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Laboratory 2F Measurement of Osmosis

Purpose: Osmosis is the fundamental aspect of physiological research. Not only does it help researchers understand cellular and tissue function. Cellular Homeostasis is one of the areas where the measurement of osmosis is used regularly. It is important to understand osmosis because it is what helps regulate the internal environmental balance in every cell. Osmosis also helps maintain the physical shape of a cell. In this lab we measured

Procedures: Before getting started with the actual lab, we made sure our work station was clean and appropriate for lab activities. We filled two dialysis bags with 25% of sucrose solution and the other was filled 50% with sucrose solution. We submerged the two bags into two separate tubes filled with distilled water making sure that we do not let the bags touch the bottom of the tubes. The two bags were tightly sealed to prevent leaking.

We will be measuring the fluid levels of each glass tube 5 times (once every 10 minutes). We repeated this cycle for 50 minutes and recorded our data. It was important to keep track of the time as the fluid level was rising.

Results: Having the thin glass tubes both measuring at 30mL we began to record the time and made sure we were recording measurements every 10 minutes. **1)** Marking the first 10 minutes, we measured the fluid level in the thin glass tubes. We first checked on the glass tube holding the 25% sucrose solution and measured it at 32ml. We then measured the next glass tube of 50% sucrose solution measured at 33ml. **2)** The next 10 minutes had come around and it was time to record the data. Again, we first measured the 25% sucrose solution filled tube and this time (after 20 minutes of recording) it measured at 35ml. We moved onto the next glass tube with 50% sucrose solution and this time it measured at 36ml. **3)** We continued measuring every 10 minutes and we noticed that on the third 10 minute mark, the 25% sucrose solution filled tube had begun to slow down almost to the point where it seemed to have stopped. Of course,

that was not the case. The 25% sucrose solution filled tube had risen in fluid volume by 1 ml measuring at 36 ml. We checked on the 50% sucrose solution filled tube and recorded the measurement at 38 ml. **4)** The next 10 minute mark was recorded with the 25% sucrose solution filled tube measuring at 37 ml and with the 50% sucrose solution filled tube measuring at 40 ml. Once the fourth 10 minute mark had passed, Katreese and I were very mindful of keeping an eye on the measurements considering the 50 minutes was almost up. **5)** The 25% sucrose solution filled tube measured at 38 ml and the 50% sucrose solution filled tube measured at 41 ml.

Discussion: We believe that the difference in measurements between the two glass tubes are dictated by the level of sucrose solution they were filled at. We think that, because of the difference in pressure, the 50% filled bag would have a greater force during the process of osmosis. The tubes with the different solution levels have an effect on the rate in which osmosis is occurring. The difference in solution concentration comes with a difference in pressure. That being said, the pressure exhibited in the two different tubes had an effect on how much and how fast osmosis was occurring.

Conclusion: What we conclude from this lab was that the pressure experienced by the different levels of fluid has an effect on the osmosis. Keeping this in mind, the osmosis that occurred in this lab can be compared to other areas where osmosis occurs such as human bodies, plants, animals, etc. This is important to take note of because osmosis helps maintain cell structures and it regulates water translation from one area to the next microscopically.