Life Sciences 11 An Eggcellent Experiment Name:

**Purpose:**

*Practice scientific method See osmosis in action*

*Collect accurate data*

**Problem:** Which liquid would be the best to replenish your cells with water post-workout (after exercise)?

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Materials:**

5 eggs

5 beakers or cups

Vinegar

Gatorade

Saline solution (salt water)

Corn Syrup

Tap Water

Spoon

Distilled water

Milk

Pop

Scale

**Method:**

1. Weigh each egg and record data in the Pre-Experiment Egg column and on the cup.
2. Place each egg into a beaker and cover with vinegar. Soak all 5 eggs in vinegar overnight.
3. *VERY DELICATELY* drain the vinegar from each egg and record any changes (weight, colour *etc*.) in the 'After Soaking in vinegar column'.
4. Replace the vinegar with equal amounts of solutions of your choice so the egg is covered.
5. Wait overnight and record any changes seen in the eggs in the appropriate column.

Observations Chart:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Pre- Experiment Egg** | **After Soaking in Vinegar** | **After Soaking in \_\_\_\_\_\_\_\_\_\_\_** | **After Soaking in \_\_\_\_\_\_\_\_\_\_\_** | **After Soaking in \_\_\_\_\_\_\_\_\_\_\_\_** | **After Soaking in \_\_\_\_\_\_\_\_\_\_\_\_\_** | **After Soaking in \_\_\_\_\_\_\_\_\_\_** |
| **1**  **Mass:** |  |  |  |  |  |  |
| **2**  **Mass:** |  |  |  |  |  |  |
| **3**  **Mass:** |  |  |  |  |  |  |
| **4**  **Mass:** |  |  |  |  |  |  |
| **5**  **Mass:** |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Egg** | **Initial Mass**  **Mass Before Soaking in Test Liquid (*after* vinegar)** | **Final Mass**  **Mass After Soaking in Test Liquid** | **Change in Mass**  **(Final – Initial)** | **% Change in Mass**  **x 100 %** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |
| **5** |  |  |  |  |

**Analysis: (Answer in COMPLETE sentence!)**

1. What is your independent variable in this experiment? **How do you know?**
2. What is your dependent variable in this experiment? **How do you know?**
3. What controls did you use in this experiment?
4. Why did we have to pre-soak the eggs in vinegar before testing the post-workout drinks?
5. What does the egg represent in this experiment?
6. Describe the changes that you observed in **each** egg. For three (3!) eggs **explain** **why** these changes may have happened. Include a **labeled drawing** to help with your explanation. *Compared to the egg,* was the solution **hypertonic, hypotonic or isotonic**? Important terms to include: **semi-permeable membrane**, **solute concentration**, **water concentration**, **water movement down concentration gradient**.

|  |  |
| --- | --- |
| Egg 1: |  |
| Egg 2: |  |
| Egg 3: |  |
| Egg 4: |  |
| Egg 5: |  |

**Conclusion:** Was your hypothesis correct? *Based on your results from the Eggcellent Experiment*, justify your answer to the *problem*.