

FOOD SCIENCE!

WEEK 1 | PART 1 | THE SUGAR TEST

SUMMARY

- ✓ Today we learn about the sweetest ingredient in food and nutrition—sugar.
- ✓ We will learn how to test foods for sugar.
- ✓ We will also explore sugar's role in nutrition.

EXPERIMENT

MATERIALS LIST

- Yeast
- Sugar
- A cookie
- Flour
- Optional: Other foods to test, like cereal, fruit, milk
- Hot water
- Measuring spoons
- Quart size Ziploc bags (4-6)
- A mixing bowl or other large container
- Kitchen Thermometer (optional)
- Marker or pen
- Timer

INSTRUCTIONS

1. **Warning!** This experiment uses hot water. Be sure to get help from an adult.
2. Prepare: Gather the supplies listed in the materials list. Setup somewhere that is safe for your computer. You may want to put down plastic or paper to catch any mess.
3. Label your Ziplocs with marker or pen. (1) Control (2) Sugar (3) Flour (4) Cookie. If you have more foods to test, label one bag per food item.

4. Add two teaspoons (10ml) of yeast into each of your Ziploc bags.
5. Add one teaspoon (or 4g) of each food item its bag. (Don't add any food to the control bag.)
6. Make warm water by mixing hot water from a kettle or urn with cold water. If you have a kitchen thermometer, it should be between 105°F (40°C) and 125°F (50°C). If you don't have a thermometer, you can test it with your finger. It should feel very warm, but not hot.
7. Once the water is the proper temperature, add a ¼ cup to each bag.
8. Seal the bag most of the way shut, carefully squeeze out as much air as you can without spilling, and then seal it all the way shut.
9. Gently kneed each bag to mix the water, yeast, and food until it is well combined.
10. Fill a large bowl or container halfway with more warm water between 105°F (40°C) and 125°F (50°C), or very warm to the touch. Put the bags in the bowl. This is called a hot water bath. Check the temperature of the hot water bath every few minutes. Add a little got water as needed to keep it the right temperature.
11. Set a timer for 10 minutes.
12. When the time is up, check on the bags. Record the results.
13. Optional: Leave the bags for another hour or more and see if anything changes.

EXPLANATION

Yeast are single celled organisms, members of the fungus kingdom. Here is a picture of yeast under microscope. Yeast eats sugars and other carbohydrates. In the process they give off carbon dioxide gas and alcohols. This process is called fermentation. It is the carbon dioxide gas that makes the bag inflate. These same bubbles make bread rise, becoming light and fluffy, full of air pockets. The more sugar in the bag, the more gas the yeast will produce, and the more the bag inflates. At first the yeast will only eat sugar, but after an hour or more they will start to break down other carbohydrates into sugar—like the flour. So foods that have carbohydrates but no sugar will inflate after an hour or more. With this in mind, we can use yeast to detect sugar, and to measure the amount of sugar in a food.

