

CONCLUSION:

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The aim of this lab was to identify the effect of a salt solution on a potato slice. Our independent variable was the absence or presence of salt in the solution, whereas our dependent variable was the mass/ observations of the potato slice after 24 hours. The results of this lab suggest that in the salt solution, water diffused out of the potato slice. This is due to the fact that the mass of the potato slice decreased after being left in a salt solution overnight. Because the water diffused rather than the salt, we must conclude that the potato is not permeable to salt. In addition, salt is extremely polar. Cell membranes are permeable to extremely small, nonpolar particles. This means that the salt could not have permeated in and out of the potato slice. One essential question is why the water diffused out of the potato slice. The salt solution in the cup was hypertonic, meaning that there was a higher concentration of salt in the solution than the potato slice; because the salt could not leave the potato, the water diffused out of the potato in order to dilute the concentration of salt outside the slice, aiming for the equilibrium of salt concentrations. This explains why the potato slice that was submerged in the salt solution seemed dehydrated. It was brown, shriveled and had lost mass. This explanation can be concluded because in the control, the potato enlarged in tap water. The potato slice that was in the tap water had the higher concentration of salt, so it was able to let water in comparatively more. This is concluded according to this potato slice's increased mass after 24 hours. Because the potato slice in tap water (the control) did not shrink, the shrunken potato slice can be directly attributed to the presence of salt, the independent variable, in the solution. The dependent variables (mass, texture, and color) all suggest the potato slice's dehydration in the salt solution. These findings do not support my hypothesis because the potato slice did not enlarge when put in the salt solution, rather it did the opposite, and shrunk. This process of water diffusion is called osmosis, which does not require energy. This experiment relates to our current studies on the process of osmosis on cell membranes. In this lab, the potato slice represents a cell. The results demonstrated the idea that certain particles cannot permeate the cell membrane, and in this case, osmosis occurs. Because the solute, salt, could not leave the potato slice, the water diffused out to try and reach equilibrium of salt concentrations. In conclusion, this lab has supported the idea of osmosis across cell membranes, through the diffusion of water out of a potato slice placed in a salt solution.