

Apples: Stop the Browning!



Have you ever wondered if there was something you could do to stop apples from turning brown after they're cut? The good news is lemon juice will do the trick — but some people don't like the taste of lemon-y apples. Are there any other ingredients in your kitchen that can keep apples in their original splendor? Become a food scientist at home and find out!

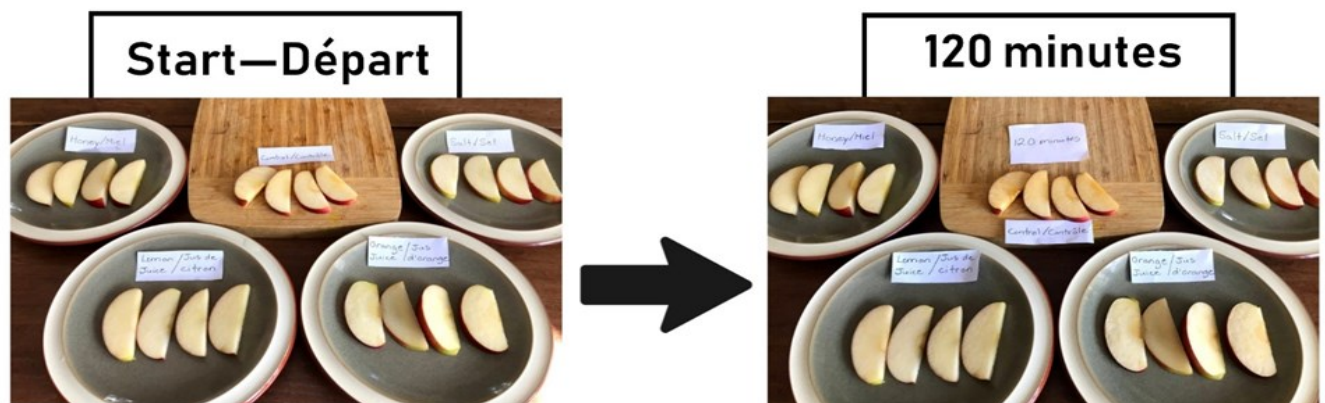
Materials

- One or two apples, cut into slices
- Lemon juice
- Two other edible, liquid ingredients of your choice (e.g., orange juice, honey)
- One edible powdered ingredient (e.g., baking soda, salt)
- Five sandwich bags
- Plates
- A permanent marker
- Small pieces of paper
- A spoon
- A way to keep track of time



Instructions

1. Set a few apple slices aside in a sandwich bag. These are your control — you won't put anything on these.
2. Pour a spoonful of liquid in another bag and add some apple slices. Close the bag tightly, and make a label for it, writing down which ingredient it contains. Repeat with a different bag for each ingredient. **Tip:** you may want to dissolve your dry ingredient in water.
3. Make sure the apple slices are completely coated in the liquid. Next, remove them from the bags and lay them out on plates, with their labels. Lay your control apples out nearby.
4. Now you start the timer! Compare your apples after 30 minutes, 60 minutes, and 120 minutes. Do you see a difference? Which ingredient seems to have worked best?
5. Give the apples a taste test! Which one do you find the tastiest? What are your conclusions?



Suggestions

- Keep the experiment going! See how long your apples slices stay white. Do they all eventually turn brown?
- Try using different apple varieties, comparing how much each one browns.

What's Going On?

An enzyme is like a little scissor that, in just the right conditions (such as when it touches air), can change the shape of other molecules.

When we cut an apple, oxygen from the air makes an enzyme in the fruit turn other compounds, called phenols, into melanin. Melanin is the same brown pigment as in our skin!

By blocking oxygen or making the conditions acidic, you prevent the enzymes from working. If the enzyme doesn't work, it doesn't transform the phenols. This keeps the apple white!

Go further

Want to learn more about how to keep your potatoes and apples fresher, longer?

Check out Agriculture and Agri-Food Canada's information sheets about

[Cold storage: Making the most of your harvest.](#)

Also check out Ingenium's [Educational Activity Kit: Apples](#)