

## Glucose Disposal Agents?

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Looking at the title of this article, I'm sure many of you are saying to yourself "well, I know what glucose is, but why would I want to throw it in the garbage? And how is James Bond going to help me get in shape?" Ha Ha, I get it. The name of the group of supplements we're going to focus on may sound a bit odd, but once you understand how the body actually handles and utilizes glucose, and how certain supplements can aid in the process, it will all make perfect sense why I believe it's worth mentioning.

Glucose, the most basic form of carbohydrate, is used by the body as its primary fuel source. It can be extracted from foods, stored for later use, even created from other macronutrients in cases of scarcity. When you ingest carbohydrate containing foods, this triggers your body to secrete higher amounts of the hormone insulin, which in turn binds with receptors on the cells, allowing nutrients to flow into the cells. This is how the resulting high glucose concentrations circulating in the blood stream are lowered, often referred to as "clearing" the high blood sugar levels. There is an opposite situation, when blood glucose levels are low, and a different hormone called Glucagon signals an increase in blood glucose levels, but that's not really important with GDA's.

The role of insulin is vital, as any athlete can tell you that it can indeed be your best friend, or your worst enemy. Shuttling nutrients into muscle cells for growth and recovery? You need insulin. Storing excess food you've eaten as body fat? Yup, insulin too. Certainly a double edged sword no doubt. Some people, due to either medical conditions or situations created through lifestyle choices, experience something that has been termed insulin resistance. This is when cells do not utilize insulin effectively.

Such a condition can lead to a buildup of sugar within the blood stream, and can result in a whole host of negative health issues; damage to your blood vessels, heart disease, stroke, not to mention diabetes all becoming very possible, or it can end up with the uptake of sugars mostly by tissue that you'd rather not do so much of the work. Either situation is certainly less than desirable.

Some people may find themselves being labeled *Insulin Sensitive* (sometimes called *carb sensitive*). No, that doesn't mean that they over react when someone else takes the last roll on the table at dinner. It means that when high amounts of carbohydrates are consumed, the resulting insulin release binds mostly to receptors on muscle cells and liver cells, leaving only a very small amount binding to the receptors on fat cells. You can see how this would be ideal for anyone trying to build muscle and minimize body fat accumulation. Imagine these lucky individuals as those friends you hate because they can eat all sorts of foods (mostly carbohydrate based) and seemingly never get fat.

People who are *Insulin Resistant*, on the other hand, suffer a very different situation. The receptors on muscle, liver, and peripheral cells become somewhat less responsive to the effects of insulin. The response of adipose tissues tissue (fat cells) doesn't though, and so the secreted insulin has no problem triggering a larger uptake of nutrients by fat cells. Also, because the muscle and liver cells aren't taking their share, the high levels of insulin can remain for a while, as the body continually tries to push more and more glucose into the fat cells.

So how can we positively affect our individual insulin sensitivity? Obviously exercising, and eating a healthy diet play a huge part, but there are also certain foods and supplements that can have an added benefit. Some work by means of amplifying the effects of the insulin normally released by the body.

Others are able to actually mimic the effects of insulin, triggering nutrient uptake by cells. Still others manage to improve the insulin signaling to allow the process to move along as it normally would.

Including certain foods in your diet, or supplementing with them, can certainly have a positive effect. Fish Oil, Garlic, Tumeric, and Cinnamon have all be shown to have benefits, and all can be very easily worked into a healthy nutrition plan. Other items, are more sports specific, in that you're most likely not going to find them just walking into your local supermarket. Products like R-ALA (R-Alpha Lipoic Acid), Bitter Melon, even Chromium Picolinate and Vanadyl Sulfate (both big headline products when they hit the market in the early 90's) can all be worthwhile when incorporated into a well-planned out diet and exercise program. Some sports supplement manufacturing companies have taken this understanding and included certain ingredients in their "fat loss" or "fat burning" products, banking on a synergistic effect with the usual stimulant based approaches that flood the market. Of course for the people who just hope a magic pill will completely change their physiology without also putting in the work of watching their nutrition and engaging in exercise: prepare to be disappointed. For everyone else, definitely take a look into these amazing products.