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Bio 125

Physiology

Lab #3

Properties of Enzyme Action

In our lab we went ahead and performed the digestion of fat with pancreatic lipase and bile salts. Pancreatic lipase plays a big role in fat digestion while bile salts help overcome problems by acting as emulsifying agents. They break down the fat into smaller droplets so that lipase has a larger surface for its hydrolysis of fats.

With starting this lab, we will be using 4 separate testing tubes each containing 3 mL of litmus cream. Into two of our tubes, we will be pouring 3 mL of 2% pancreatin. We will then pre-incubate the litmus cream and pancreatin separately in 37 Celsius degree bath for only 5 minutes. After, we will then label our tubes as follows with certain ones containing distilled water or a pinch of bile salts. **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. Gentle shake tubes to mix in the bile salts. Place them back into the incubator for 30 minutes, checking every 5 minutes or until the first tube changes color and so forth. Reminding to record the time and number of the tube. After 30 minutes we will remove all tubes from the water bath and test the pH of each one noting the odor and color.

Table	color	pH	Odor	Time to change color.
#1	two-tone purple	6	burnt	16 minutes
#2	purple	7	milk	no change in 30 minutes
#3	pink	5	burnt charcoal.	20 minutes
#4	purple	7	burnt	no change in 30 minutes

Digestion of fat produces fatty acids that neutralize the alkali, sodium carbonate, lowering the pH and change its color. Bile affects the rate of digestion through the process of emulsification. Bile acids breakdown large lipids droplets into smaller ones, increasing the surface for digestive enzymes. Enzymes are a protein that acts as catalysts within living cells. Catalysts act by reducing the activation energy, thereby increasing the rate of reaction. The raising of temperature generally speeds up a reaction and lower temperature slows down a reaction. The change of pH outside of this range will slow enzyme activity. That is what exactly happened with our lab.

In conclusion, our lab did take a total of 30 minutes to complete as to, two of our experiments took that long to find any findings. A major finding that we noted was the smell of milk and burnt charcoal. We believe that the burnt charcoal smell was caused by the bile salts.