HOMESCHOOL SCIENCE EXPERIMENT

OBSERVING THE GROWTH OF YEAST UNDER DIFFERENT SUGAR CONCENTRATIONS

QUESTION: How does the concentration of sugar affect the growth of yeast?

Name: _____ **Date:** _____

MATERIALS

- Active dry yeast
- Granulated sugar
- Warm water (100–110 °F / 38–43 °C)
- 5 clear cups or jars
- Measuring cups and spoons
- Stirring spoon
- Permanent marker
- Timer or clock
- Ruler (mm)

VARIABLES

Independent Variable:
Sugar concentration

Dependent Variable:
Yeast growth (measured by foam height)

Controlled Variables:
Yeast amount, water volume, water temperature, cup size, time, environment

PROCEDURE

1. Label 5 cups: 0% (Control), 1%, 2%, 4%, 8%.
2. Add 100 mL of warm water to each cup.
3. Add sugar to each cup to make the following concentrations (w/v):

Cup	Sugar Concentration	Sugar to Add (per 100 mL water)
0% (Control)	0%	0 g (no sugar)
1%	1%	1 g (1/4 tsp)
2%	2%	2 g (1/2 tsp)
4%	4%	4 g (1 tsp)
8%	8%	8 g (2 tsp)

4. Stir each cup until the sugar dissolves.
5. Add 1/2 tsp (about 1.5 g) of yeast to each cup.
6. Stir gently to combine.
7. Start the timer.
8. Let the cups sit in a warm place undisturbed.
9. Observe the yeast growth for 60 minutes.
10. Record your observations every 10 minutes.

TIP: Keep temperature and amounts the same for all cups.

OBSERVATIONS – Foam Height (mm)					
Time (minutes)	0% (Control)	1%	2%	4%	8%
0 (just after mixing)					
10					
20					
30					
40					
50					
60					

Which sugar concentration produced the most yeast growth (highest foam)? _____

Which produced the least? _____

ANALYSIS

1. Describe how sugar concentration affected yeast growth.

_____

2. Why do you think the control (0% sugar) had little or no growth?

_____

3. Why do you think 8% sugar did not produce more growth than 4%?

_____

4. What would you like to test next? _____

Clean up: Pour down the drain with plenty of water. Wash cups and tools with warm, soapy water.