

Biology experiment: effects of ph on enzymes assignment



**ASSIGN
BUSTER**

Biology Experiment Effects of pH on Enzymes AIM: To investigate the effect of pH on the enzyme catalase. THEORY: The enzyme in potato is called catalase. Catalase is also produced by the body to breakdown hydrogen peroxide(H_2O_2). Catalase present in all body organs being especially concentrated in the liver and erythrocytes (red blood cells). The brain, heart, skeletal muscle contains only low amounts. H_2O_2 is common by-product of metabolic reactions. In high concentration it is toxic; therefore, its accumulation in cells would be harmful.

Most tissues, however, contain the enzyme catalase, which catalyzes the breakdown of peroxide to harmless water and oxygen. Oxygen bubbles are produced during this interaction. The optimum pH for catalase is approximately neutral (pH 7.0). The pH of blood is approximately 7.5.

HYPOTHESIS: EQUIPMENT: ??? Cork borer ??? Potato ??? Ruler ??? Test tubes ??? Hydrogen peroxide ??? Universal indicator ??? Scalpel ??? Acid (HCl) ??? Alkali (NaOH) ??? pH chart ??? pipette ??? griffin filler METHOD: 1. Use a cork borer to obtain 5 2cm lengths of potato, being careful not to cut yourself.

The cork borer increases the accuracy the enzyme quantity and is a controlled variable. 2. Collect 5 clean test tubes and label them with a particular pH as listed in the Result table. 3. Using a pipette equipped with a Griffin pump for accuracy, add 4ml of hydrogen peroxide (substrate) to each test tube. 4. Add two drops of universal indicator to each substrate test tube to find its pH level. 5. Now add varying amounts of acid (HCl) and alkali (NaOH), being careful not to spill any on skin.

Drop by drop until a range of pH's are obtained by comparing the colour against a pH chart. Leave the test tubes to come to room temperature. This will become the independent variable. 6. Place the catalase (potato) into each test tube all at the same time to ensure accuracy. 7. Record the height of the bubbles (bottom to top) to the nearest millimetre produced after 3 minutes. 8. Repeat for reliability. Results: pH Height of oxygen bubbles (mm)

Class results	Average height
35	51
77	96
110	