

Cellular Respiration in Dry and Soaked Seeds

Purpose: In this lab, you will be comparing cellular respiration in dry seeds and soaked seeds

Define Cellular Respiration: _____

Question: _____

Hypothesis: _____

Materials:

- 5 Dry Seeds
- 5 Soaked Seeds
- 3 Test Tubes
- Paper Towel
- Rubber Band
- 250 mL Beaker
- 3 Pieces of Sodium Hydroxide (Soda Lime)
- Food Coloring
- Plastic Spoon/Spatula

Safety:

- *Wear safety goggles*
- *Do not touch Soda Lime with your hands*

Procedure:

Refer to Figure 1. →

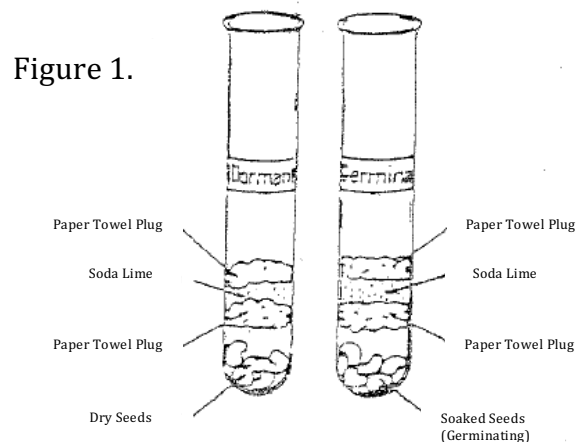
Day One:

1. Put 5 dry seeds into a test tube.
2. Pack a small amount of paper towel above the seeds so they will not fall out.
3. Add approx. ½ teaspoon of soda lime (3 pieces) to the test tube.
4. Pack a small amount of paper towel over the soda lime.
5. For test tube #2 follow steps 1-4 except use 5 **soaked seeds** instead of the dry seeds.
6. For test tube #3 follow steps 1-4 **without** seeds.
7. Take your 250 mL beaker and fill it about 1/3 of the way up with water.
8. Add **one** drop of food coloring to your water.
9. Tie a rubber band around all three test tubes to hold them together.
10. Gently place the three test tubes upside down in your beaker of water.
11. With a ruler measure, in mm, the height of the water **inside** each test tube. If the water is not inside the test tube enter "0" in your data table on the back.
12. Let the test tubes sit for at least 24 hours.

Day Two:

Do not lift the test tubes out of the water!!

1. Measure the height of the water inside each test tube. Record in your data table
2. Calculate the differences in the height of the water in each test tube. Record in your data table



3. Data:

Complete the table with your data. Remember your units!

Quantitative Data

Height of Water in Test Tubes				
	Height of Water Day One	Height of Water Day Two	Difference in Height of Water in Test Tubes	Class Average of Differences
Dry Seeds				
Soaked Seeds				
No Seeds				

Qualitative Data

Day One Observations:

Day Two Observations:

Analysis:

1. What is the purpose of cellular respiration? _____

2. What substances are needed for cellular respiration to occur? _____

3. What waste products are produced during cellular respiration? _____

4. Which type of seed had the highest rate of cellular respiration? _____

What is the *evidence* to support your answer? _____

5. Are seeds dead or just dormant? _____

How do you know? _____

6. A seed contains a food supply that is used during cellular respiration. Which seed uses food at a slower rate? _____

Explain why using food at a slower rate would be an advantage to a seed.

7. Soda lime absorbs carbon dioxide from the air. Why did you add it to the test tubes in this experiment? _____

8. Predict what the level of the water in the tubes would be after 24 hours if the soda lime was not used. _____

Explain why _____
