

Bristlecone Med-fitness

"Damaging truth, I prefer it to advantageous error. Truth heals the pain which perhaps it evokes." -Goethe

HFCS...IS IT REALLY SO BAD?

I was shocked to read an article in the local newspaper singing the praise of high-fructose corn syrup (HFCS), as a preferred choice for "natural" sweetness! The article was discrediting the bad press the sweetener has received. The argument focused solely on the calorie content of HFCS, and pointed out that 1g of HFCS contains 4 calories, the same as sugar. Therefore, HFCS is the same as ingesting sugar... **Wrong!** Calories are not the concern with HFCS, rather, *it is the unhealthy metabolic pathway of fructose during digestion.* Glucose is metabolized and burned for energy by the cells, or it can be stored by the liver as glycogen (energy) for later use.

HFCS metabolizes very quickly, and it is preferentially stored in the liver as fat! This fat is known as triglyceride!

Fructose has dramatic effect on the blood lipid profile... even from fresh fruit! HFCS comes from corn, but it is far from being natural. Throughout human history, people consumed approximately 15g of fructose per day ($\frac{1}{2}$ oz) usually from fruits and vegetables. By 1997, the average consumption of fructose was already 81g (3oz) per day. *For the first time in history, Americans were consuming fructose at extraordinary high levels.* This consumption rate has continued to increase steadily up into the present; nutritionists have documented that the HFCS consumption parallels the increasing obesity and diabetes rates in the United States.

ALL SUGAR IS NOT CREATED EQUAL!

Why then, are we using HFCS as an additive? ***It's cheap!*** In the 1970's our nation went through an inflation crisis. All attempts were made to produce food at the lowest possible cost. Using a corn by-product as a sweetener proved to be the cheapest alternative to sugar. HFCS was introduced into our food supply in the 1970's. Food manufacturers embraced it because it was cheap and it mixed easily with a variety of products. Between 1970 and 1990 the annual intake of HFCS increased 1000% exceeding the change in intake of any other food or food group.

Prior to 1980, the obesity rate of Americans was relatively stable at approximately 20% of the population. Since the introduction of HFCS, the obesity & diabetes rates have steadily increased each year. In fact, in 2004 an investigative study was conducted on the correlative relationship between the consumption of refined carbs (most containing HFCS) & the prevalence of Type II diabetes. The study focused on the years between 1909 and 1997. They found that during this period the use of corn syrup sweeteners, which were non-existent at the turn of the century, increased by more than 2100%! The findings also confirmed a paralleling skyrocket in diabetes during this same time period! *Only the increase in corn syrup correlated positively with the increased prevalence of type 2 diabetes. (Life Extension Foundation, 08)* Scientists have therefore come to realize that all sugars are not created equal!

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DON'T BE RESISTANT!

A high flux of fructose to the liver disturbs carbohydrate metabolism and glucose uptake pathways; this directly leads to the hormonal imbalances that cause insulin resistance. The loss of cell sensitivity to insulin & glucose, which creates "resistance", is the hallmark of type 2 diabetes. ***Resistance doesn't just happen. It is the result of a reoccurring shock to the system due to a poor diet.*** In fact, type 2 diabetes typically develops for 10-15 years before it is positively diagnosed through the blood.

Common products such as bread, cereal, soda, fruit snacks, yogurt, baked goods, jams & jellies, ketchup, and even some soda crackers now contain HFCS additives. HFCS actually became a common and accepted additive, or filler, for many products during the "fat free" craze of the 80's. As fat was extracted from foods like ice cream & salad dressing, *HFCS was added* to maintain flavor.

That's why in comparing labels, fat free or low fat products will always have a significantly higher sugar/carb content than regular, full fat items. It is wise to have a proper understanding of the causative relationship between the macronutrients as they relate to obesity and optimal health...*please ask a trainer or email any questions you may have.* There are no dumb questions when it comes to preventative health! Nutrition has learned a lot since the 80's...dietary fat is no longer the problem; the focus is now shifting to highly processed & refined carbs such as HFCS.

THE AGE CONNECTION!

The adverse effects of dietary fructose are not limited to blood sugar metabolism; excess fructose also encourages the formation of AGE's, *advanced glycation end products*. AGE's are created when fructose (or sugar) binds to a protein molecule in the blood.

This linking alters the structure of the protein and damages its functionality. As AGE's accumulate in the blood, they encourage inflammation and oxidative stress. The altered structure, due to the binding, creates a "sharp edge" to the molecule much like crystallized honey. The bound fructose/protein (AGE) is very damaging as it travels through the bloodstream. In fact, AGE's are clearly linked to the worst health effects known to diabetes such as: the blockage in artery walls, stiffening of the artery, hypertension, loss of vision, neuropathy, accelerated aging, and chronic cardiac failure. It has been proven that fructose is far more reactive to the protein cross linking which creates AGE's. ***The rate of AGE development from fructose is 10 times greater than the linkage rate of glucose.*** Yes, fructose is a naturally occurring form of sugar found in fruits & vegetables. However, when it is condensed and refined into a corn syrup additive, it is no longer natural! ***Check your labels.*** High fructose corn syrup can be disguised on a label as syrup, corn syrup, fructose syrup, corn sweetener...it's all the same! Another popular trick is to advertise "less than 1g of corn syrup per serving." As you calculate the serving size, you will soon realize that most people eat several servings at one sitting! *Thus, you are still ingesting many grams of HFCS.*

~Kelly & Julie