

BIOLOGICAL IMPORTANCE OF MAGNESIUM AND CALCIUM

Biological fluids contain both monovalent ions like sodium and potassium, as well as divalent ions such as magnesium and calcium, in significant quantities. These ions play vital roles in various biological functions, including the maintenance of ion balance and the conduction of nerve impulses.

Magnesium serves as a crucial cofactor for all enzymes that utilize ATP in phosphate transfer reactions. In plants, chlorophyll, the primary pigment responsible for light absorption, contains magnesium. Approximately 99% of the calcium within the human body is concentrated in bones and teeth. Calcium also performs essential functions in neuromuscular activities, interneuron communication, maintaining cell membrane integrity, and contributing to the blood coagulation process.

The concentration of calcium in the plasma is carefully regulated at around 100 mg per liter, a balance maintained by two hormones: calcitonin and parathyroid hormone. Interestingly, bone, often perceived as an inert and unchanging substance, is in fact continuously undergoing a process of solubilization and redeposition, with approximately 400 mg of calcium being cycled through the plasma on a daily basis.

In an adult human body, you can find about 25 grams of magnesium and 1200 grams of calcium, whereas iron is present in just 5 grams and copper in a mere 0.06 grams. The daily requirement for these minerals in the human body is estimated to be in the range of 200 to 300 milligrams.