

NAME _____

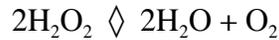
PERIOD _____

DATE _____

CATALASE LAB

Introduction

In this investigation, you will study several factors that affect the activity of enzymes. The enzyme to be used is catalase (also called peroxidase), present in most cells and found in high concentrations in liver and blood cells. You will use liver homogenate as the source of catalase. Catalase promotes the decomposition of hydrogen peroxide, H_2O_2 in the following reaction.



Hydrogen peroxide is formed as a by-product of chemical reactions in cells. It is toxic and would soon kill cells if not immediately removed or broken down.

Materials

10 mL graduated cylinder

100 mL graduated cylinder

reaction chamber (dropper bottle with cut off dropper)

pan of water (enough to cover 100 mL graduated cylinder when lying on side)

hydrogen peroxide

catalase solution

timer

Name _____

Period _____

Score _____/30

CATALASE LAB REPORT

Prelab—five points total

Carefully read through the introduction and procedure to the Catalase lab and answer the following prelab questions.

1. What enzyme are we using in this experiment? (1 point)
2. Where is the enzyme normally found? (1 point)
3. What reaction does this enzyme catalyze? (1 point)
4. How is hydrogen peroxide produced in the cells and why is it important to get rid of it? (1 point)
5. Why is it important to be as efficient as possible when carrying out this lab? (1 point)

Data—ten points total

Students will compile a data table and construct a bar graph using excel. Print your graph and data table and attach to this page to turn in for your completed report

Analysis—15 points total

1. Is the action of catalase constant with time? (1 point) Fully explain and support your answer. Refer to data and/or graph or class discussion when necessary. (2 points)
2. If you ran a new trial using 10 drops of enzyme, do you think more, less, or the same amount of O₂ would be produced compared to the previous runs? (1 point) Fully explain and support your answer. Refer to data and/or graph or class discussion when necessary. (2 points)

3. If you had allowed the trial using 1 drop to continue past 10 minutes until the reaction had run to completion, approximately how much O_2 do you think would be produced? (1 point) Fully explain and support your answer. Refer to data and/or graph or class discussion when necessary. (2 points)

4. What do you think would happen to the amount of O_2 produced if you ran the experiment in a pan of hot water? (1 point) Fully explain and support your answer. Refer to data and/or graph or class discussion when necessary. (2 points)

5. What do you think would happen to the amount of O_2 produced if you added 20 mL of hydrogen peroxide to your reaction chamber instead of 10 mL? (1 point) Fully explain and support your answer. Refer to data and/or graph or class discussion when necessary. (2 points)