

Sodium and Potassium in Water Balance

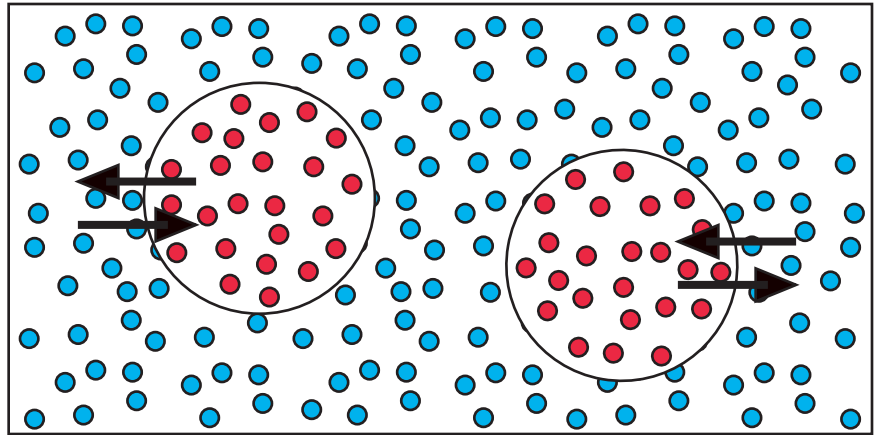
- Sodium
- Potassium

Both sodium and potassium are osmotically active ions. Potassium is found within cells and helps create osmotic pressure to draw water into the cell from interstitial fluid or plasma.

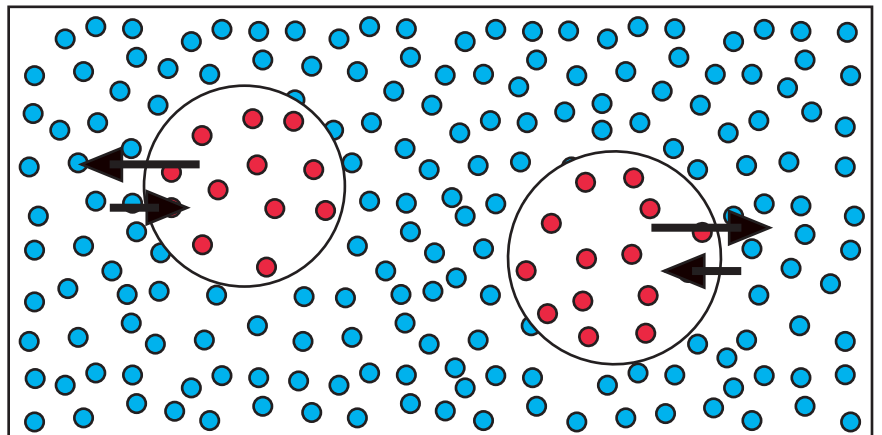
Sodium is found in substantial concentrations outside of the cell where it helps create osmotic pressure to draw water out of cells and into the interstitial fluid and plasma.

If the concentrations of osmotically active substances on either side of a semipermeable membrane (ie., cell membrane) are equal, the condition is isotonic, and water will move at equal rates in both directions.

If water is to be moved across the membrane, it is adjustments to the relative concentrations of Na and K that will do the job.



Should there be insufficient water within the plasma resulting in low blood pressure, the kidneys will adjust the location of water by altering the relative concentration of both Na and K. By retaining Na and excreting potassium in the urine, this will soon create a hypertonic condition, and water now leaves the cells and enters the plasma and blood pressure raises.



If blood pressure is excessive, then sodium will be excreted in the urine and potassium will be retained. This will soon create a hypotonic condition and water will move from the plasma into cells and blood pressure will lower.

