



FAQs

What is glucose and why is it so important for exercise?

Glucose, the carbohydrate source in *gleukos™ sports drink*, is the most simplified form of energy and the main energy currency of the body. The body relies heavily on glucose as a fuel source for activity whether you are exercising or resting; the harder or faster you workout or run, the more glucose you burn. Glucose fuels your working muscles to better your performance and enhances alertness because the brain also relies on glucose fuel for proper functioning. When glucose levels decline, the body cannot ignore this and leads to impaired athletic performance. All other forms of carbohydrate are converted into glucose prior to entering the body's energy system.

Why is glucose a preferred carbohydrate over fructose and sucrose?

Glucose, the main ingredient in *gleukos sports drink*, is the preferable carbohydrate due to its rapid absorption (fast energy delivery), lack of adverse digestion side effects and mildly sweet taste. Glucose is the only immediate source of energy for working cells; it is metabolized in every cell of the body while other carbohydrates such as fructose must be metabolized by the liver, prior to providing energy for working cells.

Sucrose is also known as common table sugar and is the sweetest tasting of all the sugars (artificial sweeteners are not considered true 'sugars'). Avoidance of sucrose is an oft-recommended health suggestion. It is so prevalent in food today that it receives much of the blame for many calorie-associated diseases. Sucrose is a main ingredient in most junk foods and beverages, and is notorious for its adverse health effects such as the development of dental cavities, diabetes, insulin resistance, obesity, and elevated triglycerides, which are a risk factor for the development of atherosclerosis (hardening of the arteries). Because of the high caloric content of sucrose and the excess amounts of sucrose consumed regularly, the body will store it in the form of fat in the organs or on the body, or in the blood as triglycerides. The molecular shape of sucrose allows it to hold water in the stomach and intestines prior to absorption, which can lead to inhibited water absorption in the digestive track resulting in bloating, gas and diarrhea. In addition, sucrose absorbs slowly into the bloodstream (energy delivery), evident by the fact that the glycemic index of sucrose is lower than that of glucose.

Fructose Fructose also robs energy stores in the liver during its metabolism, and taxes the body of its vitamins, minerals and enzymes during assimilation. Fructose is converted into fats more readily than other simple carbohydrates and raises triglycerides (a type of fat in the blood that causes negative health consequences). In people who tend to have more acidity in their body (diabetics, high stress, and high protein turnover [athletes], fructose

can lead to increases in blood lactic acid levels. And, in order for fructose to completely metabolize, it actually robs the liver of stored ATP energy.

Roughly 37% of people are unable to fully absorb fructose when supplied in a solution, and some people can only absorb less than 15 grams of fructose at a given time. Gas and diarrhea are common occurrences due to malabsorption. Fructose can also slow digestion in general, leaving an athlete thirsty and running low on fuels. A common misconception regarding the preference of fructose during exercise is that fructose will not stimulate insulin release and consequently inhibit the use of fats for fuel in exercise. This is unfounded, as secretion of insulin does not occur during exercise.

Maltodextrin is a synthetically manufactured long chain carbohydrate, sometimes hundreds of sugar molecules in length, that is artificially created when acids or other enzymes are applied to cornstarch, which breaks the starch into medium-length chains of dextrose (glucose) molecules. Maltodextrin may be disguised on labels with different names; sometimes it is referred to as “glucose polymers” or complex carbohydrate.

Maltodextrin does not provide the long-term energy that a true complex carbohydrate does. Because of its large size, it must first be enzymatically altered by the body before its benefits are realized in the form of energy.

Naturally occurring complex carbohydrates often contain some vitamins and minerals that are required to assist assimilation of the carbohydrate into the body’s energy processes. In one sense, nature packages them this way, so that the complex carbohydrates bring their own digestive and energy cofactors with them, into the body. Conversely, maltodextrin typically contains very little, if any vitamins and minerals to assist with its own digestion and assimilation. Because of this, consuming maltodextrin may actually reduce the amount of vitamins and minerals in the body. Due to the large size of maltodextrin, it uses more vitamins and minerals than will a simple carbohydrate, which can lead to a net decrease in an athlete’s vitamin and mineral status over time.

What are electrolytes and how do they affect athletic performance and health?

Electrolytes are vital to physiologic function and athletic performance. High or low levels of electrolytes are detrimental to performance and health. The term ‘electrolyte’ is a medical word for the electrically charged minerals in the body. Electrolytes are vital to health, and act as chemical messengers in the body carrying electrical impulses from the nerves to control all tissue function and movement. An imbalance of any of the electrolytes can lead to serious disruptions in physiologic function. Many bodily processes are highly dependent on them, primarily heart and nerve function, muscle coordination and control, and maintenance of the body’s fluid levels. Examples of two important electrolytes are potassium and sodium.

Why does *gleukos* contain three times the amount of potassium and less sodium than other sports drinks?

A majority of foods and beverages contain an overabundance of sodium and low potassium in relation to the standard American diet. *Gleukos* provides the optimal amount of electrolytes for the active person, with 175 milligrams of potassium and 40 milligrams of sodium per 8oz serving.

Sodium: Sodium is highly important for the regulation of fluid levels outside of the cells in the body. It is an essential factor in hydration as it 'holds' water in the cells. Too much sodium leads to increased thirst; extra amounts of sodium are rarely necessary. While sodium is highly important as an electrolyte, it is found at excessively high levels in many foods and drinks. The minimum physiological requirement for sodium is 500 milligrams per day. In the meantime, the average American diet contains roughly 3000 to 5000 milligrams of sodium per day, far exceeding the minimal requirement. For optimal health, it is recommended that one consume less than 2400 milligrams per day. Excessive intake of sodium is associated with hypertension (high blood pressure) and swelling in the tissues. Additionally, high sodium levels are associated with osteoporosis (thinning of the bones) due to sodium's effect on increasing urinary loss of calcium. Despite the widespread prevalence of sodium in the diet, many sports drinks continue to add high amounts of sodium into their formulation. This is done primarily for flavor enhancement, rather than for the claim that people need extra amounts of sodium, which is incorrect.

Potassium: Potassium is an important electrolyte that works alongside sodium in the body. Potassium is integral to maintaining the body's fluid balance with sodium. Along with sodium, it is one of the main electrolytes that are consistently lost in sweat. Potassium is the most abundant electrolyte found inside the cells of the body, and is essential for many physiologic processes including nerve impulse transmission, heart and skeletal muscle contraction, and processing of carbohydrates (energy production). Potassium is typically found in low amounts in the standard diet. Potassium needs to be replaced during and after exercise.

The daily recommended allowance of potassium is roughly 3.5 grams per day. Potassium is found in many fresh fruits and vegetables. The potassium found in vegetables is often lost in steaming and other forms of processing. The standard American diet contains roughly 2000 to 6000 milligrams of potassium per day; levels tend to be lower in people who sweat heavily, take certain prescription drugs, drink coffee and/or alcohol and consume a high-salt diet. Also, people that follow low-calorie or fad diets, off-again, on-again dieting regimens or those that consume diet pills, diuretics (blood pressure medications) or laxatives may be susceptible to low levels of potassium.

Potassium is typically found in low levels in many sports beverages, and has a taste similar to sodium. *Gleukos* contains plenty of potassium to provide the optimal balance of these two vital electrolytes.

What affect does the Glycemic Index (GI) have on athletic performance?

The rate at which circulating levels of blood sugar rise is referred to as Glycemic Index (GI). A high GI food means the carbohydrate gets into the system faster than a low GI food. Glucose has the highest GI possible; it is significantly higher than other simple carbohydrates such as fructose or sucrose. High GI foods or drink are preferred over low GI during exercise since the muscles use sugars as a fuel and require them in rapid supply. This is also recommended immediately following exercise, as the muscles preferentially absorb this to restore their fuel reserves.

When should I consume *gleukos* sports drink?

For optimal performance by elevating and maintaining energy levels, drink 8oz before and after exercise, and every 15-25 minutes during. Word on the street is that *gleukos* will out-do your morning coffee, is non-addictive, and really helps a hangover.

Where can I purchase *gleukos*™ sports drink?

Gleukos is available in specialty grocery, grocery, natural food stores, sports retailers and select online retailers in both ready-to-drink and dry mixes. If you don't see it where you shop, ask for it and let us know so we can help get it there!

Is *gleukos* safe for people with diabetes?

Yes, *gleukos* is safe for active diabetics with well-controlled blood sugars. In fact, *gleukos* is helpful for people with diabetes during exercise, as it will prevent drastic falls in blood sugar that can occur during and after activity.

Gleukos contains optimal amounts of simple carbohydrates to maintain blood sugar, yet does not contain an overabundance of them like other foods and beverages such as fruit juice, soda, and energy bars.

Staying hydrated can be more of an issue in a person with diabetes. *Gleukos* provides both the electrolytes and fluids that are necessary for optimal hydration status. People with diabetes should consult their physician prior to altering their diet.

What do ingredients like ester gum and brominated vegetable oil, and artificial colors and dyes found in other sports drinks do for an athlete?

Nothing, and some of these ingredients have actually been tied to adverse side effects to a person's well-being. Artificial colors and food dyes such as Yellow #6 and Red #40, and other chemicals have recently been tied to behavior and learning problems, and other health problems. Some side effects are ADHD, Oppositional Defiant Disorder (ODD), and Obsessive Compulsive Disorder (OCD) Ester gum (EG) is used in citrus oil-based beverage flavourings as a weighting or colouring agent. Brominated vegetable oil (BVO) is vegetable oil that has been mixed with the element bromine. Brominated vegetable oil is used as an emulsifier in citrus-flavored soft drinks such as Mountain Dew to help natural citrus flavors stay suspended in the drink. The bromine is mixed with the vegetable oil so that it will have a density identical to the water in the drink. yum.

What is precycling and how does *gleukos* support it?

Precycling is a new concept in source reduction, created as part of an effort to solve our landfill and environmental problems through making environmentally sound purchasing decisions.

Gleukos uses packaging that is environment-sensitive. Most of the drinks you see on your grocery shelf are made from recyclable PET. According to the Container Recycling Institute, less than 22% of PET containers actually get recycled. The rest, about 4 out of 5, end up in a landfill! *Gleukos* chose to have a positive impact where the most difference can be made: in the landfill. That's why *Gleukos* has chosen flexible or soft packaging. *Gleukos* flexible packaging takes up 96% less space in a landfill than traditional PET bottles. In addition, flexible packaging requires 75% less energy to produce and is 100:1 times more efficient when it comes to transportation energy used to deliver packaging (it

would take about 100 semi-trailers to deliver the same number of flexible pouches that fit in only 1 semi-trailer).

Flexible packaging falls under the environment sustainability practice known as **precycling** in which consumers should:

1. Purchase only what you need and use it before it spoils.
2. Purchase products with the least amount of packaging and products packaged in recyclable materials.
3. Make choices that emphasize, in the following order:
 1. no packaging
 2. minimal packaging
 3. consumable packaging
 4. returnable, refillable or reusable packaging
 5. recyclable packaging/recyclable material in packaging

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