

Jenkins and Wolever's research, first published in 1981, led to a surprisingly vitriolic debate among diabetologists on the value of the glycemic index as a guide to controlling blood sugar. Reaven argued that the concept was worthless if not dangerous: saturated fat, he argued, has no glycemic index, and so adding saturated fat to sugar and other carbohydrates will lower their glycemic index and make the combination appear benign when that might not quite be the case. "Ice cream has a great glycemic index, because of the fat," Reaven observed. "Do you want people to eat ice cream?" Reaven also disparaged the glycemic index for putting the clinical focus on blood sugar, whereas he considered insulin and insulin resistance the primary areas of concern. The best way for diabetics to approach their disease, Reaven insisted, was to restrict all carbohydrates.

Paradoxically, the glycemic index appears to have had its most significant influence not on the clinical management of diabetes but on the public perception of sugar itself. The key point is that the glycemic index of sucrose is lower than that of flour and starches—white bread and potatoes, for instance—and fructose is the reason why. The carbohydrates in starches are broken down upon digestion, first to maltose and then to glucose, which moves directly from the small intestine into the bloodstream. This leads immediately to an elevation of blood sugar, and so a high glycemic index. Table sugar, on the other hand—i.e., sucrose—is composed of both glucose and fructose. To be precise, a sucrose molecule is composed of a single glucose molecule bonded to a single fructose molecule. This bond is broken upon digestion. The glucose moves into the bloodstream and raises blood sugar, just as if it came from a starch, but the fructose can be metabolized only in the liver, and so most of the fructose consumed is channeled from the small intestine directly to the liver. As a result, fructose has little immediate effect on blood-sugar levels, and so only the glucose half of sugar is reflected in the glycemic index.

That sugar is half fructose is what fundamentally differentiates it from starches and even the whitest, most refined flour. If John Yudkin was right that sugar is the primary nutritional evil in the diet, it would be the fructose that endows it with that singular distinction. With an eye toward primitive diets transformed by civilization, and the change in Western diets over the past few hundred years, it can be said that the single most profound change, even more than the refinement of carbohydrates, is the dramatic increase in fructose consumption that comes with either the addition of fructose to a diet lacking carbohydrates, or the replacement of a large part of the glucose from starches by the fructose in sugar.

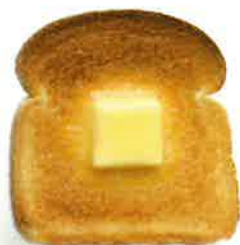
Because fructose barely registers in the glycemic index, it appeared to be the ideal sweetener for diabetics; sucrose itself, with the possible excep-

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# GOOD CALORIES,



# BAD CALORIES

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