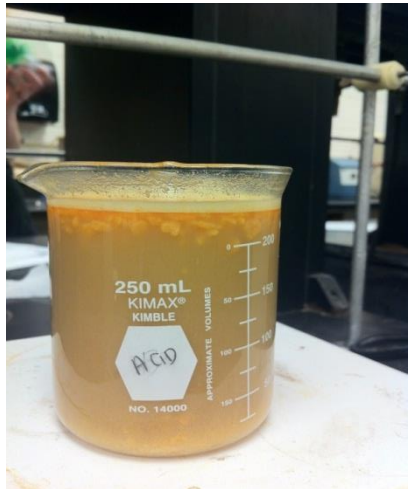California State University of Bakersfield, Department of Chemistry

Stomach Acid

Standards:

<u>4-LS1-1.</u> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

<u>MS-LS1-7.</u> Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Introduction:

Have you ever wondered about the process of food breaking down in your stomach? Your stomach contains a very powerful acid that breaks down the food you eat into tiny molecules. This lab can be used with various food items to simulate this process by creating an acid of the same temperature and same acidity of an average stomach.

Materials:

- 12M hydrochloric acid (1mL)
- Deionized water (120mL)
- Food item of choice
- Thermometer
- Magnetic stirrer

- Timer
- Litmus Paper

Safety:

When working with HCl use gloves and eye protection, and work under a ventilated area.

Procedure:

1. Put 1 mL of HCl in graduated cylinder.

2. Pour the HCl into a 125 mL beaker to allow room for the food item.

3. Measure 120 mL using a graduated cylinder three times, 50 mL, 50 mL, and 20 mL for accuracy.

4. Check the pH of the solution with litmus paper and make sure it is at a level of 1. Adjust as needed.

5. Check the temperature of the solution and adjust to about 35-37 °C (Hot Plate)

6. Set solution to stir and add desired food item while starting timer

7. Stop timer when food has been disintegrated into small pieces.

Data and Observations:
What did you see? Anything you were not expecting?

References:

1. Chloe, A. How to Make Simulated Stomach Acid.
   http://www.ehow.com/how_4856282_simulated-stomach-acid.html