

Lab-Measuring CO₂ Produced by Yeast

Background: What is yeast? Yeast is a microscopic fungus... it's a living organism!!! In a process called fermentation, these fungi convert the sugars present in dough into carbon dioxide gas, which forms pockets in the dough, causing it to expand. This process also produces small amounts of alcohol, but baking burns it off (and kills the yeasts).

Purpose: In this lab, you will test the rates of alcoholic fermentation by yeast when combined with different sweeteners.

Materials: Yeast, warm water, 3-100 mL beakers, graduated cylinder, sweeteners of your choosing, funnel, 3- 12" balloons, permanent marker, measuring tape, medicine cups, thermometer, heat lamp, colored pencils

Procedures:

1. Choose two sweeteners to use in your experiment.
2. Label 3 balloons-one for the control (no sweetener), the other two with the type of sweetener used.
3. Measure 2.5 teaspoons of yeast and using the funnel, put 2.5 teaspoons of yeast in each balloon.
4. For each balloon, measure out 60 mL warm (45 degrees Celsius) water.
5. Add 1 teaspoon of sweetener to the water (of the balloons that will have sweetener.)
6. Using the funnel, pour the water/sweetener mixture into the correct labeled balloon. Tie off the balloon.
7. Measure the circumference of the balloon and record in your data table for 0 min.
8. Place the balloons in a warm area under or near a heat lamp.
9. Measure the circumference of the balloons with a measuring tape in cm & record every minute for 20 minutes.
10. Clean and dry all lab equipment.

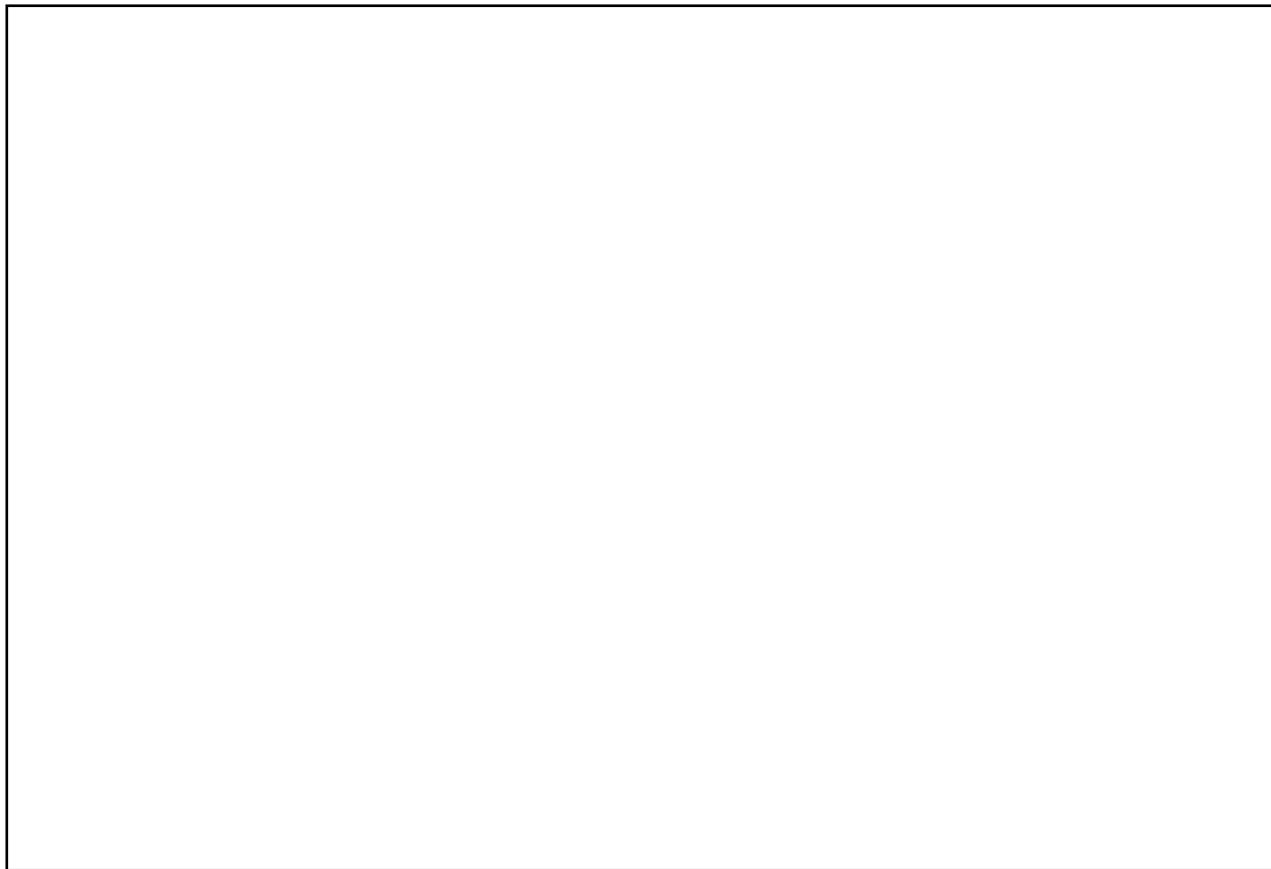
Data:

	Diameter of balloon in cm Control (no sweetener)	Diameter of balloon in cm Sweetener #1	Diameter of balloon in cm Sweetener #2
0 min.			
1 min.			
2 min.			
3 min.			
4 min.			
5 min.			
6 min.			
7 min.			
8 min.			
9 min.			
10 min.			
11 min.			
12 min.			
13 min.			
14 min.			
15 min.			
16 min.			
17 min.			
18 min.			
19 min.			
20 min.			

Graph: Use a colored pencil to graph each balloon. Indicate below which colored pencil is which balloon

Control: _____ Sweetener #1 _____ Sweetener #2 _____

Diameter in cm



Time in min.

Analysis:

1. What caused some of the balloons to inflate?
2. What chemical reaction does this experiment show?
3. Which of the sweeteners that you used caused the yeast to produce a bigger balloon? Why?
4. What characteristics of the sweeteners might be responsible for the difference in production?
5. What can you conclude from your experiment about different sweeteners?