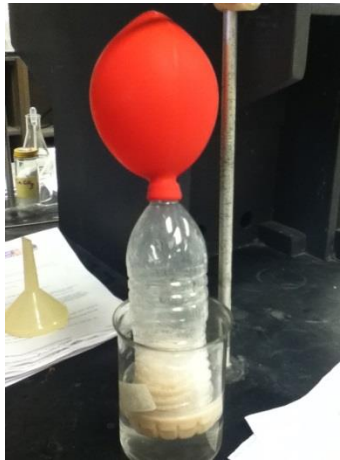




California State University of Bakersfield, Department of Chemistry

Cellular Respiration with Yeast



Standards:

HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Introduction:

Have you ever wondered how the “holes” in bread are made? Yeast makes tiny gas bubbles in our in bread before it gets baked. This experiment demonstrates cellular respiration when the yeast consumes the sugar and releases carbon dioxide.

Materials:

- A packet of yeast (available in the grocery store)
- A small, clean, clear, plastic bottle (16 oz. or smaller)
- 1 teaspoon of sugar
- Some warm water
- A small balloon

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments

Procedure:

1. Fill the bottle up with about one inch of warm water.
2. Add the entire yeast packet and gently swirl the bottle a few seconds.
3. Add the sugar and swirl it around some more.
4. Blow up the balloon a few times to stretch it out then place the neck of the balloon over the neck of the bottle.
5. Let the bottle sit in a warm place for about 20 minutes

If all goes well the balloon will begin to inflate!

Data and Observations:

What did you see? Anything you were not expecting?

Questions:

1. Does room temperature affect how much gas is created by the yeast?
2. Does the size of the container affect how much gas is created?
3. What water/room temperature helps the yeast create the most gas?
4. What "yeast food" helps the yeast create the most gas? (try sugar, syrup, honey, etc.)

References:

1. Blow Up a Balloon With Yeast. Science Bob.
<http://www.sciencebob.com/experiments/yeast.php> (accessed July 18, 2013)