

Fluoride Strengthens Teeth

Materials Needed

- Two hard-boiled eggs
- Fluoride gel or solution, 4 to 6 oz. (from dental office)
- Three clean plastic containers
- Several cans of dark soda
- Water

Process

1. Place a hard-boiled egg in one of the plastic containers and cover it with the fluoride gel or solution. Let the egg soak in the fluoride for twenty-four hours. Remove the egg and rinse it with water.
2. Place this “treated” egg in one of the two remaining clean containers, and place the “untreated” egg in the other.
3. Cover both eggs with dark soda. Change the solution every twelve hours for two days.

Conclusion

The “untreated” egg will begin to dissolve slightly, and the shell will become stained by the dark soda. The “treated” egg should not show a reaction until much later. Thus, the conclusion could be drawn that the use of fluoride helps strengthen teeth and protect them from decay.

Note: with any science experiment, it is recommended that an adult be present for supervision.



The Effects of Sweets and Other Foods on Healthy Teeth

Materials Needed

- Hard-boiled eggs
- Soft drink, such as cola or root beer
- Dried chicken bones
- Vinegar
- Water and sugar solutions
- Water and salt solutions
- Fluoride (from a local dentist, or a dental supply store or pharmacy)

Below are a handful of experiments designed to demonstrate the potential effects of sweets and other foods on healthy teeth. Children and students can work in small groups to perform the experiments.

Experiment 1

For this simple experiment, fill one container with water and another with a brown soft drink -- cola or root beer, for example. Place a hard-boiled egg into each container. Leave the eggs in the soft drink overnight. Pour out the liquid the next day and examine the eggs. Compare the eggs left in the soda to the egg left in the water. How are the eggs different? Why is it important to brush each night to keep teeth clean and white?

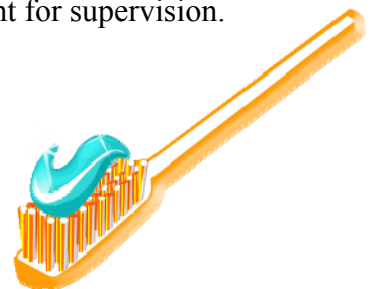
Experiment 2

Before doing this experiment, you need to collect chicken bones and set them aside to dry for a few days. Place one of the bones in a plastic cup; then pour vinegar in the cup to cover the bone. Leave the other bone exposed to the air. Let the bones sit for several days, and then compare the two bones. What has happened? (The bones soaked in vinegar will be noticeably softer. Vinegar is an acid. It has eaten away some of the bones' calcium.) From this activity, you'll learn that brushing and flossing teeth removes harmful food particles from teeth. And, food left between teeth eventually turns to a type of acid that can decay teeth.

Experiment 3

If you're able to collect extracted teeth from a local dentist, you can adapt Experiment 2 in the following way: Brush nail polish onto half of a tooth and let it dry. Put the teeth in a variety of solutions -- including water, water with sugar, a soft drink, water with salt, and vinegar -- to see what effects those solutions have on the teeth. Compare the effects and draw conclusions about tooth care.

Note: with any science experiment, it is recommended that an adult be present for supervision.



The Protection Power of Fluoride

Materials Needed

- 1 bottle of Fluoride rinse solution (available from your dentist, local dental supply company and some pharmacies)
- 2 hard-boiled eggs
- 1 bottle of white vinegar
- 3 containers

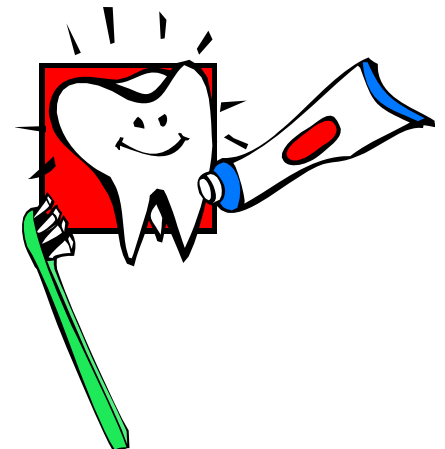
Process

1. Pour four inches of fluoride rinse solution into one of the containers and then place an egg in the solution. Let it sit for five minutes. Remove the egg.
2. Pour four inches of vinegar into each of the remaining two containers.
3. Put the egg that has been treated with the fluoride into one container of vinegar and the untreated egg in the other container of vinegar.

Conclusion

One egg will start to bubble as the vinegar (an acid) starts to attack the minerals in the egg shell. Which egg do you think will start to bubble?

Note: with any science experiment, it is recommended that an adult be present for supervision.



The Way Fluoride Strengthens Tooth Enamel against Acid

Materials Needed

- 2 hard-boiled eggs
- Large pickle jar
- Vinegar
- Plastic food storage bag
- Fluoride gel

Process

1. Take one egg and put it in a plastic bag containing the fluoride gel. Make sure the fluoride completely covers the entire egg shell. Leave the egg in the fluoride for 24 hours.
2. Take both eggs and put them in separate jars containing vinegar. Observe the immediate difference in bubbling or reactivity of the two different eggs. Leave them in the jars overnight.
3. Take both eggs out of the jar and examine.

Conclusion

The shell soaked in the fluoride will be hard. The egg shell not soaked in the fluoride will be soft, thus illustrating the acid resistant qualities of a fluoride-rich surface.

Note: with any science experiment, it is recommended that an adult be present for supervision.



Hidden Sugar Experiment

Objective

This experiment identifies the sugar content in food. Sugar is a major factor in the growth of plaque and tooth decay.

Materials Needed

- 1 bottle of Benedict's solution (ask the school science department)
- Assorted small pieces of food (cookies, crackers, bread, fruit)
- Several glass test tubes
- 1 heat source (burner, gas or electric)
- Tongs

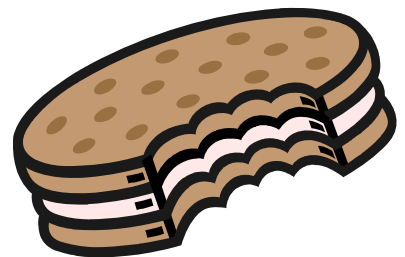
Process

1. Place a piece of food in each test tube and then pour 30 - 40 ml of Benedict's solution over the food.
2. Heat the test tubes one at a time over the burner, using the tongs to hold the test tubes.

Conclusion

Benedict's solution is blue. The presence of sugar will turn the solution to orange.

Note: with any science experiment, it is recommended that an adult be present for supervision.



Floss is the Boss

Materials Needed

- Rubber glove
- Jar of peanut butter
- Spreader (plastic butter knife)
- Container of dental floss
- Toothbrush
- Toothpaste

Process

Put the glove on one hand and hold your hand with the fingers extended but tightly together, pointing upward (your hand with the glove should look like a policeman holding his hand up to stop traffic). Spread your fingers apart and have someone spread peanut butter between your fingers - make sure to get the peanut butter deep between your finger joints. Tighten your fingers together again.

With your fingers still tightly together and held upward, use the toothbrush and toothpaste to try and scrub the peanut butter away (remember not to move your fingers apart!). Have someone else try to remove the peanut butter using the dental floss between your fingers. Which does a better job - the toothbrush and paste or the floss?

Conclusion

In this experiment, your fingers represent your teeth, and the peanut butter between them is food that gets trapped between your teeth when you eat. A toothbrush simply can't reach all the places between your teeth. Dental floss can do a much better job of removing food between your teeth. If it's not removed, it can cause gum disease and cavities.

Note: with any science experiment, it is recommended that an adult be present for supervision.

