



Cellular Hydration Relies on Mineral Salts -- Electrolytes

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The human body has a narrow range for maintaining optimal fluid levels, which it regulates by two sets of receptors that detect blood volume and cellular fluid [1]. Every cell is bathed in extracellular fluid (outside the cell), and intracellular fluid (inside the cell). Both fluids maintain a balance of osmolytes – low-molecular-weight organic compounds that influence the properties of biological fluids. Osmolytes manage the levels of ionic-charged mineral salts (electrolytes) and are comprised of amino acids and glucose. Ionic-charged minerals provide an electrical potential activating neurons in the nervous system, brain activity and muscle movement.

Sodium is the main extracellular electrolyte while potassium is the main electrolyte of the intracellular fluid [2,3]. Popular hydration drinks like Gatorade™ provide typically just these two of the major electrolytes. In contrast, MLG-50™ a low molecular weight organic acid trace mineral complex, provides over seventy ionic-charged major and trace mineral electrolytes with a balance of sodium and potassium, including 18 amino acids.

Electrolytes are quickly depleted by extreme perspiration, respiration, urination, defecation, and vomiting[2]. It's important to note that regular water -- purified, distilled, or reverse osmosis -- does not provide trace minerals, elements, and electrolytes. Too often beverage manufacturers create electrolyte replacement drinks but add in high fructose corn syrup, contributing to glucose-related physiological issues.

The body strives to maintain an equal balance of extracellular and intracellular fluid with the same level of osmolytes present on either side of the cell membrane, so the net water movement is zero [4]. Fluid levels change when we exercise or get sick and lose fluid more quickly than we are replenishing it, causing cells to either give up or absorb more fluid as the body tries to maintain a balance, conditions known as hypertonic and hypotonic dehydration [2,5,6]. If dehydration persists, cell functions begin to shut down.

Ionic mineral salts (electrolytes) are vital for our nervous system and muscle function, which includes the diaphragm, heart muscle, and brain. Virtually every process in the body functions by electrical impulse.

All known higher lifeforms require a subtle and sophisticated electrolyte balance between the intracellular and extracellular environments. In particular, the maintenance of precise osmotic gradients of electrolytes is essential [7]. There are more mineral salts found in nature than the major electrolytes -- sodium, potassium, chloride, calcium and magnesium. Nature provides a complex of ion-charged trace minerals of which MLG-50™ has over seventy – all naturally occurring from plant origin, including amino acids.

The importance of an amino acid-based rehydration beverage over a glucose-based beverage was made in a recent study. Comparing a popular glucose-based and a novel amino acid-based (AA) commercial rehydration beverage following experimental hypertonic or isotonic dehydration, superior rehydration and electrolyte replacement was demonstrated when using the AA beverage as compared to the popular glucose-based drink [8].



Mineral Logic™ offers a pure water extracted trace mineral supplement MLG-50™, a natural source fulvic-acid extract, that contains a full spectrum of approximately 70 minerals and trace minerals, 33 naturally occurring organic acids including 18 amino acids, trace elements, and electrolytes. MGL-50™ is an excellent source of electrolytes and osmolytes that can be taken to promote cellular rehydration.

References:

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