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Tuesday Lab

Laboratory 3-Properties of Enzyme Action

Purpose- Pancreatic lipase is a major enzyme that is responsible for fat and intestinal digestion. By itself lipase is ineffective due to its water soluble enzyme trying to act on lipid droplets that are water insoluble. The bile salts try to solve this problem by emulsifying the fats and making them into smaller droplets so that lipase has a larger surface area. The purpose of the lab was to show us different aspects of pancreatic lipase and bile salts taking action on lipids.

Procedures- The procedure for laboratory 3C was that we first dropped 3mL of litmus cream into 4 different test tubes (#1 ,#2, #3, and #4). We then added 3mL of 2% pancreatin to test tubes #1 and #3 and preincubated all of them in a 37 degree celsius water bath for 5 minutes. After those 5 minutes we then added bile salts to test tubes #3 and #4 and shook them for 30 seconds. We then added all 4 of the test tubes to the water bath at 37 degrees celsius for an hour, checking on them every minute for the first 5 minutes or until one of them showed any color change. After seeing a color change, we then had to check back every 15 minutes for the remaining hour. After the 1 hour water bath we then checked the pH level of all 4 tubes with pH strips. We had to then write down the results of the pH, along with the results of the color change and odor.

Results-

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

Tube	Color	pH	Odor	Time of color change
#1	Pink	4	Moldy cheese smell	Changed after 40 minutes
#2	Purple	8	Slight moldy smell	No color change
#3	Purple	7	Burning smell	No color change
#4	Pink	6	Moldy cheese smell	Changed after 10 minutes

Discussion- Doing laboratory 3C helped me to better understand the action that bile salts have on pancreatic lipase and it was really cool to watch it happen and make

observations. Tube #1 had 3 ml of cream + 3 ml of pancreatin, the end result of this tube was that the color was pink, the pH level was 4, it had a moldy cheese smell and the color changed after 40 minutes. Tube #2 had 3 ml of cream + 3 ml of distilled water, the result of this tube had no color change, the pH level was 8, and it had a slight moldy cheese smell. Tube #3 had 3 ml of cream + 3 ml of pancreatin + a pinch of bile salts, the results showed no color change, the pH level was 7, and it had a burning smell to it. The last tube had 3 ml of cream + 3 ml of distilled water + a pinch of bile salts, the results for this tube showed color change to pink, the pH level was 6, it has a moldy cheese smell, and the color changed after 10 minutes. These results showed the actions the bile salts and pancreatic lipase have on the lipids. We did not have any errors but some experimental errors that could have happened during this experiment was putting the wrong solutions into the tubes, or getting the tube numbers mixed up when they were in the water bath. Overall this experiment was very educational and helpful to better understand what was actually going on with the different tubes.

Conclusion- The experiment done in laboratory three was done to show the results of how bile salts help pancreatic lipase by emulsifying the fats and making them into smaller droplets so the lipase has a larger surface area to work with. The results of this experiment showed that tube numbers 2 and 3 had no color change but tube numbers 1 and 4 did change color to pink. Tube number 4 changed color after just 10 minutes, whereas tube number 1 took 40 minutes to change. The results also showed each tube's substance pH level, the tube numbers 2 and 3 had the highest pH level. All of the tubes had a bad smell, besides tube number 3. In conclusion this experiment was very important to accurately show exactly how actions of pancreatic lipase and bile salts work on lipids.