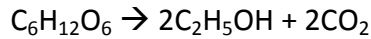


Fermentation: Inflating a Balloon

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The purpose of this activity is to review and reinforce anaerobic respiration (fermentation). You will review cellular respiration, both aerobic and anaerobic, and discuss the by-products of fermentation. The reaction that will be occurring is as follows:



Materials:

- Empty and clean water/soda bottle, ~500ml
- Party balloons
- Yeast packets
- Warm water
- Sugar

As a lab:

1. Stretch the balloon out by blowing it up 5-6 times and then set it aside.
2. Add about 200ml of warm water to the bottle (do not make the water too hot, it will kill the yeast, ~110 F is sufficient).
3. Add one packet of yeast and 2-3 teaspoons (~20 grams) of sugar to the bottle.
4. Stir or swirl the mixture until the yeast and sugar is dissolved. DO NOT SHAKE THE BOTTLE!
5. Attach a balloon to the mouth of the bottle.
6. After several minutes, you will notice the balloon should be standing upright. After several more, the balloon should inflate.

As a demo:

1. Approximately 20 minutes before the beginning of class, follow the steps above to prepare an example of the end-point to the experiment.
2. Just before class, prepare another bottle with warm water and sugar. During the demo, you will discuss the process of fermentation and ask the students questions about cellular respiration and fermentation. Finally, discuss bread-making and discuss what other organisms use it....YEAST! Then add and dissolve the yeast packet and place the balloon on. The students can observe the balloon inflate during the remainder of the class time.