



SCIENCE FESTIVAL FAMILY EXPERIMENT GUIDE: MARTIAN JELLY

Instructions:

Student: Fill your plastic cup with warm water about halfway.

Both: When the fizzing dies down, what do you notice?

Student: Dissolve one spoonful of grape jelly in the cup and note the color.

Adult: Slowly, add 2-3 spoonfuls of vinegar. Take care not to let any vinegar splash—it can sting your eyes!

Adult: Add a pinch of baking soda and stir. Be careful! A fizzing reaction will occur, possibly causing it to overflow.

Student: Stir until the color of the grape jelly solution changes again.

Questions for after:

K-2nd:

- What did you see?
- Can you describe what happened when the jelly changed color?
- Did you hear or smell any changes?

3rd-5th:

- Can you explain what happened when we added baking soda, when we added vinegar?
- Is the baking soda an acid or a base, why do you think that?
- Is the vinegar an acid or a base, why do you think that?

How It Works:

Chemical reactions occur when one chemical meets another. For example, when you added the baking soda (a base), a reaction occurred and it made the solution *basic*, changing the color of the grape jelly to a greenish-black. When you added vinegar (an acid), a reaction occurred, and the color of the grape jelly solution changed back to purple.

Vocabulary:

Basic: A solution is *basic* if it has a low concentration of hydrogen ions, or a pH of greater than 7. Some examples of basic things are soap, bleach, ammonia, and toothpaste.

Acidic: The opposite of basic is *acidic*—acidic solutions have a high concentration of hydrogen ions and a pH of less than 7. Some examples of acidic things are lemon juice, coffee, and soda.

Real-World Application:

Neutral pH (not basic or acidic) is best for most living beings. The more acidic or basic a liquid becomes, the more irritating it is to our skin, eyes, and organs. For example, most household cleaners (bleach, oven cleaners and tub and tile cleaners) are basic. Many things we like to eat are acidic but can harm our stomach or damage our teeth in large quantities, like coffee or soda, or citrus juice. Knowing how to combine acids and bases is very helpful for baking and cooking and for scientists working with dangerous acids and bases.

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