

4-H Hands-on Science

Inquiry Card

Bubbly or Not?

Type of Inquiry:

PEOE

Process Skills:

Observing, predicting, explaining, questioning, comparing, contrasting.

The Scenario:

These days, it's so easy to buy a fizzy drink at the store. It's hard to believe that our ancestors were actually making these drinks at home. The goal of this activity is to make homemade ginger ale using fermentation of yeast and to modify the ingredients to determine how each contribute to the quality of the drink.



Open-Ended Inquiry Question:

- If I change the _____, what will happen to the amount of carbon dioxide produced?

Possible Independent Variables:

Temperature of the water, amount of yeast, types of yeast, amount of ginger, amount of sugar, amount of lemon juice.

Instructions:

1. Share instructions on how to make homemade ginger ale with the young scientists.
 - Fill a 2L pop bottle with 1.5 L of room temperature water, 3 tablespoons of lemon juice, 2 tablespoons of dry active yeast, a small amount of grated ginger root and 1 cup of white sugar. Screw the lid and shake vigorously for 30 seconds. Let it sit for 4 hours
2. Let them PREDICT what will happen and EXPLAIN their prediction.
3. Let them make the ginger ale according to the instructions and observe what will happen. Let them write their OBSERVATIONS and EXPLAIN them based on their current knowledge.
4. Brainstorm with the young scientists what they could change for the next cycle of the PEOE.
5. Repeat the cycle by changing only one variable at a time.

Scientific Principles:

Yeast feeds on sugar and when metabolized, it produces gases such as carbon dioxide. This is why we get bubbles in a fizzy drink. Yeast will not survive in extreme temperatures (too cold or too hot). The sugar is necessary for fermentation, but the lemon and ginger are there only for flavouring.



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