

Sugar Detective

Ag in the Classroom Baker's Dozen of Agricultural Lesson Plans

Subject: Science

Skills:

- Predicting
- Measuring

Grade Level: Grades 3-6

Length of Lesson: 60 minutes

Overview:

Students will predict the effect sugar has on yeast, then mix both substances with water and observe the effect. Students will then test various cereals to see which contain sugar.

Background Information:

Sugar is a food for yeast and when both are combined in warm water, the yeast ferments, producing carbon dioxide.

Materials: (All materials are per group)

- 4 zipper seal plastic bags
- 4 tablespoons of yeast
- Measuring cup
- Water
- 1 teaspoon sugar
- 2 tablespoons Cheerios™
- 2 tablespoons Reese's Puffs Cereal™
- **Sugar Detective** Investigation Worksheet



Teaching the Lesson:

1. Ask students if they have ever eaten yeast. Remind them yeast is used in baking many types of bread. Discuss what effect yeast has on the bread. Why do they think this effect happens?
2. Explain to students that yeast uses sugar as a food. When yeast is combined with sugar, a chemical reaction occurs.
3. Give each group four plastic zipper bags with a tablespoon of yeast in each. Label them A-D.
4. Have students put bags C and D aside.
5. Tell them to measure 1 teaspoon of sugar and put into bag B.
6. Pour $\frac{1}{4}$ cup of warm water into bags A and B.
7. Carefully squeeze out all the air and seal the bags. Gently massage bags to mix the contents. Place bags into large measuring cups and measure the volume of each.
8. Have students predict what they think will happen to both bags. It will take about 10-15 minutes for the reaction to occur. Discuss with students the terms **control** and **variable** in the context of a science experiment. Have them identify each.
9. Once students see the reaction, have them measure the bags again and record the difference.
10. Repeat the entire experiment adding 2 tablespoons of Cheerios™ that have been crushed to powder to bag C. Add 2 tablespoons of Reese's™ cereal (also crushed) to bag D. Note: Do not let students see the sugar content on the boxes, only the names. Add $\frac{1}{4}$ cup warm water to each and squeeze out air.
11. Make predictions about which cereal contains the most sugar and measure the volume of both bags.
12. Measure again after the reaction has occurred.

Extensions:

These experiments could also be done in small soda bottles with balloons placed over the necks of the bottles. You would not be able to measure the volume however. Students could test other cereals as well.

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Funding for this Mid-Atlantic AITC project
has been provided by the National AITC Consortium.



Lab Sheet

Sugar Detective

Problem *(What question do you want to answer?)*

Materials *(What do you need to do your experiment?)*

Hypothesis *(What do you think will happen and why?)*

Procedure *(What steps must you follow to do the experiment?)*

Observations *(What do you see happen during the experiment?)*

| Bag Number | Contents | Prediction | Volume |
|------------|----------|------------|--------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

Conclusion *(What did you learn/discover from the experiment?)*