Star Advertiser

Health Options
Alan Titchenal
& Joannie Dobbs

Tuesday, March 22, 2016

Body needs its water level to stay in constant balance

Water in, water out - it's the most basic illustration of the body's attempt to maintain water homeostasis, or the ideal balance of fluid in the body. Virtually everything the body needs (vitamins, minerals, protein, etc.) is subject to a balancing act of taking in enough to balance unavoidable losses. If something gets out of balance - too high or too low - things go wrong.

Water is lost more rapidly than anything else - and we notice it. You might even think of it as a bother when your bladder is sending a strong signal to your brain that you had better find a bathroom ASAP.

Question: Are there ways to slow down urine production and delay a bathroom break a bit longer?

Answer: United Kingdom researcher Ronald Maughan and his colleagues explored this question by measuring the rate of urine production after consuming various types of beverages. Under carefully controlled conditions, they first had volunteers consume a liter (about a quart) of plain water, and measured the amounts of urine produced each hour over a four-hour period. That set the standard to which other beverages were compared.

The beverages compared with plain water included sparkling (carbonated) water, both regular cola soda and diet cola soda, a sports drink, orange juice, beer, coffee, tea, cold tea, whole milk and skim milk. Additionally, an oral rehydration solution was tested.

The researchers saw that by two hours after consuming each beverage, participants had lost more water in their urine than they had consumed, with the exception of four beverages. When participants consumed either type of milk, orange juice or the oral rehydration solution, urine production was significantly lower.

Based on the study's results, the researchers proposed the concept of a "beverage hydration index," or BHI. With this system, water has a BHI of 1.0 and milk and ORS are about 1.4 to 1.5, meaning that urine loss after drinking water was 40 to 50 percent greater after two hours than it was two hours after consuming milk or ORS.

Q: Why did some beverages maintain hydration longer than others?

A: The researchers suggested two main reasons for this. First, beverages like milk, with greater amounts of carbohydrate, protein and fat, generally enter the small intestine more gradually, slowing water absorption. Second, and perhaps more important, is the amounts of sodium and potassium in the beverages. Both sodium and potassium help the body to hold water longer, delaying elimination in the urine.

Among the drinks in this study with the highest BHI values, the two types of milk contained the greatest amounts of potassium as well as modest amounts of sodium; the ORS had the greatest amount of sodium along with a modest amount of potassium; and orange juice had moderately high potassium content but little sodium.

Although knowing the BHI of a drink might prove helpful, it cannot account for the effects of foods consumed with beverages. For example, drinking a beer with salty (high-sodium) corn chips or potato chips (high in both sodium and potassium) could help hold on to the water longer than the BHI would indicate.

In Hawaii it is easy to become dehydrated. Keeping normally hydrated can benefit the function of everything from your brain to your feet. Even dry eyes and sore joints could benefit from avoiding dehydration. So, drink up but drink right!

Joannie Dobbs, PhD, CNS and Alan Titchenal, PhD, CNS
are nutritionists in the Department of Human Nutrition, Food and Animal Sciences,
College of Tropical Agriculture and Human Resources, UH-Manoa.
Dr. Dobbs also works with the University Health Services Manoa.