

TINKER LAB *At Home!*

EGG-STRAORDINARY EXPERIMENTS

PT. 1

Age: 4-8

Materials: Raw egg(s), 1 clear jar or container, white vinegar, permanent marker (optional)

Introduction: Have you ever wondered why eggs have a shell and a transparent membrane? How could you remove the shell without breaking it or without boiling the egg?

We can do that using some basic chemistry. You don't need to be in a lab to experiment with chemistry every day. Our kitchens are full of different supplies to experiment with!

Activity: Disappearing Eggshell (Part 1)



1. Place your egg in a jar (a clear container is better) with vinegar. Vinegar is an acid called acetic (white vinegar from the grocery store is usually about 4% acetic acid and 96% water).

You can mark your egg (optional) with a permanent marker.



2. After soaking the egg in vinegar, wait a few minutes. Look closely at the egg.

What do you notice? Does the surface look different?

If you noticed some bubbles forming on the shell, these are carbon dioxide (CO_2). Eggshells are made up of calcium carbonate (CaCO_3). This is the acid in the vinegar reacting with the calcium carbonate in the shell. This reaction is producing a gas called carbon dioxide

3. Leave the egg in the vinegar for 24 hours. If you marked your egg, is the mark still there?

4. On the second day, carefully pour the old vinegar down the drain and cover the egg with fresh vinegar. Place the jar with the vinegar and egg in a safe place for a week. Don't disturb the egg but pay close attention to the bubbles forming on the surface of the shell.

(Alternatively, you can try out the eggs in vinegar after 48 hours)

5. One week later, pour off the vinegar and carefully rinse the egg with water.

What happened to the egg? How does it look like now?

What does the egg feel like? What color is it?

Is it hard or soft?

Does it feel squishy?

If your egg looks translucent it's because the harder outer shell is gone! The only thing that remains is a delicate membrane of the egg surrounding the white and the yolk. The membrane is semipermeable, a layer that only certain molecules can pass through. As an example, you might have noticed your egg looks bigger after soaking in the vinegar, which means some of the water in the vinegar solution traveled through the egg's membrane. This flow of water through a semipermeable membrane from a region of high concentration to a region of low concentration, tending to equalize the concentrations of the water is called osmosis. Osmosis is passive transport, meaning it does not require energy to be applied.



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