Understanding Digestion and Emulsifying

Purpose: The experiment done is for the purpose of understanding how emulsifying agents work together with digestive enzymes, to extract energy for our bodies.

Procedure:

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 37C 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 37C 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 color of each tube.

NOTE: Blue litmus will turn pink in an acid environment

Results:

| 3C Data | Tube # | PH Level | Time Colored Changed | Next 10Min | Next 10Min2 | Next 10Min3 |
|---|---|---|---|---|---|---|
| | | | 5Min | 10Min | 10Min | 10Min |
| | Tube#1 | 8 | Light purple at bottom | Same | More purple | Darker on top and Lighter at bottom |
| | Tube#2 | 8.5 | Still light purple at bottom | Blue | Same | Purple/Blue |
| | Tube#3 | 6.5 | Light purple at bottom | Light purple | lighter purple | Light purple pastel |
| | Tube#4 | 8 | No color changes | Same | Same | Grey/ Blue |

Discussion: The experiment did not take the time indicated, we only did 30min instead of 1hr, per professor, though results were still managed to get. There was a noticeable change in color in almost all test tubes, as the table above describes it, you can see the breaking down of the lipase and the emulsification of the fat.

Conclusion: The understanding of this experiment was met. A digestive enzyme breaks down proteins to help break down of food and to help aid digestion. Emulsification helps in breaking down the fat into smaller globules that help speed up the process of digestion.