



HIGH  
FRUCTOSE  
CORN  
SYRUP

How  
Dangerous  
Is It?

*An ad campaign  
attempts to give this  
sweetener a makeover.  
We have the full story.*

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- PHOTOGRAPHS BY  
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In the grand tradition of nutritional scapegoating, high fructose corn syrup has stepped into the spotlight as dietary enemy number one. It's an easy target. The corn-based sweetener is found throughout the American diet, in everything from sugary foods like soda and cookies to savory products like tomato sauce and salad dressing. That's precisely the problem, say critics who blame the vast quantities we consume for the nation's soaring rates of obesity and diabetes.

But not everyone is convinced. Last June, the Corn Refiners Association launched an ad campaign telling the other side of the story—namely, that HFCS is “made from corn [and] has the same calories as sugar.”

The mixed messages have left consumers looking for answers. *Prevention* investigated—and found little conclusive evidence to confirm the anti-HFCS crusade. Still, concerned researchers say there are reasons to keep your intake to a minimum. Here, we address the most common claims about HFCS and have experts weigh in so you can make the best choice for your health.

#### PROPOSERS SAY

### Table sugar and HFCS have the same number of calories.

■ **THE VERDICT:** “Gram for gram, table sugar and high fructose corn syrup are equal in calories,” says Tanya Zuckerbrot, RD, a New York City–based nutritionist. They are also equally sweet. And both consist of two simple sugars—fructose and glucose—in roughly the same proportions (though the two sugars are merely blended together in HFCS, versus chemically bonded in sugar). Your body breaks down both products in virtually the same way, says Michael F. Jacobson, PhD, executive director of the Center for Science in the Public Interest. He adds, “There’s no evidence that high fructose corn syrup is worse than sugar once it’s in your body.”

Still, we know much less about the long-term effects of HFCS than about those of sugar. HFCS was invented in the 1960s and has been used extensively in consumer products since only the late 1970s. “That’s when an increase in the

price of sugar helped make less expensive corn sweeteners more attractive to manufacturers,” says Helen H. Jensen, PhD, an agricultural economist at Iowa State University. It may be too soon to say that HFCS and sugar (which has been consumed safely for thousands of years) are the same.

#### PROPOSERS SAY

### HFCS is natural.

■ **THE VERDICT:** Natural is relative, so think of it this way: HFCS would not exist without the aid of humans. (Of course, neither would table sugar.) “You don’t just squeeze it out of a kernel of corn,” explains Jacobson. The sweetener is made from cornstarch via a process that alters corn’s naturally occurring starch molecules. For that reason, Jacobson and CSPI protested an early version of the Corn Refiners Association ads that used the term *natural* in reference to HFCS. Eventually, he says, they took out the word “because it’s not natural—it’s highly processed.”

## CRITICS SAY

**HFCS is responsible for the rise in obesity in our country.**

■ **THE VERDICT:** Manufacturers started using HFCS in the late '70s, right before America's collective waistline began to expand. Researchers have speculated that the relationship is more than a coincidence. However, a December 2008 supplement to the *American Journal of Clinical Nutrition* found no scientific support for the hypothesis that HFCS is causing obesity in the United States.

Some experts make an indirect case: HFCS, once much cheaper than sugar, cut the cost of sweet, calorie-dense foods, which fueled our sweet tooth—causing weight gain in the process.

## CRITICS SAY

**HFCS contributes to diabetes risk.**

■ **THE VERDICT:** "This notion that high fructose corn syrup is to blame for diabetes isn't exactly accurate," says Zuckerbrot. It probably gained traction alongside the obesity rumor. But we do know that excess calories—from any source—lead to weight gain, which plays a role in diabetes.

Interestingly, research suggests that a diet high in fructose (the sugar found naturally in fruit) may lead to leptin resistance, a hallmark of diabetes—and thanks to the ubiquity of HFCS, we are getting more fructose in our diets than ever before. Scientists are continuing to explore the possible link.

### 3 Sweeteners with Bonus Benefits

Surprising fact: Some sweeteners *do* have health benefits. Trade your usual packaged fare for no-added-sugar versions and flavor them with these good-for-you sweeteners. You'll satisfy your sweet tooth, boost your health, and save calories.

**ANTIOXIDANT-PACKED SWEETENERS:** Molasses, brown sugar, maple syrup, and honey all have intermediate to high levels of the disease-fighting compounds, according to a new *Journal of the American Dietetic Association* study.

■ **Sweet Savings:** One packet of maple and brown sugar instant oatmeal has 160 calories; one packet of plain instant oatmeal topped with 1 teaspoon each of maple syrup and brown sugar has 127.

**FRESH, FROZEN, OR UNSWEETENED DRIED FRUIT:** Research links a diet high in fruit with decreased risk of cardiovascular disease, thanks to its high levels of health-promoting vitamins, minerals, and antioxidants.

■ **Sweet Savings:** Six ounces of strawberry fruit-on-the-bottom yogurt packs 170 calories; 6 ounces of nonfat plain Greek yogurt blended with 1/4 cup of sliced strawberries has 112.

**A DASH OF SPICE:** Cloves and cinnamon can lend sweetness to foods while adding minimal calories. A study in the *Journal of Agriculture and Food Chemistry* found that these spices were among the highest in antioxidants out of 30 plants tested.

■ **Sweet Savings:** One 16-ounce Cinnamon Dolce Latte from Starbucks has 330 calories; a 16-ounce Caffè Latte topped with cinnamon has 192.

—Rachel Meltzer Warren

One clue that there's more to learn: In 2007, researchers at Rutgers University found that sodas sweetened with HFCS have high levels of compounds called reactive carbonyls, which are found in excess in the blood of people with diabetes and may contribute to tissue damage. "This brings up some interesting concerns, but we don't want to hang our hat on the results of one study," says American Dietetic Association spokesperson Lona Sandon, RD. Bottom line: More research needs to be done.

#### CRITICS SAY

### HFCS contains mercury.

■ **THE VERDICT:** Nearly half of the 20 HFCS samples tested in a recent study contained small amounts of potentially harmful mercury, according to a report in *Environmental Health*. While the Corn Refiners Association argues that the research was based on outdated information, another study by the Institute for Agriculture and Trade Policy found that one-third of all HFCS-containing foods it bought in the fall of 2008 tested positive for the toxin. The researchers believe that HFCS is probably the source: A compound known as caustic soda, which is used to separate the corn starch from the kernel, can be tainted with mercury, and there's no way for you to know whether the caustic soda used was contaminated, according to study author David Wallinga, MD. Although much of the US production of caustic soda uses mercury-free technology, not all manufacturers worldwide have followed suit, adding fuel to the argument for minimizing HFCS intake.



#### PROponents SAY

### The FDA says that HFCS is safe to consume, so it must be.

■ **THE VERDICT:** The FDA has ruled twice that HFCS is "safe" to consume. But the FDA also considers double bacon cheeseburgers safe—and you wouldn't want to eat those every day. Limiting HFCS (and other added sweeteners) does have one well-understood benefit: It will help you lose weight. And that will help prevent disease.

Jacobson agrees. Although the Corn Refiners Association is successfully pumping up the image of HFCS in the minds of many consumers, he believes that there's more the public should know. "The ads set the record straight about the similarities between sugar and high fructose corn syrup," he says. "But the responsible message should be 'Consume less of both.'" ■