GDA’s

Glucose disposal aids (GDA's for short) aim to help the body distribute, or partition, nutrients in a more favourable way, mainly towards muscle tissue. This is of particular importance for those looking to gain quality muscle and maintain a high carb intake.

The main hormone controlling nutrient partitioning is insulin. A more specific factor is insulin sensitivity between your muscle and fat cells. Ideally the muscles will be more responsive to taking in the goodness from food rather than fat cells. If you improve your nutrient partitioning, your body tends to support more muscle and less fat. Quite a clever trick as our survival mechanisms are primed to do the opposite. Fat is a handy reserve, whilst muscles are energy demanding.

Insulin sensitivity is strongly related to body fat. When it’s impaired then fat increases. As does inflammation around fatty areas, which, in turn, worsens insulin sensitivity. A vicious cycle sets in. Insulin resistance is a bad thing, as it means that your cells do not respond well to the presence of insulin. This has a strong link with weight gain and obesity as you struggle to utilise food for energy. It can make you feel tired and crave sugar.  
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Over the years many bodybuilders have resorted to using drugs which strictly belong in a diabetic’s medicine cabinet. The most dangerous of which is insulin itself. This potent drug drives nutrients from the bloodstream into other tissues. It really isn’t fussy where. Muscle would be ideal, but insulin is a real slut and has receptors everywhere. Another considerable drawback is how readily it will kill you. If blood sugar levels drop too dramatically a coma will ensue. Unless someone with medical knowledge finds you soon enough it’s game over. Less hazardous options are oral blood glucose lowering drugs.

Metformin is a one such drug and probably the most commonly used, lowering both baseline and post meal blood glucose. It does not stimulate insulin secretion and therefore does not produce hypoglycaemia (dangerously low blood sugars).

Metformin is thought to act in three different ways: (1) Reduction of glucose production in the liver. (2) Increasing insulin sensitivity in the muscles, improving glucose uptake and the way it’s used. (3) Delaying glucose absorption from the gut.

Aside of its action on blood sugars, metformin also has a useful effect on lipids. These are the fats in our blood. This has been shown in controlled clinical studies: it reduces total cholesterol, LDL (bad) cholesterol and triglyceride levels. Not a bad set of characteristics, but there is a price. Firstly, it’s a prescription only item, and secondly, the side effects can be troublesome. They include stomach pain, poor appetite, nausea and diarrhea.

This has led to a surge in natural sports supplements which mimic the action of these medicines.

ALA (alpha-lipoic acid) is one of them. A few studies have suggested that ALA supplements may enhance the body's ability to use its own insulin to lower blood sugar in people with type 2 diabetes. This is a step in the right direction.

Interestingly, ALA has been found to stimulate glucose uptake by muscle similar to that of insulin. All well and good, but if blood sugar levels fall too low (generally less than 4mmol/L on a finger prick test) you can feel bloody awful. This is called hypoglycaemia. It translates literally to ‘low blood sugars’ and is commonly called a ‘*hypo*’. Symptoms include feeling shaky, sweaty, pale, hungry, irritable and blurred vision.

Although ALA has been well-studied and found to be safe in humans (typically in doses of 300-600mg), very high doses are toxic so do not exceed recommended doses.

Berberine is an increasingly popular supplement. And perhaps with good reason. Berberine is one of the few supplements with human evidence that establishes it to be as effective as pharmaceuticals. Cool.

It seems able to reduce glucose production in the liver. Human and animal research demonstrates that 1500mg of berberine, taken in three doses of 500mg each, is equally effective as two different, commonly prescribed drugs for treating type II diabetes.

However, berberine has a high potential to interact with medications. Some interactions may be serious, particularly a class of antibiotic which, when taken together, can cause heart problems. Simply stop using a GDA if you’re prescribed any. Chances are you’ll feel like shit and won’t be up for training anyway.

Berberine by itself reduces blood sugar only if they’re elevated. However, the reduction in blood sugar from berberine may make other hypoglycaemics, such as ALA, more likely to cause hypos.

Glycomax by STROM Sports Nutrition is a promising example of a GDA supplement. It has a multi-pathway action to increase nutrient uptake into muscles. It works by the insulin mimicking action of ALA, alongside the reduced likelihood of fat storage and improved insulin sensitivity of berberine.

Some report if they don't eat enough carbohydrates with GDA supplements their blood sugar levels can drop into a hypo. This can be dangerous (when driving, for example), so if you do use a GDA, make sure you've got some sugary, high GI carbs around just in case, such as sweets or Lucozade. Also, build up the dose gradually and monitor how you feel. Use a blood glucose monitor to get an idea of how it's working or have an HbA1C blood test to measure blood sugar levels over the previous 3 months.

It’s nice to see some evidence based natural alternatives to drug use, but, as always, please use sensibly.

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