

Osmosis assessment task assignment



OSMOSIS ASSESSMENT TASK Introduction Osmosis is the net movement of water particles from an area where they are in high concentration to an area of low concentration, down a concentration gradient. Hypothesis: Will a high concentration of salt solution affect the mass of a potato chip? Variables

Controlled variables: -The sizes of the potato chips. Bigger size of potato

chips will weigh heavier and the smaller potato chips will weigh lighter, if we don't use the same size of potato chips throughout the experiment, we won't get an ideal result, there will be great differences between the mass of

potato chips. The duration of experiment. The duration of the experiment must be the same to ensure that the experiment starts and ends at the same time. -The surface area of the potato chips. The greater the surface area of the potato chips, there will be more space for osmosis to take place.

Independent variable: -Different percentages of salt solution. Equipment and

Method -6 boiling tubes -2 test tube racks -6 potato chips -Prepare 0%, 20%,

40%, 60%, 80%&100% of saturated salt solutions. 1) Prepare different

concentrations of salt solutions.) Use the borer to make 6 potato chips and

cut to a size of 2 cm. Record each of their mass. 3) Place one potato chip into

each test tube. Use 10ml of each salt concentration in the test tube that has

been labeled correctly. 4) Pour the saturated salt solution into the boiling

tubes according to the labels. 5) Leave them for 24 hours. 6) Take out the

potato chips carefully, mass the potato chips again. 7) Compare the

differences between the potato chips and calculate the change in mass.)

Collect the data from 6 groups carrying out the same experiment and

calculate the average change in mass for each salt concentration. Class

results showing the average change in mass of the potato chips and different

concentration of salt solution. Salt solution (%)Average change in Mass (g)

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100-0.17 80-0.19 60-0.21 40-0.29 20-0.31 00.07 Conclusion The mass of potato chips in the pure water increase and the mass of potato chips in the saturated salt solution decrease. Chips will gain water if put into a pure water because of the high concentration of water outside the chip, this will make them swell.

However, chips will lose water if put into a lower concentration of water, this will make them shrink. As the graph had shown, at 0% the mass is increased by 0.07 g, however at 100% the mass is decreased by 0.17 g. My graph fits in my hypothesis. According to my graph, it could be seen that as the salt concentration increases, the mass of the potato chips decreases. This is because the water inside the potato chips leaves the cell by osmosis, restoring the balance. My estimation of the isotonic point is 3%.

The isotonic point is where the concentrations inside and outside the potato cells are equivalent. If I were to repeat the experiment, I will increase the time of experiment to allow more osmosis to occur. The freshwater fish produce huge amounts of very dilute urine, which gets rid of the excess water that gets into their bodies. As for the marine fish such as whales, they have extremely efficient kidneys. A whale would produce 670cm³ of very concentrated urine and gains 330cm³ of pure water when the whale drinks 1000cm³ of sea water.