



Coach-Athlete Q&A

A look at some coach-replies to common questions by topic.

Q: "..... so I get 240 calories per hour. Yesterday, I tried adding 1 tablespoon granulated sugar to the mix, which provides an additional 45 calories of sucrose that digests down to glucose and fructose. I'm thinking of going with this new mix in the Duke race, but I was wondering what you thought of such a last minute change in nutrition plans and without having tried it more than once."

B.W.

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A: Fructose and glucose are poor choices for fueling the body during activity. This is because these simple sugars raise the osmolality of body fluids unless they are mixed in solution at weak, 6-8% solution.

When simple sugars are added to either Sustained Energy or Hammer Gel, the osmolality of both are raised **so much** that it delays nutrient absorption results.

In addition when the osmolality in the stomach is too high the body must draw electrolytes and fluids **out of the system** in order to reduce the stomach fluids to body fluid osmolar levels. When a simple sugar solution is added to a complex long chain sugar it unfortunately halts absorption until the body can draw enough fluids and electrolytes out of circulation to reduce solution to body fluid levels in order to be absorbed. Having your body pull fluids and electrolytes away from other areas of the body is not a good idea because it depletes the body of fluids and electrolytes more rapidly... all in the effort to digest a refined sugar.

In other words, fructose and glucose (and other refined sugars) must be used by themselves and must be mixed at weak concentrations in order to digest efficiently. This 6-8% solution usually results in around 100 carbohydrate calories, far less than what an 15-18%% solution of SE or HG will provide, about 240-280 carbohydrate calories. Additionally, both products can be mixed that highly concentrated (15-18%) and still match body fluid osmolality and digest extremely efficiently.

Adding simple sugars to any complex carbohydrate source will ruin the efficiency of the complex carbohydrates... unless you add a lot more water and electrolytes. This may cause over hydration and electrolyte imbalance.



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No matter how you look at it, complex carbohydrates always win out over sucrose, glucose, fructose, galactose (ie: G-Push), or any other refined sugar.

Keep in mind that the body, via the liver, can only process 4.1 - 4.6 carbohydrate calories per minute. Therefore, with very few exceptions (extremely large athletes) the upper limit for hourly carbohydrate intake is somewhere between 240-280 calories. Physiologically, the liver cannot transfer any more back into the energy cycle on an hourly basis. **These calories either end up in the bowels or sit in the stomach. Either way, it is performance inhibiting.**

I guess my concern has to do with why this athlete is wanting to alter his fuel mix at the last minute. That makes about as much sense as using a new pair of shoes or an untested piece of equipment for the first time prior to a race. Also, why would anyone want to use cheap fuel such as fructose and glucose, which are not complex sugars... they are mono and di-saccharides... simple sugars.

Hammer Gel and Sustained Energy have taken all the guess work out of fueling the body. Tinkering with it, using refined sugars and having to add table salt and potassium... just to make it digest, seems to be a monumental waste to me.

I've used JUST Hammer Gel, Sustained Energy, and Endurolytes on 24+ hour races with no problems, no adverse effects, and NO NEED for anything else. The athlete you are working with is flirting with a performance disaster in my opinion.

Sincerely-

Steve