Some researchers have been saying for years that sugar, not fat, is the most dangerous dietary ingredient, causing obesity and ills ranging from diabetes to hypertension. They also suggest that the focus on decreasing dietary fat has resulted in a concomitant switch to additional added sugars.

The problem, they suggest, is that sugar (table sugar or sucrose) is made up of equal parts of two simple sugars glucose and fructose and it's the fructose that is seen as the main issue. But studies that have sought to substantiate that theory have been beset with problems, such as not controlling for calorie intake, having participants lose weight, and using unrealistic amounts of sugar or fructose. A new study of obese children has added some data to this debate.

Dr. Robert Lustig from the University of California, San Francisco (UCSF) and colleagues studied obese children with some type of metabolic derangement who were participating in an obesity clinic at UCSF. Forty-three children, ranging in age from 8-18 years, were the subjects. The participants' metabolic parameters were measured at the beginning and at the end of the 10-day study. During the experimental period, each child was given foods that were designed to keep them at the same body weight, and also to keep the amounts of carbohydrates, protein and fat the same as they were at the start of the study. The main difference was that the sugar in their diets composed of glucose and fructose was replaced by starch (in bread, bagels, cereal and pasta), which contains no fructose and by sugars in fruits and vegetables. The experimental diets contained only 10 percent of calories as sucrose, and four percent of calories as fructose.

At the end of the 10-day study, the researchers reported that the body weights and BMI of the children had decreased slightly. A number of metabolic parameters were improved by the dietary changes, including fasting blood glucose and insulin levels, as well as fasting levels of LDL- (bad) cholesterol.
As a result of these data, the authors concluded that, "[t]his study argues that the health
detriments of sugar, and fructose specifically, are independent of its caloric value or effects on
weight. Further studies will be required to determine whether sugar restriction alone can impact
metabolic syndrome in adults and whether such effects are short-lived or long-term."

"This was a clever experimental design that to allow the researchers to isolate the effects of
fructose intake from that of carbohydrate intake," said Dr. Ruth Kava, senior nutrition fellow at the
American Council on Science and Health. "But there are a couple of caveats before we can agree
that they really showed that sugar per se is toxic.

"First, some of the subjects of the study did lose weight, which by itself could impact the results," she continued. "Second, the researchers had to rely on the reports of the participants to assess
their food intake at baseline which can certainly be subject to error and that was the basis on
which the experimental diets were devised.

"Finally, these children were not metabolically normal at the beginning of the study, and this might
mean that they were more likely to benefit from a dietary change than would other children or
adults. Definitely more data are needed before we can say with confidence that "sugar is toxic."