

Fermentation in a Bottle

Fermentation is a key step in making ethanol from corn. Check out this lab activity to see fermentation in action.



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Introduction:

In the United States, ethanol is usually produced from corn. Fermentation is the chemical process in which microorganisms like yeast or bacteria break down a substance into a simpler substance. To make ethanol, yeast is used to cause fermentation that breaks down corn sugars into ethanol.

Materials/supplies:

- Feedstocks: Corn Starch, Corn Meal, Corn Syrup & Sweet Corn (canned or thawed frozen corn)
- 2 packets of dry active yeast
- Warm water
- 4 plastic water bottles with lids
- 4 balloons
- Measuring spoons
- Measuring cups
- Funnel (optional)
- Flexible tape measure (or a ruler & yarn)
- Timer

Procedure

1. Label the each of the four plastic bottles with the feedstock you will put in it: corn starch, corn meal, corn syrup or sweet corn
2. Write down your predictions for which feedstock will inflate the balloon the fastest and which one will inflate the balloon most after 15 minutes
3. Place 1 tablespoon of feedstock & 1 teaspoon of yeast in each of the bottle (as labeled)
4. Add 1/4 cup of warm water to the bottle, close the lid & swirl gently
5. Remove the lid and put a balloon over the opening on top of the bottle
6. Measure the height & circumference of the balloons every 5 minutes for 15 minutes
7. Write down your observations about what the contents of each bottle looks like
8. Remove the balloons & discard the contents, you can rinse out & recycle the bottles

My Predictions

Which feedstock will inflate the balloon the fastest (after 5 mins): _____

Which feedstock will inflate the balloon the least (after 15 mins): _____

Which feedstock will inflate the balloon the most (after 15 mins): _____

My Observations

Time	Measurement	Corn Starch	Corn meal	Corn Syrup	Sweet Corn
5 min	Height				
5 min	Circumference				
10 min	Height				
10 min	Circumference				
15 min	Height				
15 min	Circumference				

My Conclusions:

Which feedstock inflated the balloon the fastest (after 5 mins): _____

Which feedstock inflated the balloon the least (after 15 mins): _____

Which feedstock inflated the balloon the most (after 15 mins): _____