Biology lab report (osmosis expeirement)

Psychology, Behaviorism

Abstract The main purpose of the experiment was to establish how the theory of osmosis works. The results of the experiments prove that the theory is true. However, there are certain results that did not turn up as expected. In this case, it is advisable for the future experiments to investigate the findings. Name: Course: Lecturer: Date: Lab Report Introduction Osmosis can be described as the rate at which solvent molecules move into a region of higher solute concentration thro a semi permeable membrane (Enger, Eldon, Frederick and Eldon 3).

The purpose of the experiment was to investigate how osmosis works by the use of water as the solvent and sucrose as the solute. In osmosis, the water is supposed to mix with the solute after some time without the possibility of mix the two. It is extremely fascinating to observe how the two mix with one another when they are left alone for some few minutes without mixing (Kokalj, Jevnikar, and Sersa 12). A study into the field of osmosis reveals that there are many intriguing facts. For instance, it is because of osmosis that the plants are able to stand on their own. Additionally, the plant roots are able to sip water from the soil through osmosis (Goldberg, 24). This is because water from the soil moves to the area where there is a high concentration of solutes. In this case, the roots provide the solute and the outer layer of the root is a semi permeable membrane.

For this reasons, one of the questions that was raised how could we be able to observe this process and verify that it is true (Harder, Walters, Bodnar, Faibish, and Roux 2009). How can water move and mix with another substance without the possibility of being mixed? Therefore, the main aim was to observe and establish how the theory of osmosis works with the use

of water and sucrose. Materials and Method The materials that were used in the experiment are; Fifteen and thirty percent of the sucrose solutions to work as the solute concentration Four hundred and fifteen lengths of dialysis tubing, this is used for the purposes of measuring the solvent and holding the solutions Eight hundred and ten centimeters of waxed dental floss Four thousand four hundred and four milliliters beaker Twenty five milliliters graduated beakers Four small string tags Ring stand/funnel apparatus Wax pencil Balance dH2O Scissors The procedure that I used for the procedures was as follows: First, I had to run four lengths of dialysis tubing under the streams of water. The reason as to why I did this was to rehydrate and be able to open the tubing. The second step was to fold the dialysis tubing, and I tied tightly with a dental floss string.

I wax the dental floss string so that it could not absorb any water or sucrose during the experiment. This is because it will affect the measurements during the experiment. On the other hand, the wax ensures that the string will not break thus affecting the whole experiment. However, I had difficulties in tying the strings. Therefore, anybody who wants to use the experiment should be careful in this section. After tying the string, I placed a string tag in each of the four-dialysis tubing for the purposes of identifying each experiment differently.

The tags should be named bag one, bag two, bag three and bag four. After I had completed the above steps, I took the four-dialysis bags, and I placed them under a funnel that I tied in a ring stand when I was preparing as the materials. Starting with dialysis bag one I put ten milliliters of dH2O using

the funnel, in bag two I put ten milliliters of fifteen percent of sucrose, bag three I put ten milliliters of thirty percent of sucrose and bag four I put ten milliliters of dH2O. This is to ensure that the experiments are done at the same time so that to save time and enjoy observing all the experiment at the same time. Moreover, repeating the same thing repeatedly it is boring. Therefore, I noticed that it was fun to conduct the experiments at the same time. After putting the solutions, I first squeezed all the air in the dialysis bag then I used the rest of the dental floss strings to tie the remaining open ends.

After that, I rinsed each of the bags in a pan of dH2O, and then I had to gently dry them with a paper towel so that I could weigh them after zero minutes. After weighing these bags, I record my results in the table on the column indicated zero minutes. After finishing this, I put three beakers with dH2O of until two hundred milliliters.

Beaker four I had to fill it with two hundred milliliters of thirty percent of sucrose. After completing this exercise, I place the bags in each beaker with their corresponding numbers. After the first fifteen minutes, I removed the each bag as I recorded the results in the corresponding column. I repeated the same exercise by place each bag in the beaker and recoding the findings. Then I recorded the results after weighing them in fifteen minutes. Finally, I return the bags to their beakers after I had cleaned them with paper towels. In this case, I had occasionally removed the bags after thirty, forty-five and sixty minutes as I weigh and recorded them. Results In the first bag that I had put dH2O, and I placed in the first beaker that contained dH2O, I

noticed that after weighing them there was a reduction in weight by zero point one milliliters.

This shows that the dH2O was moving into the beaker. In the second bag that I had fifteen percent of sucrose, and I had placed in the second beaker that had dH2O, I noticed the decrease in weights varied with time. In the third bag that I had put thirty percent of sucrose and placed in beaker three containing dH2O, I noticed that the weights were increasing unevenly with time.

In the fourth bag, that I had placed dH2O and placed in the fourth beaker that had thirty percent sucrose, I noticed that the weights first increased after fifteen minutes and then they decreased unevenly with time. Discussion According to the above results, theory of osmosis can be seen clearly. In the first bag, it was noted that the bag reduced in weight evenly. This means that the two solutions have the same concentration. In the other bag, that I had placed fifteen percent of sucrose and the beaker of dH2O the weight decreased unevenly. This showed that the sucrose was moving from the bag to the water. In this case, it showed that the sucrose was moving from a low concentration to a high concentration.

In the third bag that I had put thirty percent of sucrose and a beaker of dH2O, the weights increased in the first thirty minutes. This shows that the two solutions were trying to attain equilibrium in their concentration. The last thirty minutes decrease because the two solutions had exceeded the concentration by one side. In the last bag, there was an increase in the first fifteen minutes indicating that they had first mixed quickly exceeded the

concentration on one side then later it decreased as they tried to show equilibrium.

According to the result of the experiments, in the first bag that is what I expected to experience. In the second bag, I had expected this kind of results despite the introduction of the sucrose. In the third bag, I did not expect this behavior. This may be something new that future experiments need to discover because according to my expected results I had expected them to increase. In the last bag, I did not expect these results.

This is because I thought that according to the theory of osmosis there will be an increase in weight. In conclusion, it will be better for the experiments to be done to test why there was a decrease then an increase after some minutes. This could be used in the science of biology to discover something.

On the other hand, according to the experiments, it has proved to me that the theory of the hypothesis is true. Works Cited Enger, Eldon D, Frederick C. Ross, and Eldon D. Enger. Laboratory Manual [for] Concepts in Biology, Eleventh Edition. New York, NY: McGraw-Hill, 2004.

Sound recording. Goldberg, Deborah T. Ap Biology. Hauppauge, N. Y: Barron’s Educational Series, Inc, 2010. Print.

Harder, E, DE Walters, YD Bodnar, RS Faibish, and B Roux. “ Molecular Dynamics Study of a Polymeric Reverse Osmosis Membrane.” The Journal of Physical Chemistry. B. 113.

30 (2009): 10177-82. Print. Kokalj, T, P Jevnikar, and I Sersa. “ Study of Water Migration by Micro Mr Imaging.” Cellular & Molecular Biology Letters. 7.

1 (2002): 120-2. Print.