Solution, Hypertonic Encyclopedia Article

Solution, Hypertonic

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Solution, Hypertonic

A solution is hypertonic if it tends to gain water from a reference solution (or colloidal suspension) separated from it by a semipermeable membrane. This usually results from of a higher concentration of dissolved or dispersed substances in the hypertonic solution. It is assumed that the membrane is freely permeable to the solute (usually water) but impermeable, or nearly so, to substances in solution or suspension in the two liquids. When a living cell is immersed in a hypertonic solution, the cell will lose water to the solution. It may collapse if it is an animal cell, or plasmolyze by pulling away from the cell wall if it is a plant cell. However, as water flows out of the cell it dilutes the hypertonic solution, and causes the concentration of cellular protoplasm to increase. The ultimate result depends largely on the difference in solute concentration between the cell and the bathing liquid. When differences are small, equilibrium may be reached that does not damage the cell, but when large, harm is more apt to occur.