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## **Dietary fructose and glucose differentially affect lipid and glucose homeostasis.**

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### **Abstract**

Absorbed glucose and fructose differ in that glucose largely escapes first-pass removal by the liver, whereas fructose does not, resulting in different metabolic effects of these 2 monosaccharides. In short-term controlled feeding studies, dietary fructose significantly increases postprandial triglyceride (TG) levels and has little effect on serum glucose concentrations, whereas dietary glucose has the opposite effects. When dietary glucose and fructose have been directly compared at approximately 20-25% of energy over a 4- to 6-wk period, dietary fructose caused significant increases in fasting TG and LDL cholesterol concentrations, whereas dietary glucose did not, but dietary glucose did increase serum glucose and insulin concentrations in the postprandial state whereas dietary fructose did not. When fructose at 30-60 g (approximately 4-12% of energy) was added to the diet in the free-living state, there were no significant effects on lipid or glucose biomarkers. Sucrose and high-fructose corn syrup (HFCS) contain approximately equal amounts of fructose and glucose and no metabolic differences between them have been noted. Controlled feeding studies at more physiologic dietary intakes of fructose and glucose need to be conducted. In our view, to decrease the current high prevalence of obesity, dyslipidemia, insulin resistance, and diabetes, the focus should be on restricting the intake of excess energy, sucrose, HFCS, and animal and trans fats and increasing exercise and the intake of vegetables, vegetable oils, fish, fruit, whole grains, and fiber.

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