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 one's health and survival. They are positively and negatively charged particles (ions) that are formed when mineral or other salts dissolve and separate (dissociate) in water. Since electrolytes carry a charge, they can conduct electrical current in water, which itself in its pure form is a poor conductor of electricity. This characteristic of electrolytes is important because the current enables electrolytes to regulate how and where fluids are distributed throughout the body, which includes keeping water from floating freely across cell membranes.

Basically, cells need to be bathed in fluids—in and out. To control fluid passage across cell membranes, cells regulate the movement of electrolytes into and out of them, which causes water to follow the charged particles around wherever they go. These actions help maintain a state of fluid balance. This is also how electrolytes transport nutrients into cells and wastes out of them. The difference in electrical balance inside and outside of cells also 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.

As you can see, our bodies have developed mechanisms to keep electrolytes within specific ranges. If one loses large amounts of fluids quickly, however, electrolytes may become unbalanced. This imbalance can occur through vomiting, diarrhea, excessive sweating, serious burns, or wounds. In these cases, water and electrolytes need to be replaced. Life-threatening conditions may result if the losses are severe.

A well balanced diet usually supplies an adequate amount of electrolytes. The major ones are sodium, potassium, and chloride; others include calcium, magnesium, phosphate, and bicarbonate, to name a few. Most Americans get plenty of sodium and chloride from what they eat. Including five or more daily servings of fruits and veggies will provide sufficient potassium. Sports drinks containing these substances are usually only recommended for endurance events lasting over an hour.

Alice!

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