mystery science

Grades K-5
Mini-Lesson: “What makes some candy so sour?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Jay. I like to joke sometimes that I have two stomachs. The extra one is just for desserts. It's no secret that I love sweets, but there's one kind of candy I don't really like. Even my friends who love it can't help but make a scrunched-up face when they taste it. Someone named Bella is curious about this candy. Let's give Bella a call now.

[Video Call]

- Hi, Jay!

- Hi, Bella!

- I have a question for you. What makes some candy so sour?

- That's a great question.

Maybe you've tried sour candies before. They're sweet like other candies, but they also have a sour taste that can make your mouth pucker. The more you suck on some, the more sour flavor you get. Some people love that taste. Just thinking about it might make your mouth water. Or maybe, like me, you avoid it. But sometimes, it's hard to tell if a candy will be sour. Like this powdery stuff: is that sweet sugar or something sour? You might not know until it touches your

tongue. So how do candy makers create these super sour flavors? To figure out their secret, let's start with some other sour foods. I'm curious about sour foods you've tried.

VIDEO 2

I'm not sure how you answered, but maybe you thought of a food like lemons. This baby is tasting a lemon for the first time. There's that puckered-up face again. Definitely a sign of something sour. And watch how this puppy reacts to a sour lime. I think he's saying, “No, thanks!” One sour food I do like is orange juice. It's got a sweet, tangy flavor that's just a bit sour. Other fruits have a flavor that mixes sweet with sour, too, like green apples. But one bite can still make you pucker. And some foods, like pickles, combine salty with sour. These foods might seem pretty different, but they all have something in common. They all contain some kind of acid. If you've heard of acid before, you might think it's something dangerous or destructive, and that can be true. Check out what one kind of acid can do to a metal can. Woah. See that? That acid is breaking down the metal. That is not something you'd want to eat. When scientists measure how strong an acid is, they use a scale like this. Pure water with no acid is here, and a really strong acid would be way down here on the end. But a weak acid, like orange juice, would be here, closer to water. It's an acid that's safe for us to drink. A lemon would be about here. It's stronger, but still safe to eat. These other fruits naturally contain acids as well. And by using the acid in a liquid called vinegar, we can make sour foods like pickles. Acid is what makes some candies sour, too. Watch how these candy makers do it. This blue stuff is a mixture of melted sugar to make the candy sweet. Now see that white powder they're adding? That powder contains acid. It's very similar to the acid found in lemons, limes, and oranges. We sometimes call these citrus fruits, and the acid in them has a similar name: citric acid. Citric acid is what

gives many candies their sour flavor. You can see it on the sour gummies. The powdery white stuff is a mixture of sugar, citric acid, and some other acids, too. That's why you get a burst of sour flavor when the powder touches your tongue. Candy makers use a variety of acids, including the kind that's found in green apples. The acids in sour candies can taste strong. And measured on this scale, some are even stronger than lemons. But they're still safe to enjoy once in a while. Even if you love sour candy, it will probably still make you pucker up. Scientists are curious why our bodies do this. It might be a way to keep us safe. For instance, fruit that isn't ripe yet could make you sick, and it tends to taste more sour than sweet. Puckering up could be your body's way of saying, “Slow down. Are you sure you want to eat that?” But some foods that taste sour are good for you. They provide things that are important to our health, like vitamin C in citrus fruits. In that case, seeking out sour flavors could help our bodies. So, in summary, the secret ingredient that makes some candies so sour is acid. Some strong acids can be dangerous, but there are weaker acids found naturally in lots of everyday things like lemons and vinegar. If you see citric acid or other acids in the ingredients of a candy, you may be in for a sour treat, whether it's just a touch of tanginess or enough to make you pucker up. Scientists aren't sure why these flavors make our mouths pucker, but maybe you will uncover more mysteries about the power of sour. That's all for this week's question. Thanks, Bella, for asking it.