



Starch Test

Use iodine to test for starch

Activity Guide

Try This!

SAFETY: Iodine is toxic. Do not ingest it.

(It will also stain your skin and clothes, although this is not harmful.)

1. Place a tiny sample of cooked cornstarch in one well of the well plate.
2. Place a tiny sample of uncooked cornstarch into a second well of the well plate.
3. Put a few drops of iodine on top of the samples. What happens?
4. Now place a tiny sample of each of the remaining food and paper samples in wells of the plate.
5. Put a few drops of iodine on top of each of the remaining samples. Do they react in the same way?
6. If you like, put a corn or wheat puff in your mouth and let it absorb saliva. Then, put it in a well and see what happens when you drop iodine on it.

What's Going On?

Starch reacts with iodine, turning a blue color. The more starch there is in a sample, the darker blue it will turn.

- High-starch samples turn dark blue:
 - Cooked cornstarch
 - Cooked macaroni
 - Rice puff
 - Wheat puff
 - Some papers
- Low-starch samples turn lighter blue, or don't change color:
 - Uncooked cornstarch
 - Uncooked macaroni
 - Wheat puff been soaked in saliva
 - Some papers



The cooked food samples turned a darker blue than the uncooked samples because cooking helps to break down the cell walls, releasing the starch.

A regular wheat puff turns dark blue, but a wheat puff soaked in saliva doesn't. That's because saliva contains an enzyme called *amylase* that converts starch to sugar. Enzymes are complex proteins that act as catalysts to speed up reactions.

Most paper products are made from the wood of trees, which contains cellulose. When some papers are manufactured, they go through a chemical process that breaks down the cellulose into starch. Those papers will react with iodine and turn blue. Other papers (especially rough papers) are manufactured differently, so the cellulose remains. Those papers won't react with iodine.

Learning Objectives

- Starch reacts with iodine, turning a blue color.
- Cooked food samples turn darker blue than uncooked samples, because cooking helps to break down cell walls and releases starch.

Materials

Each visitor will need:

- 24-well plate
- Labeled cup of uncooked white rice
- Labeled cup of cooked white rice
- Labeled cup of uncooked macaroni
- Labeled cup of cooked macaroni
- Labeled cup of corn puffs
- Labeled cup of wheat puffs
- Labeled cup of uncooked cornstarch in water (*Requires advance preparation; see below*)
- Labeled cup of cooked cornstarch in water (*Requires advance preparation; see below*)
- Labeled dropping bottle with diluted iodine (*Requires advance preparation; see below*)
- Small pieces of different kinds of paper, napkins, or paper towels
- Measuring spoons
- Glass measuring cup

Advance Preparation

SAFETY: Be careful when cooking the rice, macaroni, and cornstarch.

Uncooked cornstarch mixture

1. Put $\frac{1}{2}$ teaspoon cornstarch in a glass-measuring cup.
2. Slowly stir in $\frac{1}{4}$ to $\frac{1}{2}$ cup water. The mixture should be thick and cloudy.

Cooked cornstarch mixture

1. Put $\frac{1}{2}$ teaspoon cornstarch in a glass-measuring cup.
2. Slowly stir in $\frac{1}{4}$ to $\frac{1}{2}$ cup water.
3. Cook the mixture in a microwave for one minute.
4. Stir, and cook for another 30 seconds. The heated mixture should be thick and clear.

Diluted iodine

- Combine water and iodine in approximately equal quantities, to make a light brown liquid.

Credits

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