

1 Diffusion and Osmosis

2 **Introduction:**

3 Osmosis is related to many things in life such as diffusion. Osmosis is movement of water
4 from high concentration to low concentration of water. This can result to hypertonic, isotonic or
5 hypotonic. If the cell was to be place in hypertonic the cell would shrink due to high concentration. If
6 the cell was to stay the same, this would mean that the concentration is same meaning it is isotonic. If
7 the cell was to expand this would mean there is a low concentration meaning it is hypotonic.
8 Diffusion also goes from high concentration to low concentration however molecules get passed
9 through as well. We conducted an experiment with methylene blue to see if the high concentration or
10 the low concentration of methylene blue diffusion faster. We also conducted another experiment to
11 see if osmosis would take place whether if it will go from high concentration to low concentration or
12 from high concentration to low concentration and what would happen to the plant cell when NaCl
13 (salt water) is added.

14 **Hypothesis:**

15 We conducted two labs, one to prove diffusion and one to prove osmosis. Our hypothesis for
16 diffusion was that the high concentration of methylene blue would spread to low concentration of
17 methylene blue in the agar plate faster. This is because the high concentration has more solutes in it,
18

1 therefore can diffuse more than the one with low concentration. The second lab we conducted an
2 experiment on was to check osmosis and the effects that the salt water would have when we put a
3 drop of it on the plant cell. Our hypothesis was that the plant cell would have a hypertonic reaction
4 and it would shrink when placed in salt water.

5 **Methods:**

6 For both of the experiments we took specific steps so that we can get accurate results. For the
7 diffusion lab we took two agar plates and poked holes in the plate 2mm wide. Then we placed two
8 drops of methylene blue in each agar plate. We added two drops of methylene with high
9 concentration of 2.5% inside the hole in one of the agar plate then we added two drops of methylene
10 blue with low concentration of .25% inside the hole of the other agar plates. We the agar plates, and
11 then checked them every 15 minute till 45 minute. We recorded the data to see which concentration
12 would move into the agar plate. For the osmosis lab we took three pieces of elodea plant and placed a
13 piece of it on each slide. We then took the slides and added three different types of water to them in
14 order to see what would happen to the plant cell. For one of the slides with the plant we added a drop
15 of 10% NaCl (salt water), with the other we added distilled water and with the last slide we added
16 pond water. Then we looked at each slide under the microscope to see what had happened to the cell
17 of the elodea plant in each different type of water.

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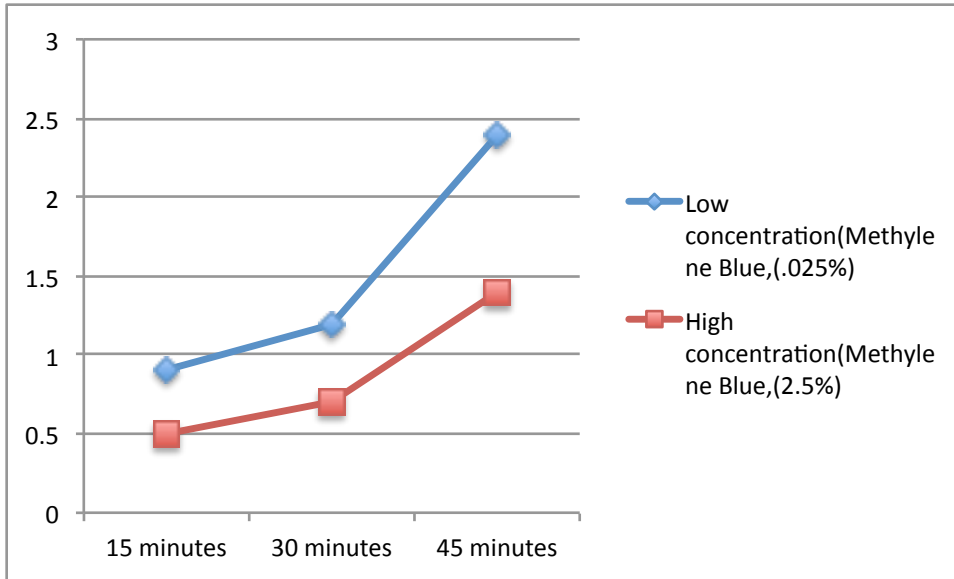
19 **Results:**

20 My initial hypothesis about osmosis and diffusion was proved to be corrected by the lab
21 experiments that my group and I coordinated. The results that were seen from the diffusion
22 experiment proved my hypothesis right. We checked the agar plate every 15 minutes, at the first

1 15 minutes the results for low concentration (25%) of methylene blue were .4 then at 30 minutes it
2 was .5 and finally at 45 minute it was 1. The results of high concentration (2.5%) of methylene blue
3 at the first 15 minutes were .5, at 30 minutes it was .7 then at 45 minutes it was 1.4. This proves that
4 methylene from high concentration diffuse faster than a low concentration of methylene blue. For the
5 osmosis experiment we saw that when a drop of NaCl was added to the elodea plant cells the cells
6 shrank showing a hypotonic result. And in the pond water the elodea plant stayed the same, showing
7 an isonic result. This proved my hypothesis to be accurate.

8 **Conclusion:**

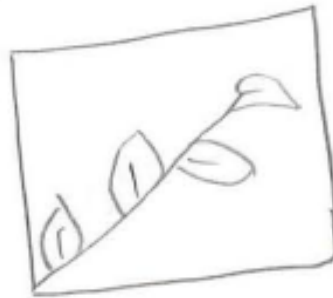
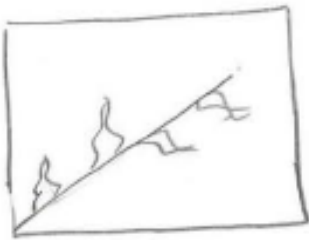
9 Osmosis and diffusion are both essential part of life. They both have an impact on all living
10 organisms one way or another. My hypothesis was proved to be accurate in both experiments that we
11 conducted. For the osmosis laboratory my group and I stated that the plant cell would shrink when a
12 drop of NaCl was added to the plant cell. Our theory was proven to be correct. This is because when
13 we placed a drop of NaCl on the plant cell, we looked at the plant cell under the microscope and
14 noticed that the plant cells were all shriveled up and had shrunken as well as they (the cell) had lost
15 their original shapes. My hypothesis for the diffusion lab was also proven to be right, this is because
16 once we started recording the data every 15 minute to see if the high or low concentration spread
17 faster. My group noticed that the methylene blue with the high concentration moved faster into the
18 low concentration inside the agar plate, than the methylene blue with the low concentration.



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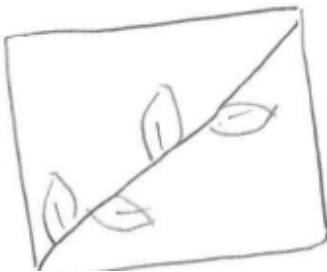
10% NaCl

Tap water (Isotonic)



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Pond water



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