



## Toxic Sugar

*Over the past 50 years, consumption of sugar has tripled worldwide. In the United States, people consume, on average, close to 40 kilograms of sugar per person per year, or more than 20 teaspoons per person per day. At the same time, the rates of heart disease, type 2 diabetes, and obesity have risen significantly during the past six decades. Are the two trends related, and is it time to reduce our consumption of added sugar?*

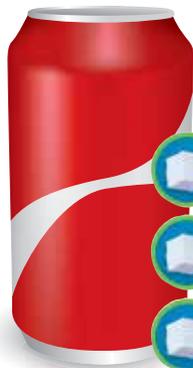
### Sugar chemistry

Sugar belongs to a group of molecules called carbohydrates, which are composed of carbon, hydrogen, and oxygen and are found in fruits, vegetables, dairy products, breads, and sweets. Carbohydrates consist of a series of repeating units called monosaccharides, which include glucose, fructose, and galactose. Table sugar is made of sucrose, a disaccharide produced through the chemical reaction of glucose with fructose (Fig. 1, p. 6).

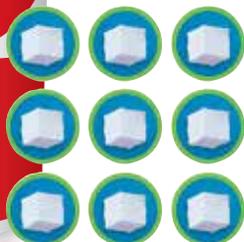
Natural sugars occur most plentifully in fruits, which is what gives them their sweet and often appealing taste. Sugar is also manufactured in the form of either table sugar (sucrose) or high-fructose corn syrup (a mixture of glucose and fructose). This manufactured sugar, called added sugar, is present in many different products to improve their flavor, appearance, and texture.



**About 37% of the added sugar in the U.S. diet comes from sugar-sweetened beverages.**



**9**  
Cubes of sugar in a 12 oz. soda can



### Is added sugar harmful?

The rise in consumption of added sugar coincides with the rise of obesity, type 2 diabetes, and heart disease. In 1960, about 12% of U.S. adults were obese; today, more than 30% of them are. In the developing world, obesity levels have quadrupled since 1980. Studies indicate possible

correlations between increased consumption of added sugar and heart disease (Fig. 2). However, more studies are needed to establish whether there is a cause-and-effect relationship between diets with high levels of added sugar and heart disease-related deaths.



### Relative Risk of Death from Added Sugar

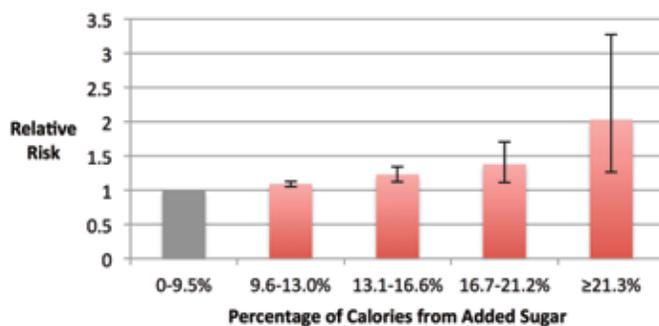


Figure 2. A recent study from the U.S. Centers for Disease Control and Prevention found that the relative risk of death from heart disease increases when the daily calories from added sugar increases. The black vertical lines are the uncertainty ranges, meaning that the actual values fall within that range. Because the lower part of the range for each vertical line lies above the mean value for the reference gray bar, the relative risk is always greater than that for the gray bar, which represents diets with relatively little added sugar.