

### Laboratory 3- Properties of Enzyme Action

**Purpose:** The properties of Enzyme Actions are the Catalytic power they have. Enzymes can break large molecules into smaller ones, bringing multiple molecules to create a larger molecule. They help increase the reaction but do not start or impact any response direction. Enzymes have specificity, meaning they will act on particular substrates, but they have multiple specificity properties and have reversibility depending on what the cell needs. Enzymes are also sensitive to temperature.

Procedures:

#### 3-C: Digestion of fat with pancreatic lipase and bile salts

1. Add just enough litmus powder to a container of dairy cream to produce a medium blue color. Pour 3 ml of the litmus cream into 4 separate test tubes. Into two additional test tubes, pour 3 ml of 2% pancreatin. Preincubate the litmus cream and the pancreatin separately in a 37°C water bath for 5 minutes. Then, prepare four test tubes as follows:

Tube #1: 3 ml cream + 3 ml pancreatin  
Tube #2: 3 ml cream + 3 ml distilled water  
Tube #3: 3 ml cream + 3 ml pancreatin + pinch of bile salts  
Tube #4: 3 ml cream + 3 ml distilled water + pinch bile salts

2. Gently shake each tube for 30 seconds to mix in the bile salts. Incubate all four tubes in a 37°C water bath for 1 hour, checking every minute for the first 5 minutes or until the first tube changes color, then every 15 minutes for the rest of the hour. Record the time and number of the tube. Continue checking for the remainder of the hour.

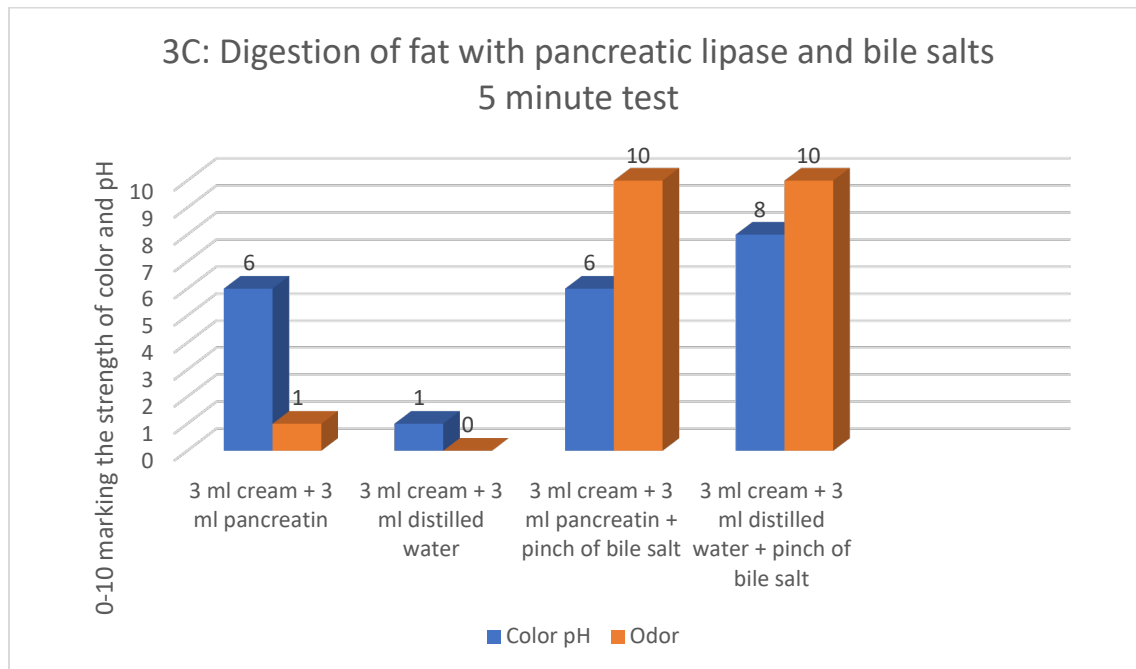
3. Remove the tubes from the water bath. Test the pH of each tube using pH paper and note the odor and color of each tube. **NOTE:** Blue litmus will turn pink in an acid environment.

4. Summarize the results in the following table:

Tube	Color pH	Odor	Time to change color
#1			
#2			
#3			
#4			

5. Explain how the digestion of fat affects the pH of the solution and how bile affects the rate of digestion.

## **Results:**



## **Discussion:**

Enzyme action acts on specific substrates, allowing them to have multiple properties and reversibility depending on the cell. Digesting fat with pancreatic lipase and bile salt was a long process, but it was interesting how the colors changed over time while in the incubator. Tubes 3 and 4 had a foul, rotten smell.

## **Conclusion:**

Even though this lab was very long, I found it stimulating, especially when a few tubes started to smell and change colors rapidly after 5 minutes in the incubator.