

New research exposes the health risks of fructose and sugary drinks

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There is compelling evidence that drinking too many sugar-sweetened beverages, which contain added sugars in the form of high fructose corn syrup or table sugar (sucrose), can lead to excess weight gain and a greater risk of developing type 2 diabetes and cardiovascular disease, according to a new review paper published today in the *Journal of the American College of Cardiology*.

The review—the most comprehensive review of the evidence on the [health effects](#) of sugar-sweetened beverages to date—also takes a closer look at the unique role fructose may play in the development of these conditions.

"Since we rarely consume fructose in isolation, the major source of

fructose in the diet comes from fructose-containing sugars, sucrose and high fructose corn syrup, in sugar-sweetened beverages," according to Frank Hu, MD, PhD, Professor of Nutrition and Epidemiology at Harvard T.H. Chan School of Public Health and lead investigator of the paper. "Our findings underscore the urgent need for [public health](#) strategies that reduce the consumption of these drinks."

Sweeteners such as high fructose corn syrup, produced from corn starch, have been widely used in the U.S. as a low-cost alternative to sucrose in foods and beverages. While the consumption of sugar-sweetened beverages has decreased moderately in the past decade, they are still the single greatest source of added sugar intake in the U.S. diet. In fact, half of the U.S. population consumes these types of drinks every day, with one in four getting at least 200 calories per day from them and 5 percent consuming more than 500 calories per day, which is the equivalent of four cans of soda.

"This is particularly concerning as the research shows that consuming one or more sugar-sweetened beverages a day has been linked to greater [weight gain](#) and obesity in numerous published studies," said Hu.

"Regular consumption of sugar-sweetened beverages can lead to weight gain because the liquid calories are not filling, and so people don't reduce their food intake at subsequent meals."

The paper, which reviewed data from recent epidemiological studies and meta-analyses of these studies, reveals that consuming one or two servings a day has been linked to:

- as high as a 26 percent greater risk of developing type 2 diabetes,
- a 35 percent greater risk of heart attack or fatal heart disease, and
- a 16 percent increased risk of stroke

The research team also explored how fructose is metabolized in the body and its link to weight gain and the development of metabolic and cardiovascular conditions.

"Part of the problem is how fructose behaves in the body," said Hu. Glucose, another component of sugar, is readily absorbed from the gastrointestinal tract into the bloodstream where it is transported through the action of insulin into the body's cells to be used as fuel. Fructose, on the other hand, is metabolized in the liver where it can be converted to fatty compounds called triglycerides, which may lead to fatty liver disease and insulin resistance, a key risk factor for developing diabetes and cardiovascular disease. Overconsumption of fructose can also lead to too much uric acid in the blood, which is associated with a greater risk of gout, a painful inflammatory arthritis.

The researchers point out that since [fructose](#) and glucose typically travel together in sugar-sweetened beverages and foods, it is important to reduce total amounts of added sugars, especially in the form of sugar-sweetened beverages. They outline a number of alternatives to sugar-sweetened beverages that include water, coffee, and tea.

Hu says that while artificially sweetened drinks may be preferable to sugary drinks in the short-term, but further studies are needed to evaluate their long-term health effects.

Hu says additional research is needed to explore the health effects of different types of sugars and how liquid vs. solid forms of sugar affect the body. However, he says there is sufficient evidence to support the need for more aggressive public policy interventions to help reduce consumption of sugar-sweetened [beverages](#). The World Health Organization and the 2015 U.S. Dietary Guidelines Advisory Committee recommend that added sugars comprise no more than 10 percent of total calories consumed.

"Although reducing the consumption of [sugar-sweetened beverages](#) or added sugar alone is unlikely to solve the obesity epidemic entirely, limiting intake is one simple change that will have a measurable impact on weight control and prevention of cardio-metabolic diseases," Hu and his team conclude.

Hu adds that he is hopeful that changes to nutritional labeling, which are expected to clearly define the amount of added sugar in a product and the percent daily value for added sugar, will also help to educate consumers and ultimately reduce the daily intake of these and other products packed with sugar.

The review paper is part of a comprehensive Population Health Promotion issue of the *Journal of the American College of Cardiology* focusing on issues that broadly impact public health and the prevention of [cardiovascular disease](#) and related conditions. Population health is a strategic priority of the American College of Cardiology, which recently brought together experts from around the world to address issues such as smoking and nutrition in the context of developing [public health strategies](#) for improving population health.

Provided by American College of Cardiology

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