

## EXPERIMENT: EXPLORING YEAST

*Note: Remember to record your experiment in a lab notebook!*

### **Question:**

What is yeast? Why is yeast added to bread?

### **Background:**

Yeast is a micro-organism (micro = tiny, organism = living thing) that can be found all around us. There are many different kinds of yeasts. Some naturally-occurring yeast can be found on our skin. Other naturally-occurring yeasts can be found on the skins of fruits and vegetables. Some yeasts are used to make industrial products like ethanol (which is used as fuel to make cars run).

However, many of us are most familiar with the type of yeast we use to make bread. The scientific name of this type of yeast is *Saccharomyces cerevisiae*. Baking yeast can be found in the grocery store under names like: “active yeast,” or “instant yeast,” and can be found in packets or jars. Most of us home cooks are familiar with yeast that takes the form of dehydrated granules (you may think the granules look like sand).

Yeast is fed with a sweetener, like sugar or honey. When the yeast eats sugar, carbon dioxide gas is produced and little bubbles get trapped in the bread. It’s important that the carbon dioxide gas is produced gradually, and not all at once. The gradual process allows the bread to rise, and makes bread fluffy inside. (The gluten network in bread dough also helps contribute to the rise. Air bubbles get trapped the gluten, leaving a nicely leavened loaf.)

When the loaf of bread is baked, the heat ends up killing the yeast. However, the gas bubbles that were trapped in the loaf can enlarge during baking as the entrapped air can expand, and water converts to steam.

### **Materials needed:**

- 2 small, clean, empty bottles with a neck (About 8oz. A clear pop bottle works great. Make sure the bottle is large enough that the water only fills it 2/3 full.)
- 1 cup warm water, divided. Make sure the water is not too hot or cold! (Try to get water 100-110F)
- 2 packets of quick rise instant yeast
- 1 tsp. sugar
- 2 latex gloves, or balloons
- 2 rubber band
- Clock or stopwatch
- Tape and marker to label the bottles

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### Procedure:

1. Prepare your experiment. Stick a piece of tape on each clean, empty bottle. On one bottle mark "Contains Sugar," and on the other bottle write "No Sugar."
2. Add 1/2c warm water to each bottle.
3. In the bottle marked "Contains Sugar," add 1tsp sugar to the water and swirl to dissolve.
4. Sprinkle 1 packet of yeast into each bottle and swirl to mix.
5. Immediately cover the top of both bottles with the gloves (or balloons) so the opening of the glove is fastened over the opening of the bottle, fingers pointing up. Rubber band the gloves tightly to the bottle.

### Observations: *(Record all observations in a lab notebook!)*

- What do you observe about the experiment? Are the gloves flat, or inflated?
- Which glove inflated?
- How long does it take the glove to inflate?

### Conclusions:

Which glove inflated? Why?

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