

BIOLOGICAL IMPORTANCE OF SODIUM AND POTASSIUM

Sodium ions are predominantly situated outside of cells, existing in blood plasma and the interstitial fluid that surrounds cells. These ions play essential roles in nerve signal transmission, regulation of water flow across cell membranes, and the transportation of sugars and amino acids into cells. Despite their chemical similarity, sodium and potassium exhibit quantitative differences in their ability to permeate cell membranes, the mechanisms by which they are transported, and their effectiveness in activating enzymes.

As a result, potassium ions are the most prevalent cations in cellular fluids. They serve as activators for numerous enzymes, participate in the oxidation of glucose to produce ATP, and, in conjunction with sodium, are responsible for transmitting nerve signals. In the body of an average 70 kg individual, sodium is present at about 90 g, and potassium is present at about 170 g, whereas iron accounts for only 5 g, and copper is a mere 0.06 g in comparison.