Hypertonic red blood cells

If a solution is hypotonic then it means that the concentration of salt is lower than that of a cell. The solution will flow into the cell and cause it to swell. What is the excess pressure on the cell membrane of a red blood cell if it is placed in a solution with a colligative molarity of 0.1 M. Note that the colligative molarity of red blood cells is 0.6 M.

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Solution: the hypotonic molarity difference is 0.5 M. Therefore, this concentration difference will give rise to an osmotic pressure. We calculate this using the van't Hoff equation.

$$\Pi = cRT = (0.5\ M)\left(0.08206\ \frac{Latm}{molK}\right)(298\ K)$$

The osmotic pressure is:

$$\Pi = cRT = 12.2\ atm$$