



Getting a Rise from Yeast

Supplies:

- Three 16 oz plastic water or soda bottles,
- 6 tsp of active dry yeast (or three packets),
- 1 ½ cups water,
- 4 tbsp sugar,
- 1 tsp salt,
- Three balloons



Age or Grade: All Ages

Time: 1 – 2 hours

Background: Yeast are single-celled fungi. They are related to other fungi such as edible mushrooms, and molds found on food and used to ripen cheeses. Yeast cells are egg-shaped and can only be seen with a microscope. It takes 140,000,000,000 yeast cells to make up one package of yeast. The scientific name for yeast is *Saccharomyces cerevisiae* or “sugar eating fungus.” Organisms such as yeast release CO₂ as they break down their food. Yeast multiplies based on the limitations of the environment, producing CO₂ as it grows.

Project Goal: Observe what conditions are best for yeast to grow.

- What to Do:**
1. Label three water bottles 1, 2 and 3.
 2. Fill three water bottles ½ full with water.
 3. In bottle 1 add 2 tsp yeast.
 4. In bottle 2 add 2 tsp yeast and 2 tbsp sugar.
 5. In bottle 3 add 2 tsp yeast, 2 tbsp sugar, and 1 tsp salt.
 6. Predict: Which bottle will produce the most CO₂?





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7. Place a balloon over the top of each bottle. Allow bottles to sit in a warm, draft-free place for 1-2 hours.
8. Observe which bottle has the largest inflated balloon? How did adding salt affect the amount of gas produced (and the size of the balloon)?

Reflect:

1. What would happen if you changed the amount of water, yeast, sugar, or salt in the bottles? What if you used flour instead of sugar?
2. What would happen if you placed the bottles in a cooler location or in the dark?
3. What is meant by the term “variable”?
4. Why is it important to change only one variable at a time in an experiment? What is meant by the term “control”?
5. Which bottle do you think contained the “control” in this activity?

Apply:

1. Where can you see yeast in action in things we use every day?
2. Why is yeast important for those things?

Going Further:

Devise an experiment based on this activity. Choose one variable and change it...see if it changes the results. Or try this fun recipe! <https://4-h.org/about/blog/inspire-kids-to-do-bread-in-a-bag/>

Notes for Parents or Helpers:

Salt controls the growth and fermentation rates of yeast. It has a strengthening effect on the gluten protein in the dough. Without salt, bread rises faster and air pockets enlarge where the gluten has broken, allowing larger holes to form. For more recipes and tips about using yeast, go to <https://redstaryeast.com/>, or <https://www.breadworld.com/>.



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