

The Glycemic Index

Healthy Lifestyle

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Health Concepts - Glycemic Index

We've become too lackadaisical about our food. It's far too easy to poke a coin into a machine or drive up to a window for something in the form of food to consume. Consider this. Should blood glucose levels rise above 180 mg/dL (a measurement of glucose in the blood stream), for a prolonged period of time kidney failure, blindness, and hardening of the arteries can result. If one's blood sugar drops below 40 mg/dL, coma, seizure, or even death may occur. Therefore, our bodies have a sophisticated hormonal system that is continuously working to maintain blood sugars in the optimal range, which would be between 80 mg/dL and 180 mg/dL.

There are two major hormones, which are primarily involved in controlling blood sugars. Insulin lowers blood sugar and is essentially our "storage hormone" and drives the sugar into the cell to be utilized or stored as fat. Glucagon is the opposite hormone of insulin and essentially takes stored fat and changes it into sugar as means of increasing blood sugar levels. Amazing findings are being revealed about what takes place in our bodies when we eat what is now referred to as a high glycemic meal. We now know why so many Americans and people who live in industrialized countries are becoming overweight, diabetic, and having heart attacks.

All carbohydrates are simply long chains of sugars: they are digested and converted to glucose. Since the early 1900's, it was believed that the digestion rate and conversion to glucose was directly related to the length of the chemical sugar chain. This gave rise to the terms "complex carbohydrate" and "simple sugar," a limited concept leading dieticians and physicians alike to recommend the consumption of starchy foods along with a decreased consumption of sugar.

In the early 1980's, however, the concept of chain length in carbohydrate digestion rate was questioned. Since then, many researchers have focused on *how fast* specific carbohydrates are absorbed by the body and converted to sugar, thus determining the body's insulin response.

Many researchers now propose the use of the *glycemic index*-the rate of how fast blood sugar levels are raised after a particular carbohydrate is consumed-as a system for classifying foods

containing carbohydrates. This concept was thoroughly reviewed in a major article, which appeared in the May 8, 2002 issue of the *Journal of the American Medical Association* titled, "The Glycemic Index", written by David Ludwig, M. D. This article draws heavily on Ludwig's findings.

Glycemic index is determined by the rate the blood sugar rises following the ingestion of a particular carbohydrate when compared to a control (usually straight glucose). Glucose is usually given a glycemic index of 100. Therefore, all other carbohydrates are compared to the absorption and rate of blood sugar increase following the ingestion of glucose. Table 1 lists a sample of a few carbohydrates and their glycemic index. Many studies use white bread as their control, which has a glycemic index of 70 when compared to glucose. This has created significant confusion and variation in the glycemic numbers. I have chosen to use glucose as the standard, since this is the control being used in most of our medical studies. Table 1 also lists a new concept known as the *Glycemic Load*.

The glycemic load is defined as the weighted average glycemic index of the individual food multiplied by the amount of calories the food actually contains. A particular carbohydrate may have a high glycemic index but is low in calories, like carrots, or they may have a high glycemic index and a high in calories, like potatoes. Some carbohydrates like peanuts have a low glycemic index and a low glycemic load. In general, most refined starchy foods and highly processed foods have a high glycemic index, whereas whole foods like fruits, vegetables, and legumes tend to have a low glycemic index.

Table 1 Glycemic Index and Glycemic Load Values of Representative Foods

| Food | Glycemic Index | Glycemic Load |
|--------------|----------------|---------------|
| Glucose | 100 | 21.0 |
| Instant rice | 91 | 24.8 |
| Baked potato | 85 | 20.3 |
| Corn flakes | 84 | 21.0 |
| Carrot | 71 | 3.8 |
| Rye bread | 65 | 19.5 |
| Banana | 53 | 13.3 |
| Apple | 36 | 8.1 |
| Lentil beans | 29 | 5.7 |
| Milk | 27 | 3.2 |
| Peanuts | 14 | 0.7 |

Following a high glycemic meal the blood glucose level quickly rises, which initially causes the beta cells of the pancreas to secrete insulin. Insulin drives the glucose into the cell to either be utilized or stored as fat. The blood sugar will then usually drop precipitously and can actually get too low. This is called "functional hypoglycemia." The regulatory responses of the body will then kick into action, leading to the release of glucagon, the fat burning hormone, in an attempt to counteract the actions of the insulin in an attempt to get the blood sugars to rise again.

We have all experienced a time in our life when this has happened to us personally. If we go without eating, we get weak and shaky and can hardly think. Our appetite increases and even after our blood sugars are back into a normal range, we will still feel like we must eat something. In fact, we tend to crave high-glycemic foods and the cycle starts all over again. On the other hand, when a low glycemic meal is eaten, none of this happens. The blood sugar will rise slowly and there will be a nice balance of insulin and glucagon. The blood sugar stays in a normal range and concentration comes more easily. Because no rebound of low blood sugars takes place, there is no craving of high carbohydrates foods.

Conclusion

For too long we've underestimated not only the power of food, but the delicate balance that must be kept in order to keep our hormone systems running smoothly. Researchers are finally realizing the health dangers of high glycemic carbohydrates and the undeniable dangers of insulin resistance. It is time for us to put this knowledge into action. Contrary to popular American diets, fat is not the enemy but instead it is high-glycemic carbohydrates.

You need to combine low-glycemic and medium glycemic carbohydrates with good fat and good proteins. You need to be eating for hormonal control and not calorie control. You need to combine these good foods in each and every meal or snack with the focus being on not spiking the blood sugar. By avoiding white bread, white flour, pasta, rice, and potatoes along with all other highly refined starches and processed foods and replacing them with whole grain breads (contains the entire grain), whole grain pasta, whole grain rice, red potatoes (these are lower glycemic), and whole fruits, vegetables, and legumes you will be making great strides toward balancing your blood sugar levels.

What about the need to lose weight? The goal is to eat for hormonal control (not spiking the sugar)-not calorie control. When the healthy eating habits found at are combined with a modest exercise program and high-quality nutritional supplements, you will see significant weight loss (if you need to lose weight).

Click [here](#) to view a list of Recommended Foods To Eat.