**Fermentation in Cellular Respiration**

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Fermentation is anaerobic respiration “without air.” Yeasts organisms are a kind of mold that “feeds on” food rich in carbohydrates such as corn, rice, or cereal grains. Yeasts secrete enzymes that break down these complex carbohydrates into simple sugars.

**Purpose:** To observe the catabolic process of fermentation.

**Materials:**

Dry active yeast packet (found in baking aisle of grocery stores)

Empty and cleaned soda bottle

Balloon

Table sugar (granulated)

Warm water (the warmer the water the better the reaction)

Masking tape

Pieces of cabbage

Crushed grapes

Pieces of boiled potato

**Procedure:**

Observe as your teacher does the following:

1. Put 1 spoonful of yeast and 2 spoonfuls of sugar in the soda bottle.

2. Fill the bottle ¾ full with warm water.

3. Quickly stretch the balloon over the opening of the bottle.

4. Seal with masking tape.

5. Shake the bottle to speed up the reaction.

6. Measure the diameter of the balloon every 2 minutes.

7. Shake as needed to mix the ingredients.

8. Set up different bottles following steps 1-7 but substituting either slices of cabbage, crushed grapes, or pieces of a boiled potato for sugar.

**Data**:

Time (min) Balloon diameter measurement (cm/in)

**Conclusions**:

What gas is filling the balloon and what is this gas’ role in fermentation?

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Yeast, like all living organisms, needs a source of energy. What is the source of energy in this experiment?

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Which food filled up the balloon the most?

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These foods are rich in starch. What do you know about the structure of starch that could provide the energy needed for fermentation to occur?

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