



Making a Model of Digestive Enzyme Action

In this experiment, you will model how digestive enzymes break down starch (a complex carbohydrate) into simpler sugars.

Name: _____

Date: _____

Topic: Enzymes & Digestion

Grade Level: _____



WHAT YOU WILL LEARN

You will observe how an enzyme (amylase) breaks down starch into simpler sugars, just like in the human digestive system.



MATERIALS

- 1/2 cup starch solution (see below)
- 1/4 cup saliva (from your mouth—collect in a clean cup)
- 2 clear cups or test tubes
- Iodine solution
- Droppers
- Warm water (about 98–105°F or body temperature)
- Timer
- Labels or masking tape
- Stirring stick or spoon

HOW TO MAKE STARCH SOLUTION

Mix 1 tablespoon of cornstarch with 1/2 cup of cool water. Slowly stir in 1 cup of boiling water. Stir until the mixture becomes clear and thickened. Let it cool to warm (not hot). This is your starch solution.



SAFETY

Do not swallow any materials. Wash your hands after the experiment.



PROCEDURE

1. Label one cup "Test" and the other "Control."
2. Add 2 tablespoons of warm starch solution to both cups.
3. To the Test cup, add 2 tablespoons of saliva. Stir gently.
4. To the Control cup, add 2 tablespoons of warm water. Stir gently.
5. Place both cups in warm water to keep the temperature warm (body temperature).
6. Wait 15 minutes.
7. After 15 minutes, add 2–3 drops of iodine solution to each cup. Stir and observe the color.
8. Record your observations in the table below.
9. (Optional) Repeat the test after 30 minutes and record your observations.

TEST
(Starch + Saliva)



Enzyme present:
starch broken down

CONTROL
(Starch + Water)



No enzyme:
starch remains

IODINE COLOR GUIDE



Blue-black = Starch is present



Yellow-brown = Starch is mostly broken down

OBSERVATIONS

Time	Test (Starch + Saliva)	Control (Starch + Water)
15 minutes		
30 minutes		

What did you notice? _____



THINK & ANSWER

1. What happened in the Test cup after 15 minutes? _____
2. What happened in the Control cup after 15 minutes? _____
3. Why do you think the results were different? _____
4. How does this experiment model what happens in your body when you eat food? _____



EXTENSION IDEAS

- Test what happens at a colder temperature (refrigerator) or a hotter temperature (not above 110°F).
- Test other substances (like protein with gelatin and protease, if available).
- Research other enzymes that help with digestion.

