**Enzyme Potato Lab**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Period: \_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_**

**Background:**

In this lab, you will test the reaction rate of an enzyme called a **catalase**, a common enzymethat is formed in the cells of many living tissues. This specific enzyme **speeds up** a reaction which breaks down hydrogen peroxide (a toxic chemical) into 2 harmless substances- water and oxygen. Catalase is found in nearly every living thing. In this lab, you will study the catalase found in potato cells.

**Materials: (Please notify the teacher if any are missing)**

Part A materials:

* 1 container of potato puree
* 1 tablespoon
* 3 small beakers with 50 mL of hydrogen peroxide (1 cold, 1 room temperature, and one warm)

Part B materials:

* 1 container of potato puree
* Room temperature Hydrogen Peroxide
* pH labeled containers (bleach, water, and vinegar)
* Tweezers and stirring rod
* Hole punched papers (paper disks)
* Paper towels

**Procedure Part A:**

1. Obtain the container with 50 mL of cold hydrogen peroxide and fill it with a spoonful of potato puree.
2. Repeat with the room temperature and warm hydrogen peroxide and record what you see.

**Hypothesis:**

What effect do you think the temperature has on the reaction rate of the enzyme?

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**Part A Data:**

|  |  |
| --- | --- |
| **Temperature** | **Record your Observations** |
| **Cold** |  |
| **Room**  |  |
| **Boiled** |  |

**Procedures Part B:**

1. Fill the container labeled “ACID” with one spoonful of potato and 5-10 drops of **vinegar.** Swirl with stir rod.
2. Fill the container labeled “NEUTRAL” with a spoonful of potato and 5-10 drops of **water.** Swirl with stir rod.
3. Fill the container labeled “BASIC” witha spoonful of potato and 5-10 drops of **bleach.** Swirl with stir rod.
4. Get a clean beaker and fill it with 50 mL of fresh hydrogen peroxide at room temperature.
5. Using the tweezers, dip a small piece of paper into the **acid** potato solution. Dab excess solution on a paper towel.
6. Using the tweezers, place the paper disk (hole punched papers) in the bottom of the hydrogen peroxide beaker. As soon as the disk enters the beaker, start a timer.
7. When the disk floats to the surface of the hydrogen peroxide, stop the timer. Record the time in the data table and repeat steps 5 and 6 two more times. Then, calculate the average.
8. **Repeat** steps 5-7 for the neutral and basic solutions, obtaining 3 trials for each.

**Hypothesis:**

What effect do you think pH has on the reaction rate?

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**Part B Data:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Solution**  | **Rising time** **Trial 1** | **Rising time** **Trial 2** | **Rising time****Trial 3** | **Rising time** **Average (Total sum of times/ 3)** |
| **Acidic (vinegar)** |  |  |  |  |
| **Neutral (water)** |  |  |  |  |
| **Basic (bleach)** |  |  |  |  |

This is an edited worksheet from:

<https://sciencelessonsthatrock.com/catalase-enzyme-lab-html/> And

<https://www.education.com/science-fair/article/activator/>