



Keep It Fresh!

Learn how you can keep a sliced apple fresh and ready to eat by testing different solutions that may keep the fruit from browning.



Fun Facts/Information:

- A process called oxidation is what will cause your apple to brown. This is the same process that causes metal to rust.
- There are three ways to slow down oxidation and reduce browning: Cooking the apple, reducing the PH of the apple, or reducing its exposure to oxygen.
- The pH value of something tells us how acidic or basic it is.

Learning Objectives:

- Identify and evaluate which solution most effectively slows down the browning of an apple, based on observable evidence
- Explain how and why a solution slows oxidation and reduces apple browning.



Materials:

- Apple
- Apple Cutter or knife (adult use only)
- Six small bowls
- Six sticky notes or labels
- Pen or pencil
- Honey
- Lemon Juice
- Salt
- Lemon-lime soda
- Club Soda
- Tap water
- Teaspoon
- ½ teaspoon
- 1 cup measuring cup
- Three spoons
- Notepad or paper

Procedure:

Safety Considerations

- Adult supervision is required when slicing the apple in this experiment.
- Check the materials list to ensure there are no allergens for anyone participating in this activity.

1. Use your notebook to record a hypothesis for this experiment. A hypothesis is an educated guess of what will happen during the experiment that can then be tested. Research Question: Which solution will be the most effective in slowing down the apple's browning?
2. Create a label for each solution to label the bowl that it will be in. You will need the following labels: honey, lemon juice, salt, lemon-lime soda, club soda and control. Place a label on each of the six bowls.
3. Add one cup of lemon-lime soda to the bowl designated for it.
4. Add one cup of club soda to the bowl designated for it.
5. Add one cup of tap water to the bowl labeled honey, then add 1 tsp of Honey and mix with a spoon.
6. Add one cup of tap water to the bowl labeled salt, then add ½ tsp of salt and mix.
7. Add one cup of tap water to the bowl labeled lemon juice, then add 1 tsp of lemon juice and mix.
8. Add nothing to the bowl labeled control.
9. Ask an adult to use an apple cutter or knife to slice the apple. It will need to be cut into 6 even slices.
10. Use the apple cutter to cut the apple into 6 equal pieces.
11. Immediately place each slice of apple into a bowl.
12. Set a timer for 15 minutes. Leave apple slices in the bowls until the time goes off.
13. When the timer goes off, remove all apple slices from the bowls.
14. Observe any changes that have occurred with your apple. Record the observations on your paper.
15. Taste each apple slice!

Discussion Questions:

- Ask yourself: Was your hypothesis correct?
- Which solution kept the apple from browning the least?
- Look up the typical PH for the solutions tested. How is this information significant to your results?
- Which apple slice tastes the best?

Extensions:

- Test out other fruits and vegetables with this process, such as Avocado, Banana, and Potato.

For more activities, please visit us at www.alcosan.org/educational-activities.

