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Lab 3 - Properties of Enzyme Action
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Purpose

To give us a better understanding on why enzymes are important, what their role is, and what they are composed of. This lab also discussed how enzymes initiate and accelerate specific chemical reactions without being changed or used up, and how they act as catalysts because of their complex molecular configuration, providing temporary binding sites for specific substrate molecules. Understanding what happens during the denaturing period and why this occurs was also one of the objectives of this lab procedure.

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.

Results

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

Tube	Color	pH	Odor	Time to change color
#1	Light pink	7	Spoiled milk	10min/30min
#2	Light purple	8	No odor	10min/30min
#3	Pink	8	Rotten eggs	10min/30min
#4	Blue/purple	6	Burnt	10min/30min

Discussion

It was interesting seeing the color and odor change through time with temperature. Although the smell was not very pleasant, I don't know why it made me think maybe this is why some people smell when they sweat, because enzymes are being broken down? It probably has nothing to do with it but that thought came to my mind. I enjoyed learning about enzymes, but I wish the lab would've been faster.

Conclusion

- Be able to define an enzyme.
- Understand the manner in which enzymes operate.
- Understand the effect of pH and temperature on an enzyme.
- Understand the difference between digestion and emulsification.
- Understand the roles of indicators and buffers in this experiment.