Biology 125- Human Physiology

Laboratory 3- Properties of Enzyme Action

Brianna Kingsland

September 1, 2023

I. Purpose

The purpose of this lab is to investigate various features of pancreatic lipase and bile salts' impact on lipids. Enzymes are complex proteins that begin and speed up certain chemical processes without being altered or depleted.

II. Procedure

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 a37°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				

III. Result

Tube	Color	pH	Odor	Time to Change Color
#1	Pink	5	Sour Milk	(3 minutes)
#2	Purple	8	Warm Milk	(No Change)
#3	Pink/Light Purple	6	Sour Milk	(5 minutes)
#4	Purple	8	Chemical Smell	(No Change)

IV. Discussion

From these experiments we learned that fats reduce the pH of the solution, producing a foul smell to cream, but bile increases the speed of digestion by rising the pH and generating no color shift.

V. Conclusion

This experiment taught me that bile enzymes facilitate the simpler digestion of fat emulsification.