

Acid/Base Simulation

Use a simple model of the digestive system to represent the stomach (cup filled with vinegar) and the small intestine (cup filled with water and baking soda). Test a medication that is commonly used to relieve pain or fever, aspirin. Unfortunately, aspirin can also make your stomach hurt. To prevent this from happening, chemists have developed several types of coatings to keep aspirin from being digested until after it has passed through the stomach and into the small intestine. Perform a quick test on one of these coatings to see how well it works.

Materials: coated aspirin, enteric aspirin, cups, acetic acid (vinegar), baking soda, salt, and water

Procedure:

Fill cup with vinegar. Fill second cup with a mixture of baking soda, salt and water.

Drop both aspirins into the cup containing vinegar.

Record time taken for each aspirin to dissolve.

After 5 minutes, take the enteric aspirin out of the vinegar cup and place it in the baking soda/water mix.

Record observations and time taken for aspirin to dissolve.

Protect That Pill

Materials: flour, cornstarch, sugar, oil, paper plate, cups, clear diet soda, color-coated candy, recipe and fraction worksheet

Procedure:

Create recipe for your coating and then test it by observing its effectiveness in protecting a piece of candy.

Divide the class into groups of 3-4 students each and distribute worksheets

Discuss the different properties of each ingredient

Record approximate amount of ingredients.

Apply the coating to a piece of candy. Make a thin and sleek design so the pill is easy to swallow, inexpensive to ship and requires less packaging.

Allow coated candy to dry for 5 minutes. Set up a control for the entire class.

Drop coated candies into cup of clear soda and record time.

Allow candy to sit in the soda for up to 10 minutes. Stir cup if the coatings are not dissolving.

Remove coated candy from soda-filled cup.

Make observations about which coating best protected the candy "pill" and compare the coating recipes to see what did not work.

Calculate on worksheets the fractions represented by each ingredient in recipe.

Answer the following:

What are the relationships between performance and proportion of certain ingredients?

What are the advantages and disadvantages of using certain materials?

Suggest and write a new and improved coating recipe.

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