

Diffusion and osmosis lab report assignment



Osmosis is the usage of water from a region of high water concentration through a semi. Permeable membrane (Semi-permeable membranes are very thin layers of material which allow some things to pass through them but prevent other things from passing through,) to a region of low water concentration, This is seen in cell membranes. When there is a higher concentration tot one type of molecule outside of a cell, water will move through a membrane out of the cell in order to make the water concentrations equal.

This causes the cell to shrink (hypersonic). If the concentration of certain molecules is higher inside of the cell, then the eater will move into the cell causing it to swell (hypotonic). When the molecule concentrations are equal on both sides of the membrane, water does not move (isotonic). In the human body, many salts and enzymes help to regulate a cell's state and the processes necessary for the human body to function such as potassium and calcium channels in the heart.

These functions are carried out by having constant changes in concentration Of molecules from one side Of the membrane to another. Cell membranes will allow small molecules like oxygen, water, carbon dioxide, ammonia, glucose, amino acids, etc. To pass through. Cell membranes will not allow larger molecules like sucrose, starch, protein, etc. , to pass through. Problem Statement(s): What is the movement of material through a semi- permeable membrane? (Activity 1) What is the osmotic effect of varying sucrose solutions on the physical characteristics of a potato core? Activity 2)

Vocabulary: cell, cell membrane, permeable, diffusion, semi-permeable membrane, osmosis, hypersonic, hypotonic, isotonic Materials (per group):

Activity 1 Zipper bag ; liquid starch forceps ; beaker (500 ml) ; water ; Iodine (Logo's solution) Activity 2 razor ; potato ; ruler ; balance ; graduated cylinder distilled water ; sucrose solution dissecting needle ; beaker aluminum foil Procedures: Activity 1: Diffusion through a semi-permeable membrane.

1. Get a small plastic zip-top bag, a cup of liquid starch, a forceps and a large container of water to which a few drops of iodine solution has been added. Be careful with container and do not get the iodine solution on your skin. It will stain. 2. Place liquid starch in plastic bag and securely zip the top closed. Record observations Of the color Of the starch and the water in the container. . Place bag with starch into the iodine/water solution. Let it sit while you go on to Activity 2. 4.

Observe and record the changes over time to both the iodine/water solution and the starch in the bag. You will need to carefully lift the bag part way out of the water with a forceps to observe. Then lower the bag back into the water and return the container as directed by the teacher. Activity 2: Potato Osmosis 1. Using the razor, carefully cut each potato core into a cylinder of about three to five centimeters in length, Make sure that all of the potato cores are the same length and note this length for later use. Also measure and record the diameter of each potato core. . Using the balance, measure and record the mass of each potato core. 3. Fill the graduated cylinder with tap water two-thirds of the way up, Measure and record the volume of water in the graduated cylinder, Attach each potato core, one at a time, to the end of the dissecting needle and hold it so that the potato core is completely submerged in the water. Measure and record the water level in the cylinder.

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The difference in your two measurements is the volume of the potato core. _
Place one potato core in the beaker faith distilled water and label this beaker
“ 100”.