What’s the main purpose of electrolytes? [1]

Dear Alice,

What is the main purpose for electrolytes? Why does the human body need them?

Answer

Dear Reader,

Electrolytes are vital to a person’s health and survival; the human body relies on them to perform its most basic functions. Electrolytes are minerals that can be dissolved in bodily fluids, including the blood stream. Common ones include sodium, potassium, chloride, calcium, and magnesium. When these minerals dissolve and separate (dissociate) in liquid, positively and negatively charged particles (ions) form. Since electrolytes carry a charge, they can conduct an electrical current in water. This ability to conduct a current is crucial. Why? The current enables electrolytes to regulate how and where fluids are distributed throughout the body. Essentially, electrolytes help maintain the body’s fluid levels. Additionally, they help with muscle function and pH (acid-base) balance in the body. Eager to examine electrolytes further? Read on!

Basically, cells need to be bathed in fluids; inside and out in the body. To control fluid passage across their membranes, cells regulate the movement of electrolytes in and out of them. This is because liquid follows electrolytes (especially sodium) around wherever they go. These actions help maintain a state of fluid balance. This is also how electrolytes transport nutrients into cells and waste out of them. Additionally, the difference in electrical balance inside and outside of cells allows for transmission of nerve impulses, contraction or relaxation of muscles, blood pressure control, and proper gland functioning. In addition, the presence of electrolytes determines the acidity or pH of some fluids, especially blood.

You might be wondering what happens if you don’t have enough electrolytes in your body. If a person loses large amounts of fluids quickly, electrolytes may become unbalanced. This imbalance may occur because of vomiting, diarrhea, excessive sweating, serious burns, or wounds. In these cases, both water and electrolytes need to be replaced. Life-threatening conditions may result if the imbalance is severe and could include:

- Weakness
- Twitching
- Numbness
- Confusion
- Lethargy
- Muscle spasms
- Blood pressures changes
- Irregular heartbeat
- Nervous system disorders
- Convulsions
- Bone disorders
- Seizures

List adapted from University of New Mexico Comprehensive Cancer Center. [2]

How can you be sure to keep plenty of electrolytes in your system? A well-balanced diet usually supplies an adequate amount of electrolytes. Most Americans get plenty of sodium and chloride from what they eat (in fact, it's recommended you avoid eating too much salt). Another way to up your electrolyte intake is to eat fruits and veggies (such as bananas, potatoes with skins, or prune juice) that provide sufficient potassium [3]. You might have also seen sports drinks containing electrolytes, but these are usually only recommended for use following participation in endurance events lasting over an hour. For additional information on eating well-balanced meals full of the minerals your body requires, check out Optimal Nutrition [4] in the Go Ask Alice! archives.

Hope your new knowledge is electrifying,

Alice!
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