

FEBRUARY IS NATIONAL CHILDREN'S DENTAL HEALTH MONTH



STAIN LAB

1. ASK A QUESTION.



2. RESEARCH.



3. FORM A HYPOTHESIS.



Before



After



4. EXPERIMENT.



5. ANALYZE THE RESULTS.



6. DRAW A CONCLUSION.



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It may seem like an odd pairing – teeth and eggs – but this is a great project to demonstrate the impact of commonly consumed beverages on the integrity of our teeth. While we all have varying diets and dental hygiene routines, this eggsperiment is a strong visual for kids to see what really happens when our teeth are constantly exposed to different liquids and their ingredients.

MATERIALS NEEDED:

- Hard-boiled white eggs
- Marker and tape for creating labels on the containers
- Sugary and/or acidic beverages you'd like to try. We recommend including a dark or colorful soda (Diet Pepsi or Coca-Cola produces a big result, as will orange soda) various colorful sports drinks (red is a big result-maker, too), multiple energy drinks (Red Bull, Monster Energy), black coffee, different juices and/or lemonade
- Basic beverages (non-acidic and non-sugary) like milk or water
- Containers large enough to hold eggs fully submerged in liquid (mason jars work great, or even standard cups – transparent containers are helpful to watch the process evolve)

SET-UP:

- Have your child complete the Scientific Method Worksheet before you begin, and ask them to continue recording observations and updates as they work on the project.
- To begin, have an adult hard-boil a dozen eggs – or enough to place one egg in each of the liquids you're testing. Let eggs completely cool before using.
- Label your containers with the liquid of your choice (either write directly on the container, or use a permanent marker on tape to create an adhesive label).
- Fill each container with a liquid of your choice, one liquid per container, making sure it's deep enough to completely submerge your egg.
- Place one egg into each container, for as many containers as you've created. If the egg floats, you can place a spoon over the top to make sure it stays fully submerged.
- Now the waiting and observing begins! After 12 hours, you can ask your kids to check the eggs by gently pulling them out of the vinegar to observe and record their findings. Once observations are complete, slowly lower the egg back into its soaking container and continue to wait and observe.
- We found great success in letting our eggs soak for multiple days – if you have patient enough little scientists, perhaps you try a full week and make daily observations.
- At the end of your eggsperiment timeframe (you choose the duration/impact you'd like to see), ask your little scientists to pour out each liquid and make observations to the soaked egg.

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VARIATIONS OF THE STAIN LAB:

What color did the egg begin as, and what color is it now? Do you see variations in color on any particular egg (did one solution cause darker spots on the egg, or smooth overall staining)? Which liquid seems to have done the most staining damage to the eggshell? What happened to the eggs soaked in "basic" liquids, such as milk or water; did they have the same effects as the sugary and acidic choices?

BONUS:

Once the eggs have become stained, is it possible to make them white again? Ask your little scientists to load up an old toothbrush with fluoridated toothpaste and gently scrub away at the stained eggs. Are they able to recover the previously white appearance of the egg? Is it as white as it began, or is it permanently stained?

THE SCIENCE BEHIND THE EGGSPERIMENT:

The composition of an eggshell is very similar to that of the enamel on our teeth. Both are produced as hard protective layers that can also become brittle under different circumstances; they are both made of similar materials (calcium carbonate and calcium phosphate); and both will react to chemical exposure in similar ways. In this case, the exposure is being submerged in different beverages that we all may consume on a daily basis.

The staining of the eggshells replicates the same result of the staining effects to our teeth. It's important that when choosing to consume these drinks, we consider rinsing with water often to wash the sugary content off of our teeth, disallowing the staining effect to sit and take hold. Water's pH level is neutral and very similar to that of our saliva; you'll notice the egg soaked in water received no staining or compromise to the integrity/strength of the shell (it's one of the healthiest drink choices we can make!).