

Diffusion Lab: Water Potential Calculation Using Potato Cores

Please be sure you have the following in your lab notebook. You will turn in your entire notebook at the end of this unit.

1. **Data Chart** for potato core mass change in different molarities of sucrose
2. **Graph of data.** Showing your group's data AND the class avg data. Clearly indicate the molarity of your potato cores on the graph.
3. **Calculation** to show water potential of your potato cores.
4. **Sketch** to show an initial beaker with potato cores in 0.2M sucrose. For both your cores and the beaker contents, show Ψ , Ψ_p and Ψ_s
5. **Explanation:** What direction would water move in your assigned sucrose molarity *based on water potential*? (You will need to know the water potential of the assigned sucrose solution.)
6. **Summary Paragraph:** What did the data show? What is the relationship between % mass change in your potato cores and the sucrose concentration in the beakers? Explain what happened using words like hypotonic, hypertonic, isotonic, water potential, solute potential.

Equations you will need:

$$\Psi = \Psi_p + \Psi_s$$

$$\Psi_s = -iCRT$$

where

i = ionization constant, which is 1 for sucrose

C = molar concentration

R = 0.0831 liter bars/mole K (pressure constant)

T = temperature in degrees K, which = degrees Celsius + 273

Assume a room temperature of 27° C.