Marlene Aguilar

BIO 125

9/12/23

LABORATORY 3: PROPERTIES OF ENZYME ACTION

PURPOSE:

The purpose of this lab was to examine the aspects of the action of pancreatic lipase and bile salts on lipids in order to understand the role pancreatic lipase had in fat digestion and how bile salts play a factor in overcoming problems the lipase can face by acting as an emulsifying agent breaking the fat down into small droplets allowing he lipase to have a larger surface area for its hydrolysis of fats.

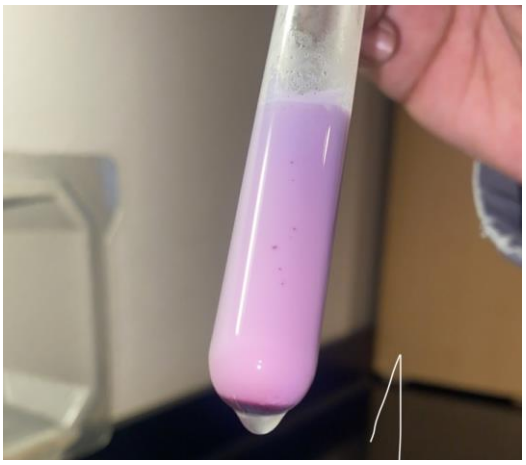
PROCEDURE:

- Litmus powder was added to a container of dairy cream creating a medium blue color
- 3 ml of the litmus cream was added to 4 separate test tubes, in 2 of those test tubes 3 ml of 2% pancreatin was added but preincubated separately in 37 C water bath for 5 mintues
- The test tubes were prepared as:
  Tube 1: 3 ml cream and 3 ml pancreatin
  Tube 2: 3 ml cream and 3 ml distilled water
  Tube 3: 3 ml cream and 3 ml pancreatin and pinch of bile salts
  Tube 4: 3 ml cream and 3 ml distilled water and pinch bile salts
- Each tube was shaken for 30 seconds to mix in bile salts then incubated in the water bath for 1 hour but checking every 15 minutes to inspect for color change
- After the hour, tubes were removed from bath and tested for pH

RESULTS:

Tube	Color	pH	Odor	Time to change color
#1	Light pink/purple	6	Milk	15 min
#2	Dark blue/purple	8	No distinct odor	30 min
#3	Pink/purple	6	Rotten cheese	30 min
#4	Dark/light purple	7	Cheese	45 min

15 minutes:



Tube 1

Tube 2

Tube 3

Tube 4

<u>30 minutes:</u>

Tube 1

Tube 2

Tube 3

 **Tube 4**

45 minutes:

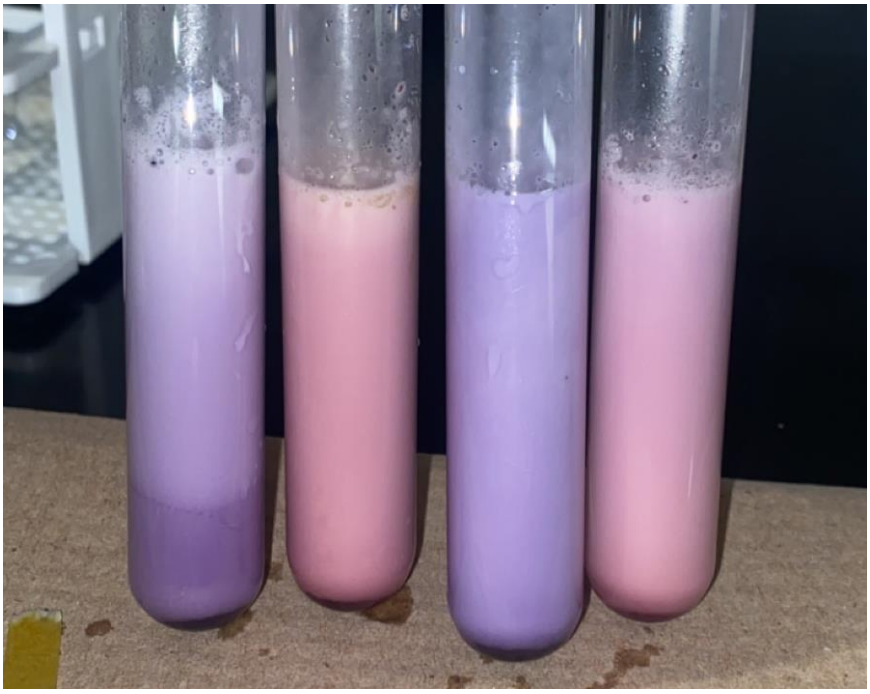
 **Tube 1**

 **Tube 2**

Tube 3

Tube 4

<u>60 minutes:</u>



Tubes from 4-1

DISCUSSION:

In this experiment, as time went by all solutions began to change color tube #1 was the quickest to change color from a light purple to a darker purple top but light pink bottom in 15 minutes but after 60 minutes it was a light pink/purple. Tube #4 took the longest to have a color change from a purple to lighter purple in 45 minutes. Comparing all the tubes from start to their end color I would say tube #1 had the most color change. Tube #3 had the most distinct odor or I would say the worst smell out of all being a rotten cheese scent. Tube #2 had the highest pH of 8. The digestion of fats affects the pH of the solutions in the way that they produce fatty acids that neutralize and lower the pH. Bile affects the rate of digestion due to the bile acids breaking down large lipid droplets into smaller ones thus increasing the surface area for digestive enzymes.

CONCLUSION:

In conclusion, based on this experiment and seeing how the solutions changed colors at different rates and different shades resulting in different pH's and odors the role of pancreatic lipase and bile salts were shown. With this knowledge it creates a better understanding of how this works in the human body and why each of the elements used are important in digestion.