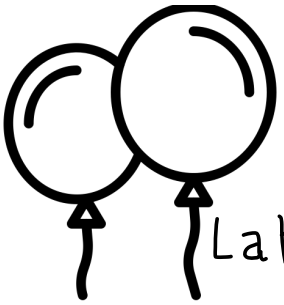

Name: _____

Extension 8.3.2

Lab-Measuring CO_2 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 types and amounts of sweeteners, such as table sugar, corn syrup, molasses, honey, fruit juice concentrate (with no added sugar), or saccharine. Propose a hypothesis about how different sweeteners will affect the amount of CO_2 production by yeast.

Hypothesis: _____

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

Procedures:

1. Choose two sweeteners to use in your experiment.
2. Label 3 balloons with your name and class period and 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.
8. Place the balloons in a warm area under or near a heat lamp.
9. Observe your balloons in 5 minute increments as well as balloons from other class periods. Measure the circumference of the balloons with a measuring tape and record.
10. Clean and dry all lab equipment.
11. Leave your balloon on the counter for other classes to observe.

Data:

Balloon	0 min	5 min	10 min	15 min	20 min	Other class	Other class	Other class
Control (no sweetener)								
Sweetener_____								
Sweetener_____								

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?

Conclusions:

1. Was your hypothesis supported by your results? Why or why not?

2. What can you conclude from your experiment about different sweeteners?