Lab 8 Report

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AP Biology - Mr. Sko

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Objective: In this lab, we will model a cell’s semi-permeable membrane using dialysis tubing and solutions of different concentrations.

Hypothesis: If the dialysis bag has a higher solute concentration than the solution it is suspended in, then water will move into the dialysis bag. If the dialysis bag has a lower solute concentration than the solution it is suspended in, then water will move out the dialysis bag.

Procedure:

1. Obtain dialysis tubing, distilled water, 5% solute solution, 20% solute solution, clips, graduated cylinder and 2 large beakers.
2. Cut 4 inches of dialysis tubing and tie off one end. Insert 25 mL of 20% solute solution and clip the other end shut.
3. Place the dialysis bag into a beaker containing 250 mL of 5 % solute solution and let sit for 15 minutes
4. Repeat steps 2 and 3 but put 5 % solute solution in the dialysis bag and insert into a beaker with 20% solute solution.
5. After the dialysis bag has been in the solution for 15 minutes, remove it and poor its contents into a graduated cylinder. Measure the bag’s contents and record
6. Perform 3 trials for each situation

Data/Results:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Trial 1 | Trial 2 | Trial 3 |
| 20% solute bag | 16 mL | 15.5 mL | 17 mL  |
| 5 % solute bag | 32 mL | 34 mL | 32.5 mL  |

Conclusion: The results of this experiment matched our hypothesis. When the dialysis bag had a higher solute concentration than the solution it is suspended in, water moved into the dialysis bag. When the dialysis bag had a lower solute concentration than the solution it is suspended in, water moved out the dialysis bag. On average, 8.83 mL moved out of the 20% solute dialysis bag (hypertonic) into the 5% solute solution, which was hypotonic. Additionally, an average of 7.83 mL moved into 5% solute dialysis bag (hypotonic) into the 20% solute solution, which was hypertonic. This movement created two isotonic environments with equal solute concentrations. This movement of water occurs between cells and their environments too. If a cell is placed in salt water, the cell will shrivel up because it releases water into its environment. If a cell is placed in distilled water, it will take in water and become more bloated. Our body works hard to maintain proper water and ion concentrations so that cells can survive and work properly in their environments. This balance is called homeostasis and is crucial for the survival of all living things.