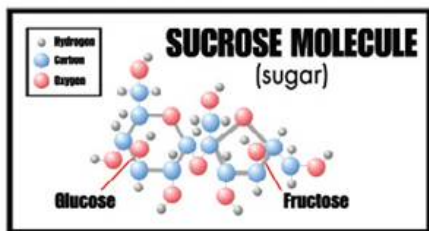
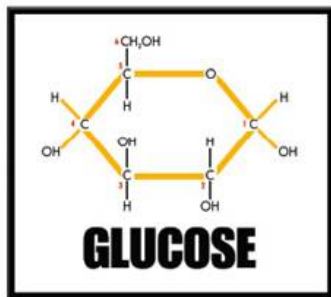


# Vital Nutrition

## Simple Carbohydrates:

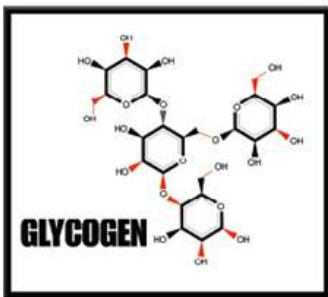
Simple carbohydrates are either monosaccharides or disaccharides. Mono is a single sugar molecule not attached to any others. Glucose (pictured right) is a monosaccharide. Disaccharides consist of pairs of single ring sugars bonded together. Pictured below is a sucrose (table sugar) molecule, which consists of one glucose unit bonded to one fructose unit.



When you're in need of a quick pick-me-up, simple carbs are great for immediate energy. But, be prepared for the crash. Your blood sugar spikes when you take in simple sugars and insulin is released to lower blood glucose back down to normal. Take Red Bull for example, which has 26g of sugar. You get a rush of energy, but it only lasts maybe 45 minutes to an hour. Simple carbohydrates are processed quickly by the body and therefore are not a good source of sustainable energy.

## Complex Carbohydrates

Complex carbohydrates are polysaccharides (poly meaning many). These carbs are composed of long chains of single-ring sugars. Examples of polysaccharides include starch, dextrin, glycogen, and cellulose. Glycogen is the body's "storage" form of carbohydrate and provides reserve energy, unlike glucose, which provides immediate energy.



The simpler the sugar molecules that make up a carbohydrate, the more complex the carbohydrate is and the higher its "molecular weight." Molecular weight is a commonly used term to describe and differentiate complex carbohydrates. So, let's take a look at how all of this applies to Max ACM.

**Max ACM, Advanced Carbohydrate Matrix,** contains a scientifically-based Triple Carbohydrate Matrix featuring three different molecular weight carbohydrates: waxy maize starch (amylopectin), maltodextrin and trehalose. Each of these complex carbohydrates provides our bodies with a unique and effective response.

**Amylopectin (Waxy Maize Starch):** Waxy Maize Starch is a huge polysaccharide made up of branched

glucose polymers that have numerous chains of up to 30 glucose molecules. Waxy maize starch passes quickly through the stomach and is broken down and absorbed in the small intestine. Because of its high molecular weight and long chains, waxy maize has a sort of "time release" effect. It takes the body more steps to break down this monster molecule to its base component of glucose, thus providing sustained energy release.

**Maltodextrin:** The maltodextrin portion of the Triple Carbohydrate Matrix is a short-chain polysaccharide made up of 3-20 dextrose (glucose) molecules and is the intermediate energy source in Max ACM. Maltodextrin has been shown to support high levels of energy during endurance exercise and is an ideal carbohydrate for energy replacement drinks.

**Trehalose:** Trehalose is a disaccharide (two sugar) molecule composed of two smaller glucose molecules linked together. A relatively new compound to the endurance energy market, it can be found in many types of plants and it occurs naturally in a variety of foods such as mushrooms, honey and baker's or brewer's yeast. Commercially, trehalose is made from cornstarch. Preliminary research indicates that when tested as a sports beverage supplement, trehalose elicits a lower insulin response than glucose when provided to competitive and recreational athletes before or during continuous exercise. Trehalose has a mildly sweet taste and only 3.6 calories per gram. Interestingly, trehalose has been reported to be the most effective sugar for stabilizing proteins. And according to Dr. Harvey, "trehalose aids in nutrient absorption and may increase the bioavailability of other nutrients."

*(See the sidebar on page 47 for how Max ACM helps different athletes.)*

## How Max ACM Came To Be

Several years ago, sports nutrition companies jumped on the whey protein bandwagon. "Whey protein was the hot new product and most formulas on the market at that time were all single-source in nature, meaning the formula was comprised of one type of protein," explains Sean Greene, president of Max Muscle Sports Nutrition. During this period, MMSN followed some of the world's foremost experts' research in protein and observed that combining multiple sources of protein allowed the body to assimilate protein and maintain positive nitrogen retention better.

Based on that research, MMSN developed a number of multi-source proteins, such as High 5 and Max Pro, both of which remain MMSN's top selling products today. "Leveraging off that experience, our Product Development team, headed by Dr. Phil Harvey, formulated an advanced carbohydrate product for the endurance market and serious athletes, applying the same multi-source strategy," says Greene. "The result, Max ACM, is a completely unique product with three very different carbohydrate sources, each with its own breakdown and absorption times to create a time-release carbohydrate loading product."

**MS&F**