Acids in Drinks Experiment

ACIDITY TESTING

Test for acidity in different common beverages. Students will discover how acidity affects their teeth and learn how to make heathier choices when choosing beverages to enjoy. *Experiment time: 15 Minutes*

Background: People use a pH scale, measuring with values from 1—14, to measure how much or how little acid is in a substance. To give you an idea of how the scale can be used, water has a pH value of 7 while battery acid has a pH value of 1. If a food or drink has a pH value closer to 1 than 7, you may run the risk of destroying your tooth enamel.

Tooth enamel is the hardest substance in the human body, even harder than your bones!

Question: Which of the following common beverages contain the highest level of acid?

Prediction: Review the three beverages that you will use in this experiment. Which one do you think will have the highest level of acid? Why do you think that is? [Take a quick moment to discuss this with your students].

Materials:

- (3) 3.5 oz. clear cups
- (1) Teaspoon
- Beaker
- Timer
- Data sheet
- Baking Soda (Sodium Bicarbonate)
- (40 mL) Apple juice
- (40 mL) Orange juice
- (40 mL) Cola

Procedure:

1. Line the three clear cups in a row for easy observation.
2. Using the beaker, measure 40 mL of each beverage and pour them separately into their own cups. *
3. Using the teaspoon, measure one spoonful of baking soda.

4. **Apple juice**: A second person will use the timer to time how long the beverage fizzes after you pour the baking soda into the juice. Record the length of time onto your data sheet.
5. **Orange juice**: Repeat step 4 using the orange juice.
6. **Cola**: Repeat step using the cola.

What Just Happened?

Baking soda has a pH level of 8.3, which places it on the alkaline (*basic*) end of the pH scale. Basic substances, like the baking soda, mixed with acidic substances react very strongly together creating a carbon dioxide gas (CO_2). In this experiment, the more bubbles that formed means the more acid a beverage had!

Which beverage fizzed the longest once the baking soda was added? Was your prediction correct?

Science Flash Quiz: The fizzing caused by the mixing of the beverage with the baking soda can be described as a Chemical _____.

Answer: Chemical Reaction. When substances combine and change into something else they have experienced a chemical reaction/ change. ***For example, when the baking soda and orange juice were mixed and bubbles appeared that were not there before!***

References

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