

Hydrade vs. Gatorade

A common question by consumers and distributors is; how does Hydrade compare to Gatorade and Powerade? This question is always followed up by; why do the added ingredients in Hydrade, especially glycerol, make Hydrade better than Gatorade and Powerade?

Before answers can be given, it is important to first compare the contents of Gatorade and Powerade to Hydrade. These contents are presented in Table 1.

Table 1. Contents* within Gatorade, Powerade and Hydrade.

Category	Ingredient	Gatorade	Powerade	Hydrade
Sugars	Sucrose (g)	7	0	0
	HFCS (g)	7	10	10
	Maltodextrin (g)		9	0
Total Sugars (g)		14	19	10
Water Binding	Glycerol (g)	0	0	12.4
Electrolytes	Na ⁺ (mg)	110	55	91
	K ⁺ (mg)	30	30	77
Vitamins	Ascorbic Acid (mg)	0	0	24
Osmolality (mOsmol/kg)		290	?	967
Energy (Kcals)		50	70	55

Ingredient amounts are for an 8 oz serving; * Does not include flavors and preservatives.

As shown in Table 1, Hydrade has less sugar than either of Gatorade or Powerade, a little more sodium, far more potassium, far higher osmolality, fewer calories, and is unique in having glycerol and vitamin C (ascorbic acid). I will discuss each of these items below.

Sugar Content

A sports drink has sugars to aid provision of glucose to muscle, as well as fructose to the liver for helping regulate blood glucose. During long-term exercise (lasting > 90 min), the body needs to have carbohydrate to supplement its own stores of carbohydrate. A carbohydrate-electrolyte drink is a great way to ingest these carbohydrates, because along with the carbohydrate you also get water to retard a developing dehydration. The problem with carbohydrate though, is that it can offset the hydration properties of the drink. It is hard, if not impossible, for a sports drink to adequately provide carbohydrate and also optimally hydrate the body. Too much carbohydrate slows the rate of fluid release from the stomach to the small intestine. This is the dilemma with Gatorade and Powerade, while they would like to promote their products for both carbohydrate nutrition and

hydration, the fact remains no research evidence exists to support their claims of superior hydration.

As Hydrade was developed purely for hydration, it is by far the best formulation to support hydration, with patent recognition and support of this innovation. The carbohydrate in Hydrade is there for taste, to support the carbohydrate needs of prolonged exercise, and is low to prevent impairments to the emptying of the drink from the stomach. More carbohydrate would make the drink taste too sweet, as the additional glycerol content is also a sweetener.

Sodium

Twenty years ago, Gatorade had far more sodium than it does today. Research during the 1980's revealed that the body does not lose the sodium in sweat that had been assumed for decades earlier. Lowering the sodium content made the drink taste better, and aligned the drink content more with research-based evidence.

During the late 1990's and early 2000's, added research then showed how sodium was actually very important for some athletes who experience decreased sodium content in blood and other body fluids. Sodium content was once again in focus. Added to this role, sodium has also been shown to stimulate improved water retention in blood, thereby improving function of the heart during exercise and in recovery from dehydration. As such Hydrade has slightly lower sodium than Gatorade and far higher sodium than Powerade.

Potassium

It is ironical that Gatorade and Powerade have low potassium. Research is clear that during exercise, muscle loses potassium, causing increases in blood potassium. When exercise is stopped, the blood potassium increase serves to replenish the lost muscle potassium, and there is a dramatic reduction in blood potassium. This rise and fall in blood potassium may be responsible for the post-exercise cramping we see in athletes, or in any person after completing long duration exercise or suffering from dehydration.

Providing more potassium in a sports drink facilitates the post-exercise provision of potassium to muscle, and sustains a more normal post-exercise blood potassium concentration.

Osmolality

There is a widely accepted assumption that a drink osmolality close to body fluid osmolality (285-295 mOsmol/kg) (isotonic) will more readily be absorbed into the body. While this thought has logical merit, research has not supported this belief. Furthermore, the physiology of kidney function and body fluid regulation does not support an isotonic drink. This is crucial to understanding the benefits of Hydrade in body hydration.

The higher osmolality of Hydrade provides the particle content to prevent over-rapid restoration of normal blood osmolality after dehydration. This blood

rehydration can occur when the rest of the body remains dehydrated. As the body's hormonal regulation of hydration and fluid balance is based on sensors responsive to blood electrolyte content, which is highly dependent on blood osmolality, the net result of these situations is to cause added fluid ingestion to simply result in an increased urine volume, even though the cells of the body are still dehydrated.

Calories

More than 70% of U.S. adults do not get enough daily exercise or physical activity. More than 30% of U.S. adults are obese. An increasing proportion of U.S. children are overweight and even obese. Today's youth are also inactive, and even have symptoms of diabetes, heart disease, and hypertension. The last thing most U.S. adults, youth and children need are sports drinks containing too many calories.

The fact is that most U.S. adults and children do not exercise enough to warrant the calories in a sports drink. However, almost all U.S. citizens are at risk of dehydration on almost a daily basis, depending on work demands, climate, and exercise habits. To alleviate dehydration in the largest proportion of U.S. citizens, it is therefore logical to decrease the caloric content of a hydration drink.

With these facts and reasoning, Hydrade has the lowest sugar content of any sports drink, and as explained in the section on glycerol, has a patented formulation that fosters large increases in hydration.

Glycerol

Glycerol is a naturally occurring metabolite in the human body. However, typical concentrations of glycerol in body fluids are very low. Ingestion of added glycerol raises blood glycerol. As glycerol is a highly diffusive molecule, it rapidly leaves the blood and moves into and between the cells of the body. Another property of glycerol is that it is readily hydrated. This means that connected to glycerol are multiple water molecules. Thus, where glycerol goes so does water. The net result of this is that glycerol ingestion facilitates the movement of water from the blood to the cells. This allows for a combination of improved hydration pre-exercise (or any other dehydration stress), as well as more rapid recovery from dehydration.

Hydrade is unique that it is the only sports drink proven by research to offer superior hydration. Research in my laboratory clearly shows this, and some of this data is shown in Figures 1 and 2. Here ingestion of Gatorade is compared with distilled water and a 5.75 grams/100mL glycerol solution. Fluid ingestion occurred for 2 hours, and hydration was measured every 30 min through the 2 hour hydration and for an additional 3 hours. Both Gatorade and distilled water induced a profound urinary water excretion (Figure 1), so much so that within 1 hour after drinking, the body was actually dehydrated (Figure 2)! The same results would be expected for Powerade.

Ingesting the glycerol solution provided a comparative decrease in urine volume (Figure 1), and the body retained a hydrated state for more than 3 hours after drink ingestion (Figure 2). Similar findings have been shown in multiple research laboratories in the U.S. and other counties of the world.

If hydration is important to you, you need to drink Hydrade.

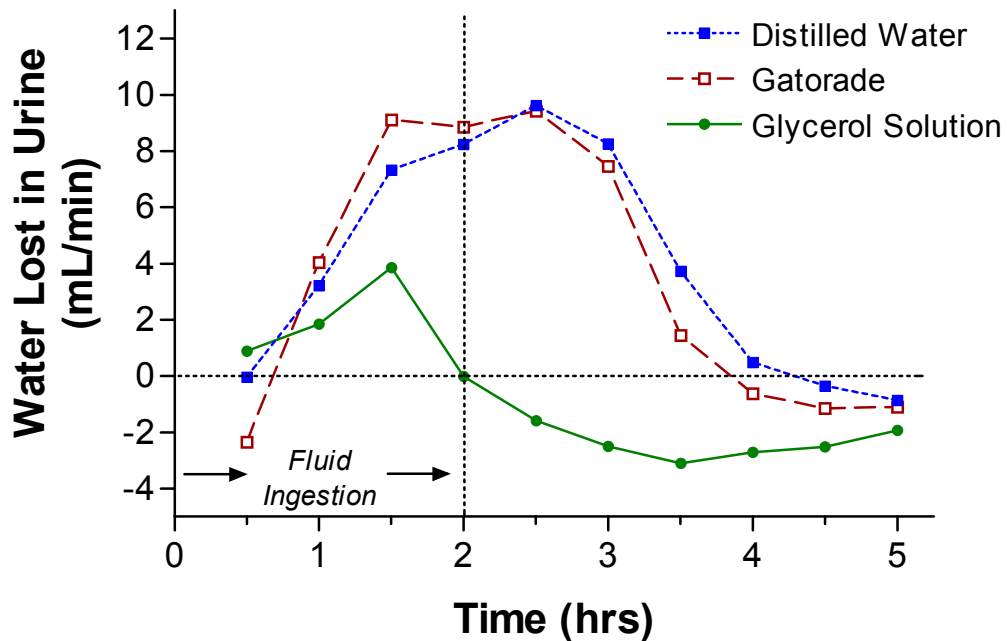


Figure 1. The differences in free water clearance (excess water excretion by the kidney) after ingesting distilled water, Gatorade, or a 5.75 % glycerol solution.

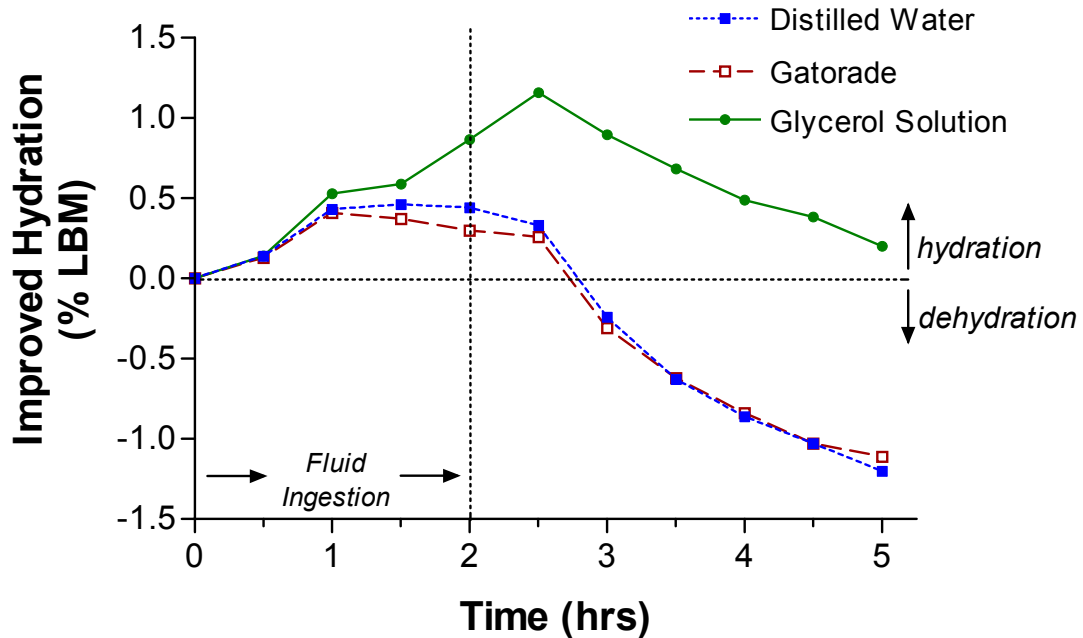


Figure 2. The differences in body weight (hydration) after ingesting distilled water, Gatorade, or a 5.75 % glycerol solution.

Vitamin C

When muscle contracts, and there is an increased rate of reactions to support the energy needs of the muscles, there is an increased production of small sized oxygen derived molecules called free radicals. Free radicals can interfere with the structure of other molecules, such as cell membrane proteins, resulting in damage to cells. Typically, the body has enough natural protection against these free radicals. However, for athletes who train excessively, or compete in long duration events, added nutritional protection against free radicals has been shown to decrease muscle damage during exercise. Vitamin C provides protection against free radicals, and all sports drinks should have vitamin C.

Hydrade has vitamin C, but Gatorade and Powerade do not!

I hope this information helps you understand the essential benefits of Hydrade compared to other sports drink options.

Regards,



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