mouth and is constantly washing away food and plaque. If you have dry mouth, then typically you're just letting things sit on your teeth at a lower pH, and that's how people end up getting cavities. So, a gum with xylitol promotes salivary flow because the act of chewing produces saliva.

If a mother of a newborn consumed xylitol, would that decrease the spread of cavity-producing bacteria to her child?

I saw a study that showed that new mothers taking xylitol actually lowered the mother's bacterial load, and consequently they passed off less of it to their newborns. It was a really interesting study. This could likely be replicated in other caregivers as well since this does not happen in utero.

Do your patients ask about the potential benefits from xylitol-additive products? What do you tell them?

Every once in a while I'll have a patient bring it up. But for the most part, I end up recommending it to my patients all the time. When I'm doing a caries risk assessment on a patient—basically a fancy term for how likely you are to get a cavity—I will ask questions like, "Do you eat sweets or candy? Do you eat a lot of snacks? Do you chew gum?" If the patient is using cough drops, or frequently snacking, or chewing gum, I immediately recommend that they go for a sugar-free option or a xylitol-containing option. Sugar-free is sometimes just easier to find on the shelves. But really, xylitol is my number one choice. I like xylitol-containing products more than sugar-free because it literally cannot be broken down into acid.

So, is it safe to say that you feel xylitol's benefits for oral health are rooted in fact, not fad?

I would say it's fact. I do think there is a caveat of the fact that, to be effective, it's got to be taken in a certain therapeutic dose. For me, I'm nowhere near the therapeutic dose, but I'm certainly not doing any harm

because it's very easy to just buy xylitol-containing gum as opposed to regular gum. But if you're somebody who is chewing gum frequently throughout the day, or if you take cough drops regularly or a breath-freshening mint after every meal, [xylitol](#)-containing products are a great option.

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