Fermentation in Yeast Lab

# Materials

4 tablespoons Active Dry Yeast

1-2 packets sugar

1-2 packets fully artificial sweetener\* (Sweet-n-Low or Equal)

1-2 packets “Natural” artificial sweetener\* (Splenda)

1-2 packets Natural sweetener\* (Stevia)

5 Balloons, 2.5 inch long and thin recommended

5 empty water or soda bottles (same sizes)

Funnel (optional)

Warm water

Ruler or measuring tape

\*maybe visit a restaurant to find just 1-2 packets of each sweetener?

# Procedure

1. Using the funnel, carefully add 1 tablespoon of dry yeast to all 5 bottles.
2. Label your bottles to correspond to the data table you need to complete (see Data Table).
3. Next, add the different packets of ‘sugar’ sources to individual bottles. Do not add anything to the ‘water’ bottle. Make sure you add the same amount of sugar source to each (i.e. use either 1 packet in each bottle or 2 packets in each bottle). Be sure to match the labels.
4. Add about ¼ cup (or whatever amount measures about 2 cm in bottle) of warm (not too hot, body temp) water from the faucet to all 5 bottles.
5. Swirl well to mix.
6. Place a balloon over the bottle opening. Be sure to completely cover the opening.
7. Observe the bottles and balloons carefully and continually. Using the table below, collect the appropriate data at the indicated time points. You should record the height of the balloon as well as the height of the yeast/sugar slurry in your bottle. Measure the same way for all bottles. Carefully record the timing for your data collection.
8. During your data collection you should photograph your experiment in progress and at the end.
9. Compile your results in a table like the one below.
10. Create a line graph from your data. Label your Graph. Label your axes: the y-axis is Height (cm) and the x-axis is Time. Label and plot the data for each “sugar” as a different line on your graph. (Hint: google “how to make a line graph in Excel” or “how to make a line graph in Word” to find a tutorial)
11. Write a Lab Report with the following sections:
    1. Introduction: Give some background information on cellular respiration. Include the reactants and the products. End this section with a hypothesis (remember it’s a statement) and a prediction.
    2. Materials and Methods- Write what you did versus cutting and pasting the procedure
    3. Results: Include a written paragraph, a table and a line graph. Include any problems or issues.
    4. Discussion- In your discussion, describe your understanding of what happened and include answers to the following questions. Which bottle was the control? What was the independent variable (something you measured)? What was the dependent variable (something you changed between in each bottle)? Address anything that did not work or performed differently than expected.
    5. Resources: Include our Study Plan and any resources you consulted in APA format.

Lumen Learning (2022). General Biology. Lumen Learning <https://lumenlearning.com/courses/biology-for-non-majors-i/>.

1. Upload Lab Report in D2L

A note about this experiment: You should complete this experiment near a sink if possible. By the end of your experiment, you may have a bit of a mess.

# Data Table

