SUGAR

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weight, leads to a sharp decline in triglycerides and a key protein called ApoC-III – two features that are associated with heart disease in adulthood.

In a study published online July 19, and in the current issue of the journal Atherosclerosis, researchers from Touro University California and UCSF reported that triglycerides dropped 33 percent and ApoC-III fell by 49 percent in just 10 days of sugar restriction. The work expands on previous research published last year in the journal Obesity that found restricting sugar – without restricting calories or total carbs -- reversed a cluster of metabolic diseases in children, including high cholesterol and blood pressure.

In both studies, 43 children aged between 9 and 18 were recruited from the Weight Assessment for Teen and Child Health (WATCH) clinic at UCSF Benioff Children's Hospital San Francisco. The participants were obese and had at least one chronic metabolic disorder, such as high blood pressure, high triglycerides, or a marker for fatty liver. Eligibility was limited to Latino and African-American youth, who are at higher risk for metabolic diseases.

Over the course of nine days, the children were provided food and beverages that mirrored the same fat, protein, carbohydrate and caloric levels as their home diets. The difference was that sugary foods like pastries, sweetened yogurts and cake were substituted with starchy ones, such as bagels, pizza and hot dogs. Total dietary sugar was cut from 28 percent to 10 percent, and fructose from 12 percent to 4 percent of total calories.

Other 'Villain' to Blame for Cardiovascular Risks

In the current study, researchers compared baseline blood levels with those taken after 10 days and found not only the significant changes in triglycerides and ApoC-III, but also the disappearance of small dense LDL, a type of cholesterol increasingly considered a risk factor for heart disease.

"LDL is known as the 'bad' cholesterol, but it is more complex than that," said first author Alejandro Gugliucci, MD, PhD, of the department of research at Touro University California College of Osteopathic Medicine in Vallejo. "Many researchers now believe that high LDL is bad only when it is packaged in small containers – so-called small dense LDL. In our study, we found that small dense LDL, which is not normally seen in children, disappeared. We also discovered that the HDL particle got bigger, which is consistent with cardiovascular protection."

"While statins are effective in lowering LDL, they only reduce heart disease risk by 50 percent," Gugliucci noted. "The other villain is blood lipid triglycerides and the associated protein ApoC-III. Drug companies are looking for medicines to specifically block ApoC-III. We found in our study that just reducing sugar consumption did a wonderful job in lowering these two key risk factors by 30 to 50 percent."

"In order to get this degree of lipid and protein reduction by just eating less, a patient would need to lose more than 20 percent of their BMI, one-fifth of their body weight," said second author Robert Lustig, MD, MSL, a pediatric endocrinologist at UCSF Benioff Children's Hospital San Francisco.

"The blood lipid responses of these children is nothing short of astounding, and unrelated to calories or weight change," he said. "Combined with data from the previous study demonstrating improvement in metabolic health with sugar restriction alone, we have conclusively shown that sugar calories are not like other calories. Sugar is uniquely metabolized to fat in the liver, which leads to fat accumulation in the bloodstream, driving heart disease. As long as we focus on total calories rather than on what those calories are and how they are metabolized, the obesity, diabetes and heart disease epidemics will continue."

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COUNCIL

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water and sewer infrastructure as it relates to a proposed rate increase, and the city's continuing efforts to assist those businesses that would be hardest hit by

a result of the commission's deliberations regarding the East 5th Street mobile home park last year.

"Of course the big news for the planning commission in 2015 was the crude by rail project," Dean told the council.

"The affordable housing issue came out of the East 5th Street mobile home park discussion last year. When we looked at it we thought, here's a situation where the affordable housing policies come into play. Have we reviewed those recently, and