Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 4: How is Protein Digested

Activity 4.2

Purpose

Food is made up of carbohydrates, proteins, and fats. In the previous activity, you observed how your teeth and tongue started the physical digestion of food. Saliva in your mouth began the chemical digestion of carbohydrates. Most chemical digestion of carbohydrates occurs in the mouth and intestines- not the stomach.

However, we know that the stomach plays a role in digestion. This is especially true of the digestion of proteins. We will make a model of your stomach using the chemicals found in your stomach and test tubes. Your stomach has hydrochloric acid and an enzyme called pepsin. We will use cubes of egg white for protein.

Word Wall Words

Protein:_____

Pepsin:_____

✚ Safety

Wear goggles when working with chemicals. Hydrochloric acid (HCl) is strong. Do not get it on your skin. If you get it on your skin, thoroughly wash the skin with soap and water.

Procedure: Day 1

1. Take a paper cup and write your period and group number on it with a permanent marker.
2. Pick up 3 test tubes. Label them with a marker as follows: *HCl, P, HCl+ P*
3. Mass a piece of egg white. Record the mass in your data table. Place it in the "HCl" test tube.
4. Add 10 ml of HCl to the test tube marked "HCl". Gently swirl the contents of the test tube.
5. Mass a piece of egg white. Record the mass in your data table. Place it in the "P" test tube.
6. Add 10 ml of pepsin to the test tube marked "P". Gently swirl the contents of the test tube.
7. Mass a piece of egg white. Record the mass in your data table. Place it in the "HCl+P" test tube.
8. Add 10 ml of pepsin and 10 drops of HCl to the test tube marked "HCl+P". Gently swirl the contents of the test tube.
9. Place the test tubes in the paper cup. Set the paper cup in the back of the classroom.

Procedure: Day 2

10. One student in the lab groups needs a pair of gloves.
11. The student with the gloves needs to pour out the contents of test tube "HCl" over the sink and catch the egg piece in a strainer. Carefully dab off excess liquid from the egg piece.
12. Check the scale is dry and zeroed. Mass the egg piece and record it in the data table.
13. Repeat this process for the two remaining test tubes.
14. Clean up:
    a. Put egg , paper cup, and paper towels in the trash.
    b. Rinse out test tubes well and place them where your teacher wants them.
    c. Dry the counter and the scale.
15. Calculate the percent the mass of the egg has changed for each test tube.

Data Table

	Mass Before (g.) + Observations	Mass After (g.) + Observations	% Change in Mass = $\frac{\text{(Mass Before – Mass After)}}{\text{Mass Before}} \times 100$
Egg Whites With **Hydrochloric Acid**			
Egg Whites With **Pepsin**			
Egg Whites With **Pepsin** and **Hydrochloric Acid**			

Making Sense

Which model of the stomach (which test tube) best digested the protein (egg)? Explain.