Title: Lab 3 Properties of Salivary Enzyme Action

Purpose: In this experiment, be able to define an enzyme and understand the process of denaturing. Also, understand how an enzyme operate in an understanding manner. Finally, understand the role of indicators and buffers in the experiment.

Procedures:

-Add enough litmus powder to a container of dairy cream to produce medium blue color.

- pour 3ml of litmus cream into 4 separate test tubes.

- two additional tubes pour 3ml of 2% pancreatic.

- pre-incubate the litmus cream and the pancreatic separately in a 37c water bth for 5 minutes.

- prepare 4 tubes as follows:

Tube#1: 3ml cream + 3ml pancreatin

Tube#2: 3ml cream + 3ml distilled water

Tube#3: 3ml cream + 3ml pancreatin + pinch of bile salts

Tube#4: 3ml cream + 3ml distilled water + pinch bile salts

* Gently shake each tube for 30 seconds to mix in the bile salts. Incubate all four tubes in a 37C water bath for 1 hour and check every first 5 minutes or until the first tube change color, then every 15 minutes for the rest of the hour. Record the time and number of the tube and continue checking for the remainder hour.

-remove all tubes from water bath and test the pH of each tube using pH paper and note the odor and color of each tube.

Results:

|  |  |  |
| --- | --- | --- |
| Tube Color | PH Odor | Times to change color |
| #1 separated pink/Dark pink, lavender | 8 baby milk | 5min |
| #2 lavender with foam | 8 rotten milk 5/10 | 15min |
| #3 foam/ separated milky pink | 6 rotten milk 10/10 | 30min |
| #4 dark purple separated with cloud misty foam | 8 rotten milk 3/10 | 45min |
|  |  |  |

Discussion:

Enzymes are the bio catalyst produced by living tissue which catalyzed specific biological reactions.

Substrate- compound which bind with active site of enzyme.

Active site- Substrate binding site of an enzyme.

Activation energy- Minimum amount of energy which convert subject into product.

Induced fit- After substrate binding the modifications occurs in binding site of enzyme for binding with substrate is known as induced fit. factors are - Temperature, pH, substrate and enzyme concentration, activator, inhibitor, ion concentration, concentration of product.

Competitive inhibitor has structural similarly with substrate while noncompetitive does not have any similarities. Competitive inhibitors bind with active sites and noncompetitive bind with allosteric site(binding sites other than active site).

Conclusion: Enzymes are proteins that help speed up metabolism, or the chemical reactions in our bodies. They build some substances and break others down. All living things have enzymes. Our bodies naturally produce enzymes. But enzymes are also in manufactured products and food. Enzymes work by binding to reactant molecules and holding them in such a way that the chemical bond-breaking and bond-forming processes take place more readily. Each enzyme has an optimum pH range. Changing the pH outside of this range will slow enzyme activity. Emulsification is a process of dissolving fats into smaller fat droplets with the use of bile, while digestion (chemical digestion) involves the conversion of biomolecules (proteins, lipids, and carbohydrates) into their simpler form with the use of enzymes.