Cellular Respiration Essay, Research Paper

Introduction:

The purpose of this lab is to observe the rate of cellular respiration in a given organism by

observing the amount of oxygen gas taken in and the amount of carbon dioxide expelled by the

peas. The oxygen will be measured at 2 different temperatures and the carbon dioxide amount

will be determined by stochiometry after it has reacted with potassium hydroxide to form water

and potassium carbonate.

Lab Objectives:

-calculate the rate of cellular respiration from the obtained data.

-observe how cellular respiration works.

-use a chemical raection in oreder to find out the amount of initial reactant.

Hypotheses:

H0= The germinating peas will have the greatest respiration rate.

H1= The dry peas and beads will have the second highest respiration rate.

H2= The test tube with beads alone will have the lowest cellular respiration rate.

Materials List:

All materials are stated on lab sheet.

Procedure:

1. Obtain the volume of 25 germinating peas using the water displacement method. Dry

the peas. Also, set up the water baths, one at room temperature and the other at 10

degrees celsius.

2. Again using the water displacement method, place 25 dry peas in the water, and add

beads until the total displacement of the germinating seeds is reached. Dry the peas.

3. Once again use the water displacement method tp attain the number of beads that

would be needed to displace the same amount of water as the 25 germinating peas

displaced.

4. Repeat 1-3 with different peas. Set all these peas aside for later.

5. Assemble 6 respirometers. Take 6 vials and put a small swab of cotton in the bottom

of each. Saturate the cotton with 15%KOH. Dry the inside of the respirator vials.

Place a dry swab of cotton on top of the soaked one.

6. Put each set of peas in a vial. One set of 3 will be used at room temperature, and the

other will be used in the 10 degree water bath. Put the stopper with the

attached pipette on each. Place the weighted collar on each vial.

7. Create a bridge of masking tape to hold the pipettes out of water during the

equilibration period of 7 minutes.

8. After that time eriod, immerse all the vials in their respective baths. Arrange the

pipettes so that they can let me read from out of the water without having to br

touched.

9. After 3 minutes, record the initial reading of the pipette on each vial. Check the

temperature of the baths as well. For every 5 minutes as 20 minutes as elapsed, take

the position of the water in each pipette.

Conclusion:

In this experiment, the data proved by my hypotheses was to be correct. Starting with the

new beads and ending with the germinating peas, the respiration rate increased. Additionally,

there was an increase in resoiration rates with both types of peas at a higher temperature. These

conclusions were derived from calculating the amount of oxygen used in each vial. The greater

the amount of oxygen used, the higher the respiration rate.

Sources of Error:

Possible sources of error in this experiment include water leaking into the vial, and other

human errors. For instance, not measuring the volume correctly, or not putting enougfh KOH

into the bottom of each vial. Additionally, if the temperatures weren t exactly 10 degrees celsius

or room temperature, the results also would have been thrown off.