Dayana Silva

Professor Okerblom

Physiology

12 September 2023

Tittle: Laboratory 3 - 3-C Digestion of fat with Pancreatic lipase and bile salts

Purpose: Enzymes, as proteins, are subject to denaturing, which disrupts their tertiary molecular structure. Which then leads to extreme changes in temperature,pH, and Odor.Pancreatic lipase has a major role in fat digestion, but by itself,lipase is ineffective because it is a water-soluble enzyme trying to act on large lipid droplets, which are water insoluble. In this experiment bile salt acts as emulsifying agents,breaking the fat into smaller droplets.

Material and Methods:

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. Preincubatethe 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

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. Summarize results.

Results:

Test Tube	color	pH	Odor	Time to Change color
#1	½ of the tube is pink the other half is lavender	#7 (yellow)	Rotten milk	5 min
#2	Light purple	#8 (lime green)	Rotten milk	15min
#3	Very pink	#6 (light orange)	cheese	15 min
#4	Milky blue lavender color at the top other half is blue lavender at the bottom	#8 (lime green)	Gross smell	15 min

Discussion: Setting the test tubes in the bath water caused the test tubes to change color. A couple of the test tubes were relatively similar in color for a couple of min. When testing out the pH of each test tube 2 out of the 4 tubes had the same pH, however when it came to the odor test tube number four was by far the worst smell.

Conclusion: Temperature and pH has an effect on a Enzyme and changes color of solution. Lipase is ineffective by itself as it is a water soluble enzyme.