Egg osmosis lab report conclusion

Osmosis Through a cell membrane of an Egg Joe Lockwood Introduction: When a cell membrane is said to be selectively permeable, it means that the cell membrane controls which substances go in and out through the membrane. This characteristic of cell membranes plays a large role in passive transport. Passive transport is the movement of substances over the cell membrane without any input of energy through the cell. The energy for passive transport comes entirely from kinetic energy that the molecules have. The simplest type of passive transport is diffusion, which is the movement of molecules from a high concentration area to an area with a lower concentration. Diffusion moves down the concentration gradient, which is the difference in the concentration of molecules in a space. Osmosis is a type of diffusion in which water molecules move the concentration gradient downwards. When the concentration of solvent molecules outside the cell is lower than the concentration of solvent in the cytosol, the solution is hypotonic outside for the cytosol. If the concentration of solvent molecules is higher outside the cell, it is said that the solution is outside hypertonic. The solution outside is isotonic if the concentration on both sides of the cell membrane is the same. The egg shell is made of calcium carbonate and vinegar contains acetic acid. These two can respond to the production of calcium acetate and carbon dioxide which then deify in water and carbon dioxide, as evidenced by the two chemical equations: Hypothesis: The eggs will increase in mass in all three solutions, showing that diffusion and osmosis occur when the concentration of two solutions is different, so that balance can be established. Materials: To carry out this experiment, these materials will be needed: 1-2 fresh chicken eggs in their shells, masking tape and marker, distilled water, clear sugar syrup, vinegar, clear pot with lid, tongs, electronic balance, paper towels, paper and a pencil. Methods: On day 1, the first step should be to label the pot with your lab group and the word vinegar. Then the group will record the egg mass with the electronic balance and the results in the table of data. After this, the group will carefully place the raw egg in the pot and cover the egg with vinegar. Finally, the group should sum up the pot loosely and leave the pot for 24 to 48 hours until the outer calcium shell is removed. On day 2, the day should begin with the group opening the pot and pouring the vinegar. They will then use tongs to gently remove the egg to a paper towel and pat dry. When this is done, the group must mass the egg on an electrical balance and record the size, mass, and appearance of the egg. After this, they will clean the pot and relabel it with their lab group and the word distilled water. They will carefully place the egg in the pot and egg with distilled water. Finally, they will loosely recap the pot and let it sit for 24 hours. On day 3, the first step to open the pot and clean the distilled water. Then tongs should be used to carefully remove the egg to a paper towel and pat it dry. The size must be registered and so should be the appearance of the egg on the table. The group will then massage the egg on an electrical balance and record the results. After this, the pot must be cleaned and relabeled with the name of the group and the word syrup. Finally, the group should cover the egg in the pot with clear syrup, loosely re-cap the pot and let it sit for 24 hours. On day 4, the day should begin by the group opening the pot and pouring the syrup. Next, the group will use tongs to remove the egg very carefully, rinse the excess syrup under slow-flowing water and pat the egg dry on a paper towel. After this, the size and appearance of the egg must be recorded in the data table. Next, the mass of the egg should be taken on an electronic equilibrium and recorded. Finally, the work area must be cleaned and all laboratory equipment must be stored. Results: Questions: 1. Vinegar is made of acetic acid and water. Explain how it was able to remove the calcium shell. The reaction of the acetic acid and calcium carbonate of the egg shell produces calcium acetate and carbon dioxide, which then decompesses in water and carbon dioxide. 2.a) What happened to the size of the egg after remaining in vinegar? The egg got bigger. b) Was there more or less liquid left in the pot? There was less liquid in the pot. (c) Did the water get in or out of the egg? Why? Water moves into the egg because there is a lower concentration of dissolved molecules in the vinegar than there is in the egg. 3.a) What happened to the size of the egg after it remained in distilled water? The egg got a little bigger, but not by very much. b) Was there more or less liquid left in the pot? There was a little less liquid left in the pot, but the change was very small. (c) Did the water get in or out of the egg? Why? A small amount of water moved into the egg because the distilled water had a slightly lower concentration of dissolved molecules than in the egg. 4. (a) What happened to the size of the egg after remaining in syrup? The egg got smaller. b) Was there more or less liquid left in the pot? There was more liquid in the jar. (c) Did the water get in or out of the egg? Why? Water moved out of the cell because the syrup molecules were hypotonic for the dissolved molecules in the egg. 5. Was the egg larger after remaining in water or vinegar? Why? The egg was larger after remaining in water because water has the lower concentration of solvent molecules than the vinegar so more water would spread to an area of higher concentration of solvent particles. 6. Why are fresh vegetables sprinkled with water at markets? They This so that the water will spread into the vegetables and keep them plump and let them keep their look of freshness. 7. Roads are sometimes salted to melt ice. What What do this salts to the plants along the way and why? These salts dehydrate the plants because the higher salt concentration causes the water from the plant to spread out to even increase the concentration. Error analysis: A few errors may have been made in the course of this experiment. Washing the egg may have affected the mass. Also, the jars may not have been thoroughly cleaned before they put the next substance in. This may have affected the rate of dispersal because it would have changed the concentration of the dissolved particles. These errors and a few others may have occurred. Discussion and Conclusion: The hypothesis was not correct. While two of the solutions caused the eggs to increase in mass, syrup caused the egg to lose mass. This shows that the syrup was hypertonic to the solution in the egg, causing water from the egg to spread to try to establish balance. The mass of the egg increased in the distilled water and vinegar because they were hypotonic for the solution in the egg, causing water to spread in the cell. The shell on the egg dissolved because the egg shell is made of calcium carbonate and vinegar contains acetic acid. These two can respond to calcium acetate and carbon dioxide which then defse into water and carbon dioxide. BACK O SlideShare uses a cookies para otimizar a funcionalidade e o desempenho do site, assim como para apresentar publicidade mais relevant aos nossos usuários. Se você continuar a navegar o site, você aceita o uso de cookies. Leia nosso Contrato do Usuário e nossa Política de Privacidade. O SlideShare uses a cookies para otimizar a funcionalidade e o desempenho do site, assim como para apresentar publicidade mais relevant aos nossos usuários. Se você continuar a utilizar o site, você aceita o uso de cookies. Leia nossa Política de Privacidade e nosso Contrato do Usuário para obter mais detalhes. The result is that the egg in size and mass when placed in white vinegar solution and tap water solution. But reduced in size and mass when placed in syrup. Experiment 1 - The Eggsperiment with Vinegar solutionThe first experiment conducted was the egg placed in vinegar solution which allowed the egg to become soft and bouncy as jelly. Vinegar is a weak acid that is 5% acetic acid in water (meaning vinegar is largely water only). The egg has a shell that consists of calcium carbonate and has many proteins and fats dissolved in it, resulting in vinegar to have a lower resolve. When vinegar combines along with the shell of the egg, the calcium carbonate is eaten away or break down by the vinegar, which then produces carbon dioxide. The egg then reveals a semi-permeable membrane where it allows small molecules such as water to enter it. While this action is taking place, more water is entering the egg instead leaving it. This action is call osmosis that is the movement of water by a semipermeable membrane from a weak solution to a strong strong Experiment 2 - The Eggsperiment with Syrup solutionThe second experiment conducted was the egg placed in syrup solution causing the egg to be deflated. Osmosis takes action again in this experiment as the first to shrink the egg. Syrup is a sugary substance that has a dissolved concentration that is much greater than the egg. Experiment 3 - The Eggsperiment with Tap Water solutionThe third experiment was the egg that was placed in tap water solution, which allowed the egg to be inflated again. Osmosis also takes place in this experiment and the egg increases in size and weight more than the first and second experiments. Tap water is a weaker solution than the other solutions used in the first and second experiment, so that it could pass through the eggs semi-permeable membrane more easily. Finally, the goal is to determine why the egg changes in size and weight when placed in three different types of liquid solutions is dissolved. The hypothesis that was 'The naked egg when placed in tap water solution will go back to the original size and weight at the beginning of the first experiment. But change in weight and size when placed in syrup solution and vinegar solution.' was almost exact. Unfortunately, the hypothesis was wrong to say that the egg will go back to its original size from the beginning of the first experiment. Experiment.