

Treating Diabetes From A Nutritional Perspective – PART TWO

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Last month we began our discussion by identifying factors that contribute to the onset of diabetes. This month we will look at ways to reduce those contributing factors.

THE ROLE OF DIET IN SOLVING THE PROBLEM:

Diet plays the major role in regulating blood sugar levels. As a general rule, the more processed and refined a food is, the faster it will breakdown into its component nutrients in the digestive tract and be absorbed into the blood. These nutrients then travel to the liver and get rerouted from there or are carried by the blood directly to body tissues. As noted in part one of this series, processed starches and simple sugars become absorbed quickly and the glucose derived from their breakdown must be removed from the blood into the cell. This process is largely facilitated by the hormone insulin. Insulin is secreted by the beta cells of the pancreas.

Eating carbohydrates that have been minimally processed will, as a general rule, result in a slower release of glucose into the blood and subsequently result in a slower release of insulin. Many foods have been categorized as to their glycemic (G.I.) response in the body. Glycemic response has to do with the rate at which a carbohydrate will breakdown into glucose. The standard is set as pure glucose having a rating of 100. The glycemic range is as follows: A low G.I. food is below 55, an intermediate G.I. food is between 55 and 70 and a high G.I. food is more than 70. For example, Kellogg's Corn Flakes have a G.I. of 84. This means that this food has a high G.I. and its carbohydrates will rapidly turn into glucose. Old Fashioned Oatmeal has a G.I. rating of 49 which means that this carbohydrate food will break down into glucose much slower. The Kellogg's Corn Flakes are much more processed and have sugar added, whereas the Oatmeal is much less processed.

While, as a general rule, the less a food is processed the lower will be its glycemic rating, this is not always the case. A baked potato has a rating of 93 where as French fries are rated at 75. Why would the less processed baked potato have a faster blood sugar response than the more processed French fries? The starch in the baked potato has a highly gelatinized (swollen) surface making it more accessible to digestive enzymes and therefore rapid breakdown into glucose. The French fries have more fat because of being fried in oil. The fat actually slows down the digestive process and therefore increases the time it takes the carbohydrate to break down into glucose. It must be remembered, however, that both the baked potato and the French fries have high glycemic ratings which should be a consideration in developing a sugar control diet. In addition, the French fries have more fat, including the dangerous trans fats, and therefore are overall less healthy than the baked potato.

There are two basic types of starch in foods. One is called amylose and the other amylopectin. The ratio of one to the other in a food has a direct affect on the glycemic index of that food. Amylose is a straight chain of glucose molecules tightly bound together and therefore hard to gelatinize and therefore slow to digest. Amylopectin is a string of glucose molecules with lots of branching chains which results in a starch that is easier to gelatinize and therefore, more easy to digest.

Foods that have little amylose but lots of amylopectin have higher glycemic ratings. Wheat flour is an example of a high amylopectin carbohydrate. Basmati rice and most legumes have a lot of amylose and therefore are examples of foods having lower glycemic ratings. Pasta that is made from durum wheat (semolina flour) will generally have a low glycemic rating because durum wheat is very hard when milled. This results in larger particles with

less gelatinization and therefore slower digestion.

A good book to read on the subject of glycemic index is The Glucose Revolution. This book will explain the glycemic index in detail and provide glycemic ratings for hundreds of foods, including combinations of foods that make up meals. As a general rule, you will greatly improve your blood sugar control by avoiding white flour bakery products, processed breakfast cereals, candies, soda waters and most snack foods. You will experience improvement in your blood sugar metabolism by eating more whole grains such as brown rice (G.I. of 55), legumes such as kidney beans (G.I. of 27), and lentils (G.I. of 30). Unprocessed fruit is almost always a good choice. An apple (G.I. of 38), a plum (G.I. of 39), and a grapefruit (G.I. of 25) are low glycemic foods that also provide good overall nutrition. Pastas, by and large, have a low glycemic index. Try to eat pasta made from whole grain flours. To obtain the glycemic index on a variety of food, you can visit www.glycemicindex.com.

THE FRUCTOSE QUESTION:

Since sucrose has become such a recognized contributor to high blood glucose levels, many food manufactures have begun to substitute the monosaccharide fructose in their products. It's believed that this sugar is safer, as it is not immediately turned into glucose, but travels to the liver where it is largely converted to glycogen. Glycogen, which is a stored starch made up of glucose, is released by the liver as needed by the body. Upon its release, glycogen is broken down into glucose. It is at this point that insulin gets involved in having to remove this glucose from the blood into the cells. In 1980, the average person ate 39 pounds of fructose and 84 pounds of sucrose. In 1994, the average person ate 83 pounds of fructose and 66 pounds of sucrose. You can see how fructose consumption has →

accelerated. You can also see how total simple sugar consumption has increased.

Fructose is naturally found in fruit, therefore its name. The fructose being used by the food industry is not derived from fruit as that would be much too expensive. Commercially used fructose is instead derived from corn syrup and in reality is a blend of 55 percent fructose and 45 percent glucose. While the fructose does not immediately convert to glucose, the glucose in this blend will raise blood sugar quickly and therefore must be processed out of the blood by insulin. Substituting fructose for sucrose is not improving things very much.

In addition to being converted to glycogen, fructose also stimulates the liver to produce triglycerides. In research done with feeding men a high glucose or a high fructose diet, it was the high fructose diet that led to significantly higher triglyceride levels in the blood. Fructose converts to fat more readily than any other sugar. Other research has shown that fructose caused an increase

in serum cholesterol and low density lipoproteins (LDL). Fructose ingestion increases uric acid levels which can lead to inflammatory problems.

It should be apparent that fructose from corn syrup is not the answer to improving blood sugar control. When fructose is analyzed relative to its fat generating effect, we have even more reason to avoid it. Fructose found in fruit and vegetables is present in small amounts and is combined with fiber and a variety of nutrients. This is the way you should eat your fructose.

In part three of this series we will evaluate the available sugar substitutes. Visit www.milkandhoneyhealthfoods.com for comprehensive articles on many aspects of health and nutrition.