

# Nutrition Action

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## Sugar Belly

### How Much is Too Much Sugar?

BY BONNIE LIEBMAN

You've heard of a beer belly. Now there's new evidence that the fructose in added sugars may send more of your extra calories to that bulge where your waist used to be.

For years, researchers have found a higher risk of type 2 diabetes, heart disease, high blood pressure, high triglycerides, gout, and weight gain in people who consume more sugar-sweetened beverages. Now a flurry of new studies suggests that our out-of-control sweet tooth is connected to our out-of-control belly fat.

And it's that kind of fat that may cripple the body's ability to use insulin, setting the stage for diabetes and heart disease.

*Continued on p. 3.*

# Sugar Belly

## How Much is Too Much?

### OBESITY

Do sugary foods and drinks deserve more blame for America's obesity epidemic than other foods?

"There is strong evidence linking sugar-sweetened beverages to weight," says Vasanti Malik, a research fellow at the Harvard School of Public Health.

For example, when she and her colleagues tracked more than 50,000 women for four years, they found that weight gain was greatest (about 10

pounds) among women who went from drinking no more than one sugar-sweetened drink a week to at least one a day.<sup>1</sup>

"But most industry-funded studies have reported no association," she notes. "This back-and-forth with industry has been muddying the waters."

For example, a 2009 meta-analysis by scientists with industry ties found no link between soft drinks and weight in children.<sup>2</sup>

"But there were some errors in the way they scaled the data," Malik explains.

What's more, some studies in the industry-funded analysis only compared soda drinkers to non-soda drinkers *who consumed the same number of calories*.

"It doesn't make sense to adjust for total calories because extra calories may explain *how* sugar-sweetened beverages lead to obesity," says Malik.

"When we re-analyzed the data correctly, there *was* an association between weight and sugar-sweetened beverages."<sup>3</sup>

What about the added sugars

Soft drinks, sports drinks, fruit drinks, energy drinks, coffee drinks, cupcakes, cookies, muffins, doughnuts, granola bars, chocolate, ice cream, sweetened yogurt, cereal, candy. The list of sweet temptations is endless.

The average American now consumes 22 to 28 teaspoons of *added sugars* a day—mostly high-fructose corn syrup and ordinary table sugar (sucrose). That's 350 to 440 empty calories that few of us can afford.

How much added sugar is too much? Cutting back to 100 calories (6½ teaspoons) a day for women and 150 calories (9½ teaspoons) a day for men might mean slimmer waistlines and a lower risk of disease.

in solid foods? "There's not as much evidence for them," says Malik. "We haven't looked at that carefully yet."

"We focused on sugar-sweetened beverages because they're the largest contributor of added sugar intake," she adds, "and because of the lack of compensation for liquid calories."

Studies find that people may "compen-

sate" for the calories they get from solid foods by eating less later in the day. But that doesn't seem to happen when people drink liquid calories.<sup>4</sup>

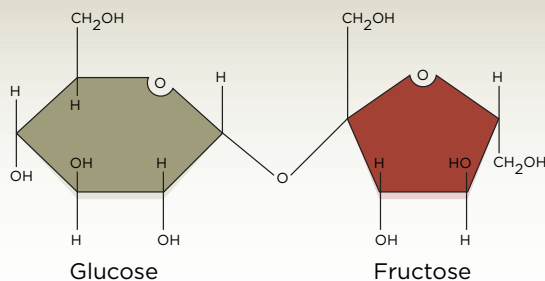
"In one study, people given jelly beans consumed less at subsequent meals than those who were given the same calories as liquid sugary beverages," says Malik.

More evidence that sugary beverages can plaster on the pounds: In three studies, scientists randomly assigned people to consume either sugary

beverages (made with sugar or high-fructose corn syrup) versus diet beverages (usually made with aspartame) for three to 10 weeks.<sup>5-7</sup> Sure enough, only those who consumed sugar or high-fructose corn syrup gained weight.

But now researchers are hot on the trail of a new lead: Is the fructose that makes up roughly half of most added sugars more likely to migrate to your belly than elsewhere?

### Sugars 101



Sucrose (table sugar) is broken down—in the body and (to some extent) in foods—to half fructose and half glucose. At that point it is almost identical to most high-fructose corn syrup. Fruit contains a mixture of fructose, sucrose, and glucose.

### A Beeline to the Belly

Clearly, too many calories from *anything*—sugary beverages, beer, burgers, fries, pizza, ice cream, or dozens of other foods—explains why many American waists have been replaced by a spare tire.

And studies haven't found that you'd gain more pounds from, say, 100 calories of added sugars than from 100 calories of other foods. But calories from fructose (which is found only in added sugars and fruit) may be more likely than other calories to aim for

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your waist.

To find out if fructose is destined to end up around your midsection, researchers compare fructose to glucose (which is found in added sugars but is also the building block of starches).

The first solid evidence came in 2009. Researchers gave 32 overweight or obese middle-aged men and women 25 percent of their calories from beverages sweetened with either fructose or glucose for 10 weeks.<sup>8</sup>

Both groups gained the same weight (about three pounds). But their new fat didn't all go to the same place.

"We saw an increase in visceral fat in people fed fructose," says study author Kimber Stanhope of the University of

California, Davis.

Visceral (deep belly) fat is more closely linked to a higher risk of heart disease and diabetes than subcutaneous (just below the skin) fat. (See "Where's the Fat?")

"The high-fructose corn syrup industry's scientific consultants criticized our study," says Stanhope. "They said, 'This is meaningless. No one consumes foods sweetened with pure fructose so no one consumes that much fructose.'"

Now two new studies have reported similar results with less fructose:

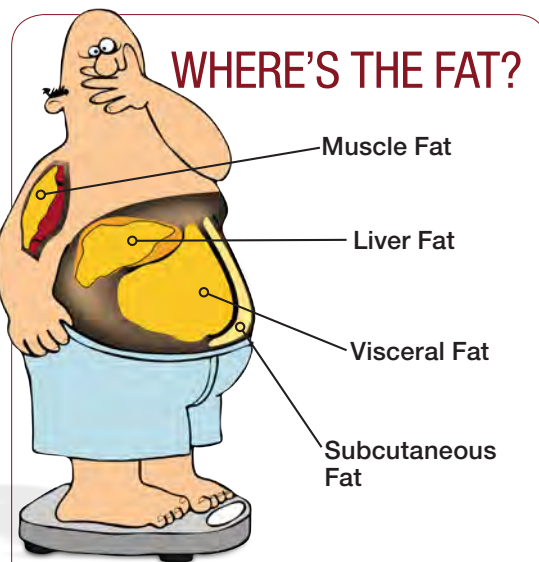
■ **Danish scientists** assigned 47 overweight men and women to drink a liter (not quite three 12 oz. cans) a day of one of four drinks: regular cola (sweetened with sucrose), reduced-fat milk, diet cola (sweetened with aspartame), or water.<sup>9</sup> (Sucrose is half glucose and half fructose.)

After six months, visceral fat went up only in those drinking regular cola. "The increase in visceral fat was quite impressive," says Stanhope.

And a liter isn't much. Roughly half the population doesn't drink sugary beverages, but among the drinkers, 50 percent swallow at least half a liter a day and 5 percent gulp down at least 1½ liters.<sup>10</sup>

■ **Swiss researchers** assigned 29 healthy, normal-weight men to drink beverages with one of the following: 10 teaspoons of fructose, 20 teaspoons of fructose, 10 teaspoons of glucose, 20 teaspoons of glucose, or 20 teaspoons of sucrose each day.<sup>11</sup>

"Those aren't large amounts," notes Stanhope. A 12 oz. can of soda has about 10 teaspoons of sugars (roughly half fructose and half glucose). The 10-teaspoon dose was only about 7 percent of the men's calories.



The fructose in most added sugars appears to boost liver, muscle, and visceral fat. Excess fat anywhere in the body increases the risk of insulin resistance and diabetes. But a fatty liver and visceral fat may increase your risk the most.

After just three weeks, waist-to-hip ratio rose slightly only in the men who got fructose (alone or in sucrose), but not glucose. (Measuring waist-to-hip ratio isn't as accurate as measuring visceral fat, but when your waist expands, it's often because visceral fat expands.)

"With three studies now, these data suggest that added sugars cause an increase in visceral fat," says Stanhope.

And links between visceral fat and sugary foods or drinks are now showing up elsewhere. When University of Minnesota researchers studied nearly 800 men and women, those who drank the most sugar-sweetened beverages had more visceral fat and larger waists.<sup>12</sup>

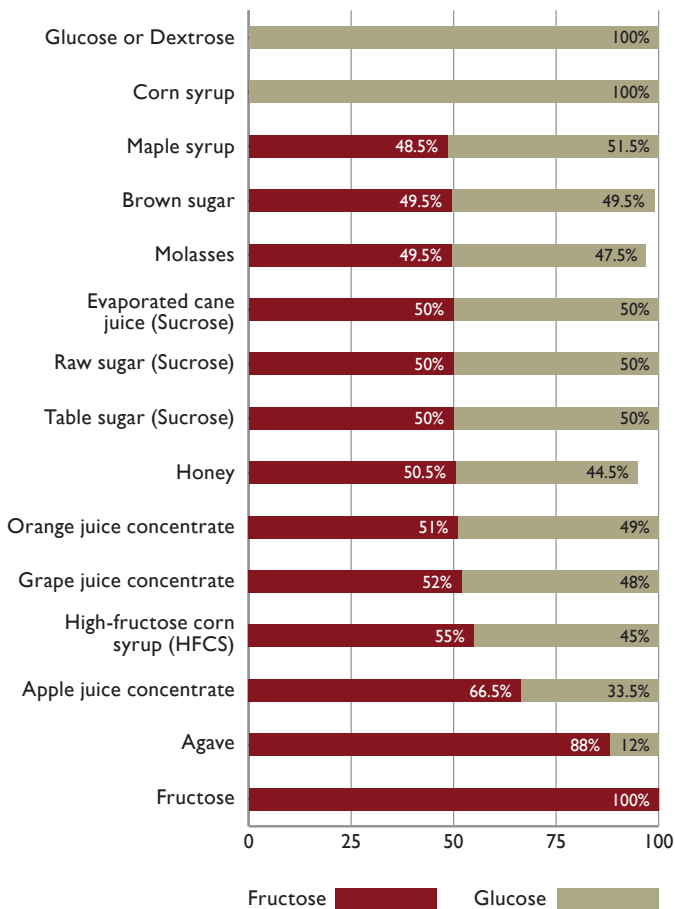
"We observed greater overall abdominal fat with increasing sugar-sweetened beverage consumption, and the increase in visceral fat was driving it," says Andrew Odegaard, a research associate at the University of Minnesota School of Public Health.

And among roughly 560 teenagers, those who consumed the most fructose (from beverages and food) had the most visceral fat, as well as the most insulin resistance, higher blood pressure, and higher blood sugar levels.<sup>13</sup>

"We took into account a lot of variables that could make this relationship spurious—fiber, calorie intake, fat and lean mass, socioeconomic status, physical activity," says author Norman Pollock, an assistant professor of pediatrics at the Georgia Health Sciences University in Au-

## Sugar by Any Other Name

With a few exceptions (like agave and corn syrup), most sweeteners and the naturally occurring sugars in fruit break down into roughly half fructose and half glucose in the body.\* The natural sugar in milk (lactose) breaks down into half glucose and half galactose.



\*Sucrose is shown as its component sugars (fructose and glucose). Note: If percentages don't add up to 100, other sugars account for the difference. Sources: USDA Nutrient Database and company information.

gusta. “But the relationship with visceral fat was still there.”

It’s not as though added sugars are the only cause of a ballooning belly. Most of our expanding waistlines is due to eating too many calories, period.

But each notch on that belt could have serious consequences for your health.

“From what we understand, visceral fat may be what really drives insulin resistance and cardiometabolic disorders like type 2 diabetes and heart disease,” says Odegaard.

## DIABETES & HEART DISEASE

The link between diabetes and sugars is clearest when researchers look at sugary drinks.

“We summarized the results from eight studies,” explains Harvard’s Vasanti Malik. All told, the meta-analysis pooled data on more than 300,000 people.<sup>14</sup> The results: “For each 12 oz. serving of a sugar-sweetened beverage you drink per day, you’re getting about a 15 percent increased risk for diabetes,” says Malik. “So it really doesn’t take much to increase your risk.”

“Fewer studies have looked at cardiovascular disease,” she observes. “But we found an increased risk.”

When Malik and colleagues tracked 88,000 nurses for 24 years, those who consumed at least two sugar-sweetened beverages a day had a 35 percent higher risk of heart attack than those who drank less than one a month.<sup>15</sup>

Sugar-sweetened-beverage drinkers also have a higher risk of the metabolic syndrome, which can lead to type 2 diabetes or heart disease.<sup>14,16</sup> (You have the metabolic syndrome if you have at least three of the following: elevated blood sugar, blood tri-

glycerides, blood pressure, or waist circumference, or low HDL cholesterol.)

“In our meta-analysis, people who drank two or more sugar-sweetened beverages a day had about a 20 percent increased risk of the metabolic syndrome compared to those who drank none or less than one per month,” says Malik.

And it’s not just that can of Coke. In 2010, researchers at Emory University reported that among a nationally representative sample of more than 6,000 adults, those who got more sugars from drinks *and* foods had lower HDL (“good”) cholesterol and higher triglyceride levels in their blood.<sup>17</sup>

“Elevated triglycerides, together with elevated LDL (“bad”) cholesterol, contributes to changes in our blood vessels that increase the risk of heart disease,” explains Emory’s Jean Welsh.

“The job of HDL is to carry away the triglycerides and the bad cholesterol so that they don’t cause damage.”

But none of those studies can prove cause-and-effect. “To find out if fructose is causing adverse effects, you have to give people fructose or glucose drinks for months,” says Pollock.

That’s just what the latest studies did.

### Look to the Liver

In the Danish study, the people who drank a liter a day of sucrose-sweetened cola didn’t just have more visceral fat. Their liver and muscle fat more than doubled.<sup>9</sup>

“That’s a substantial increase,” notes Stanhope. “We had suggested that consuming high amounts of fructose-containing sugars could lead to an increase in liver fat. This is the first well-controlled study to show it.”

## Sugar vs. Sugar

“No High Fructose Corn Syrup,” says the Kashi GoLean label.

Is high-fructose corn syrup worse than table sugar (sucrose), even though both are roughly half fructose and half glucose?

“Added sugars—whether they come from sucrose, high-fructose corn syrup, or fruit juice concentrates—all have equal adverse effects metabolically,” says Harvard University’s Vasanti Malik. “This obsession with high-fructose corn syrup is a little misguided.”

In January, researchers at the University of Florida reported that people who were given 24 ounces of Dr Pepper sweetened with high-fructose corn syrup had higher blood sugar levels over the next six hours than those who got sucrose-sweetened Dr Pepper.<sup>1</sup> But other short-term studies have found no difference.<sup>2</sup>

“If you’re getting a lot of fructose, it doesn’t matter where it’s coming from,” says the Georgia Health Sciences University’s Norman Pollock. “Even 100 percent fruit juice could be bad if you’re consuming large quantities.”

In fact, in some studies, people who drank more fruit juice had a greater risk of type 2 diabetes or weight gain.<sup>3,4</sup>

“The sugars in juices are natural, but it’s still a large amount of sugar,” explains Malik. “We saw an increased risk of diabetes with juices but not whole fruit, which suggests that the fiber in fruit—which isn’t in the juice—might ameliorate the risk of diabetes.”

Her advice: “Drink water, tea, or coffee, keeping the sweeteners and creamers minimal in the coffees and teas. If you want a little flavor, try sparkling waters with a twist of lime or orange. You can cut a little lime or lemon rind or orange peel and add them yourself.”

<sup>1</sup> *Metabolism* (2011), DOI:10.1016/j.metabol.2011.09.013.

<sup>2</sup> *Am. J. Clin. Nutr.* 87: 1194, 2008.

<sup>3</sup> *Diabetes Care* 31: 1311, 2008.

<sup>4</sup> *JAMA* 292: 927, 2004.



Soda drinkers have a higher risk of heart disease and diabetes.



## Sweet Somethings

Here's how much added sugars you'd get in a sampling of popular foods.

(The numbers don't include the naturally occurring sugars in fruit or milk ingredients.)

Most women should get no more than 100 calories (6½ teaspoons) a day from added sugars. Most men should get no more than 150 calories (9½ teaspoons). To convert teaspoons to grams of sugar, multiply by 4. To convert teaspoons to calories from sugar, multiply by 16.

### Sweets (1 cookie, piece of cake, etc., unless noted)

	Calories	Added Sugar (tsp)
Kashi TLC Oatmeal Dark Chocolate Cookies (1 oz.)	130	2
Pepperidge Farm Nantucket Dark Chocolate Soft Baked Cookies (1.1 oz.)	140	2.5
Krispy Kreme Original Glazed Doughnut (1.7 oz.)	190	2.5
Nabisco Chips Ahoy! Original (3 cookies, 1.2 oz.)	160	3
Pepperidge Farm Milano Cookies (3 cookies, 1.2 oz.)	180	3
Nabisco Oreo (3 cookies, 1.2 oz.)	160	3.5
Newman's Own Organics Original Newman-O's (3 cookies, 1.3 oz.)	170	3.5
Entenmann's Ultimate Crumb Cake (½ cake, 2 oz.)	250	4
Entenmann's Rich Frosted Donut (2.1 oz.)	300	4.5
Sara Lee All Butter Pound Cake (¼ cake, 2.7 oz.)	300	5
Pepperidge Farm Golden 3-Layer Cake (½ cake, 2.5 oz.)	230	6.5
Krispy Kreme Glazed Chocolate Cake Doughnut (2.8 oz.)	300	6.5
Au Bon Pain Chocolate Mocha Whoopie Pie (3 oz.)	330	6.5
Marie Callender's Southern Pecan Pie (½ pie, 4 oz.)	490	6.5
Marie Callender's Lemon Meringue Pie (½ pie, 4.3 oz.)	320	8.5
Starbucks Marble Pound Cake (3.8 oz.)	350	8.5
Panera Chocolate Chipper cookie (3.3 oz.)	440	8.5
Entenmann's Cinnamon Danish (4 oz.)	460	8.5
Starbucks Cinnamon Chip Scone (4.2 oz.)	480	8.5
Entenmann's Jumbo Iced Honey Bun (5 oz.)	660	8.5
Au Bon Pain Red Velvet Cupcake (3.1 oz.)	400	9
Starbucks Reduced-Fat Cinnamon Swirl Coffee Cake (4 oz.)	340	10
Au Bon Pain Hazelnut Mocha Brownie (4 oz.)	450	10.5
Dunkin' Donuts Chocolate Chip Muffin	610	14
Panera Chocolate Fudge Brownie with icing (4.3 oz.)	470	14.5
Cinnabon Classic Roll	880	15
Cinnabon Caramel Pecanbon	1,080	19
IHOP CINN-A-STACK Pancakes (4) with Old Fashioned Syrup (¼ cup)	1,110	23.5
The Cheesecake Factory Black-Out Cake	1,330	38

### Candy, Chocolate, etc. (1 bar, box, etc., unless noted)

Lindt Excellence 70% Cocoa Smooth Dark (4 squares, 1.4 oz.)	250	3
Planters Sweet 'N Crunchy Peanuts (1 oz.)	140	3.5
Dove Dark Chocolate Silky Smooth Promises (5 pieces, 1.4 oz.)	210	5
Hershey's Milk Chocolate Kisses (9 pieces, 1.4 oz.)	200	6
Hershey's Milk Chocolate bar (1.5 oz.)	210	6
Ghirardelli Chocolate Dark & Mint Squares (3 squares, 1.6 oz.)	210	6.5
M&M's Milk Chocolate (1.7 oz.)	230	8
Junior Mints, theater size (4 oz.)	480	22.5

### Cereals

	Calories	Added Sugar (tsp)
Quaker Lower Sugar Maple & Brown Sugar Instant Oatmeal (1 pkt., 1.2 oz.)	120	1
Kellogg's Original All-Bran (½ cup, 1.1 oz.)	80	1.5
Post Honey Roasted Honey Bunches of Oats (¾ cup, 1 oz.)	120	1.5
General Mills Honey Nut Cheerios (¾ cup, 1 oz.)	110	2.5
Kellogg's Vanilla Almond Special K (¾ cup, 1 oz.)	110	2.5
Quaker Maple & Brown Sugar Instant Oatmeal (1 pkt., 1.5 oz.)	160	2.5
Kellogg's Raisin Bran (1 cup, 2.1 oz.)	190	2.5
Bear Naked Maple Pecan Granola (½ cup, 2.2 oz.)	260	2.5
Kellogg's Frosted Mini-Wheats Bite Size (21 biscuits, 1.9 oz.)	190	3
Kashi GoLean Crunch! (1 cup, 1.9 oz.)	190	3.5
Post Just Bunches! Honey Roasted Honey Bunches of Oats (⅔ cup, 2 oz.)	250	3.5

### Cereal & Granola Bars (1 bar)

Kashi TLC Honey Almond Flax Chewy Granola Bar (1.2 oz.)	140	1.5
Fiber One Oats & Chocolate Chewy Bar (1.4 oz.)	140	2.5
Nature Valley Vanilla Chewy Yogurt Bar (1.2 oz.)	140	3.5
Quaker Dark Chocolatey Chewy Dipp's Granola Bar (1.1 oz.)	140	3.5
Kellogg's Special K Chocolate Caramel Protein Meal Bar (1.6 oz.)	170	4
Kashi GoLean Chocolate Malted Crisp Bar (1.9 oz.)	190	4.5
Clif Bar Maple Nut (2.4 oz.)	250	5.5

### Beverages

Silk Vanilla Soymilk, refrigerated (8 fl. oz.)	100	2
Starbucks Caramel Macchiato (grande, 16 fl. oz.)	240	4*
Starbucks Vanilla Latte (grande, 16 fl. oz.)	250	4*
Silk Chocolate Soymilk, refrigerated (8 fl. oz.)	140	5
Starbucks Tazo Black Shaken Iced Tea (grande, 16 fl. oz.)	80	5.5
Ocean Spray Cranberry Juice Cocktail (8 fl. oz.)	120	5.5*
Schweppes Tonic Water (12 fl. oz.)	130	8
Gatorade Perform Lemon-Lime (20 fl. oz.)	130	9
Starbucks White Chocolate Mocha (grande, 16 fl. oz.)	470	9*
Coca-Cola (12 fl. oz.)	140	10
AriZona Extra Sweet Green Tea (23.5 fl. oz.)	260	17
McDonald's Sweet Tea (large, 32 fl. oz.)	280	17.5
Starbucks Java Chip Frappuccino (venti, 24 fl. oz.)	560	18.5*

### Dairy

Häagen-Dazs Chocolate Ice Cream (3.7 oz.)	260	3*
Dannon All Natural Vanilla Yogurt (6 oz.)	150	4*
Häagen-Dazs Zesty Lemon Sorbet (4 oz.)	120	7
Cold Stone Creamery Sweet Cream Ice Cream (Love it, 8 oz.)	530	8.5*
TCBY Golden Vanilla Yogurt (large, 13.4 fl. oz.)	400	9.5*
Pinkberry Original Frozen Yogurt (large, 13 oz.)	370	14.5*
Cold Stone Creamery Very Vanilla Shake (Gotta Have It, 24 fl. oz.)	1,550	32.5*

### Other

Wholesome Sweeteners Organic Raw Blue Agave (1 Tbs.)	60	4
Honey (1 Tbs.)	60	4.5
Betty Crocker Rich & Creamy Chocolate Frosting (2 Tbs.)	130	4.5
Nutella (2 Tbs.)	200	5*

\* Estimate. Note: added sugars are rounded to the nearest half teaspoon.

Source: Company information.

The liver may also explain why fructose leads to higher levels of triglycerides.

“Fructose gets metabolized by the liver very quickly,” says Welsh. “When there is more sugar than the liver can process, it converts the sugar to fat. Some of the fat goes into the bloodstream, and that’s why we get elevated triglycerides.”

What’s more, in Stanhope’s study, the fructose drinkers burned less fat (and more carbohydrate).<sup>18</sup> “The body doesn’t make fat and burn fat at the same time,” she explains.

“In our study, fat oxidation got blocked every time people drank the fructose drink because that fructose is getting turned into fat.”

Also troubling: “We saw an increase in small, dense LDL when people drank fructose,” says Stanhope. Those are cholesterol-carrying particles that are more damaging to arteries than fluffy, large LDL.

And Stanhope noticed something else. “LDL increased as much in the high-fructose corn syrup group as in the pure fructose group. That was surprising because the high-fructose corn syrup group got less fructose.”<sup>19</sup>

“Do fructose and glucose together exacerbate the problems?” she asks. “We can’t say at this point. But it’s possible that because fructose is activating the pathways by which sugar gets turned into fat, more of the glucose is getting turned into fat, too.”

As if that weren’t enough, fructose may also lead to gout, a painful inflammation due to a buildup of uric acid in joints.

“Fructose has been shown to increase uric acid,” says Malik. “And gout has also been associated with sugar-sweetened beverages.”<sup>20</sup>

The problem isn’t just that fructose boosts several risk factors for diabetes and cardiovascular disease.

“It’s that those risk factors—abdominal obesity, high triglycerides, and insulin resistance—all exacerbate each other,” says Stanhope. “You get a vicious circle going.”

A case in point: “Some researchers argue that if you increase visceral fat, it sends out more inflammatory factors, which go back to the liver, where they promote more insulin resistance,” she explains.

Another example: “Fructose-containing sugars increase fat-making in the liver, which causes insulin resistance,” says Stanhope. “But insulin resistance also increases fat-making in the liver, so all the processes get revved up.”



**Healthier? A slice of Starbucks Reduced-Fat Cinnamon Swirl Coffee Cake has 10 teaspoons of added sugars.**

“That’s why the metabolic syndrome is so difficult to treat with one medication,” she adds. “Everything is feeding on everything else.”

## EMPTY CALORIES

How much is too much added sugar? In 2009, the American Heart Association suggested a limit: no more than 100 calories a day for women and no more than 150 calories a day for men.<sup>21</sup>

The heart association wasn’t just concerned about “the worldwide pandemic of obesity and cardiovascular disease,” but also about the healthy foods that added sugar replaces.

“To follow recommendations to lower the risk of heart disease, diabetes, osteoporosis, hypertension, you name it, you have to use most of your calories for fruits, vegetables, grains, milk, meat, fish, poultry, and oils,” explains Susan Krebs-Smith of the National Cancer Institute. “Very few calories are left over for empty calories.”

In her recent analysis of a nationally representative survey of more than 16,000 people, roughly 78 percent of women and 67 percent of men ate too much added sugar.<sup>22</sup>

“For example, for

someone who eats 2,000 calories a day, ‘too much’ was more than 130 calories’ worth of added sugar,” she says.

Not surprisingly, more than 90 percent of the people also came up short on green and orange vegetables, beans, dairy, and whole grains. “Most calories need to count for something nutritionally,” adds Krebs-Smith.

But growing evidence suggests that added sugars aren’t just empty calories. They’re harmful calories.

“We saw huge metabolic differences between people who consumed fructose instead of glucose, despite the same weight gain,” says Stanhope.

“Many people believe that excess calories are the problem, and it doesn’t matter where they come from. But now we know that that’s not true.” 🍌

<sup>1</sup> *JAMA* 292: 927, 2004.

<sup>2</sup> *Am. J. Clin. Nutr.* 87: 1662, 2008.

<sup>3</sup> *Am. J. Clin. Nutr.* 89: 438, 2009.

<sup>4</sup> *Int. J. Obes.* 24: 794, 2000.

<sup>5</sup> *Am. J. Clin. Nutr.* 51: 963, 1990.

<sup>6</sup> *Am. J. Clin. Nutr.* 76: 721, 2002.

<sup>7</sup> *Br. J. Nutr.* 97: 193, 2002.

<sup>8</sup> *J. Clin. Invest.* 119: 1322, 2009.

<sup>9</sup> *Am. J. Clin. Nutr.* 95: 283, 2012.

<sup>10</sup> [cdc.gov/nchs/data/databriefs/db71.htm](http://cdc.gov/nchs/data/databriefs/db71.htm).

<sup>11</sup> *Am. J. Clin. Nutr.* 94: 479, 2011.

<sup>12</sup> *Obesity* 20: 689, 2011.

<sup>13</sup> *J. Nutr.* 142: 251, 2012.

<sup>14</sup> *Diabetes Care* 33: 2477, 2010.

<sup>15</sup> *Am. J. Clin. Nutr.* 89: 1037, 2009.

<sup>16</sup> *Circulation* 116: 480, 2007.

<sup>17</sup> *JAMA* 303: 1490, 2010.

<sup>18</sup> *Eur. J. Clin. Nutr.* 66: 201, 2012.

<sup>19</sup> *J. Clin. Endocrinol. Metab.* 96: E1596, 2011.

<sup>20</sup> *BMJ* 336: 309, 2008.

<sup>21</sup> *Circulation* 120: 1011, 2009.

<sup>22</sup> *J. Nutr.* 140: 1832, 2010.

## The Bottom Line

- Shoot for 100 calories (6½ teaspoons) a day of added sugars if you’re a woman and 150 calories (9½ teaspoons) a day if you’re a man. Even less may be better for your heart. (See “What Should I Eat?” Oct. 2009, p. 1.)
- Don’t drink sugar-sweetened beverages. Limit fruit juices to no more than 1 cup a day.
- Limit all added sugars, including high-fructose corn syrup, cane or beet sugar, evaporated cane juice, brown rice syrup, agave syrup, and honey.
- Don’t worry about the naturally occurring sugar in fruit, milk, and plain yogurt.
- If a food has little or no milk or fruit (which contain natural sugars), the “Sugars” number on the package’s Nutrition Facts panel will tell you how many grams of added sugars are in each serving. Multiply the grams by 4 to get calories from sugar. Divide the grams by 4 to get teaspoons of sugar.