

# Tooth Decay

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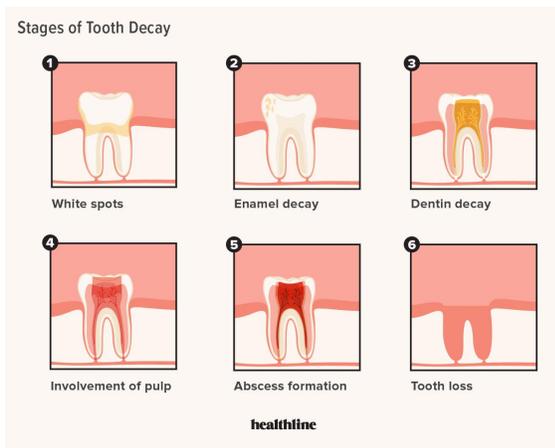
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This experiment was meant to capture which drinks affect human teeth the most. The experiment can help people understand how sugary and acidic drinks can cause damage to their teeth. This experiment was done using eggs and various types of liquids. To capture the effect of the liquids on the egg shells this experiment was done twice. This experiment shows that Coca Cola is the most acidic and sugary drink that was tested.

Have you ever wondered what drinks do to your teeth? Drinks can affect your teeth in a variety of ways. When you consume drinks that are sugary or drinks that have caffeine in them and they come in contact with your teeth they can die or decay which is called cavities. This experiment will determine which drinks affect your teeth the most. It is an important experiment because it is helpful to know how you can best take care of your teeth. This experiment will also expand your knowledge of the parts of a tooth and the ingredients in drinks that are good and bad for teeth. For this experiment, I looked at different types of drinks and how they affect human teeth.

## **Background Information**

When looking at a tooth you can see a lot of different things. In a tooth there are different parts including; enamel, dentin, pulp, and



cementum. There are many stages to tooth decay. Stage one is initial demineralization, stage two is enamel decay, stage three is dentin decay, stage four is pulp damage and lastly, stage five is abscess. This decaying happens when sugars and acid in food and drinks get into your teeth and start to cause damage. The drinks that are most common to hurt your teeth are coffee, alcohol, and sugary drinks like lemonade, Coca Cola and any fruit

juice. The best drink for your teeth is milk. Milk has good calcium that will make your teeth stronger and it also has no sugars that will affect your teeth. The other ways you can protect your teeth are fluoride, drinking through a straw, after eating meals and beverages rinse your mouth with water, and of course brushing your teeth.

If you think that you have cavities or your teeth are decaying, look for these signs; pain, discoloration, bad breath, swelling on gums, and bad taste in your mouth. When your teeth are decaying you can find plaque on them, which is a sticky substance with a film of bacteria.

You can also find tartar, which is when plaque is not removed and it hardens into tartar. Low saliva levels in the mouth can also cause more decay and cavities.

### **Procedure**

Below are all of the item I used for my experiment:

- Lemonade
- Milk
- Water
- Coffee
- Coke
- Ten cups
- Ten Boiled eggs (with the shell left on).

First, I boiled five eggs. After those five eggs were boiled, I measured out one cup of each liquid and put them into different cups. Once that was done, I let the egg shells sit in the substance for 72 hours. While the eggs were sitting in the cups for 72 hours, I watched them and took notes and pictures. When looking at the eggs I looked for discoloration, different textures, and difference in the shell's health. Once they were done, I took them out and took some final notes and then started my next trial. For my next trial, I did the same procedure that I did for the first trial. After I conducted all of the steps, I looked at all of my photos and notes and compared what happened to each egg.

### **Experiment**

For my experiment, my dependent variable was the egg shells. These are the egg shells that were put into the drinks. My independent variable is the different types of drinks that I used for example milk, water, lemonade, Coca Cola, and coffee. My hypothesis was that the Coca Cola would affect the egg shells the most because it is the drink that is the most acidic and sugary. The constant in this experiment was water.

## **Results**

The results for this experiment were very surprising. When the egg was in the lemonade it became bubbly and a light yellow color. Although the egg discolored and changed textures it never changed how fragile it was. When the egg was soaked in milk it was moldy and spoiled. The shell began to peel a little but stayed in one piece. Next, was coffee. The shell that was soaked in the coffee had very little change. The egg soaked in water had no changes at all. It stayed the same but had some cracks in it because of the temperature. Lastly, the egg in the Coca Cola. This egg had the most changes. The biggest change that I observed was that the Coke dyed the egg to a deep brown color. These eggs also had discoloration in some areas because in some of the areas there were white spots. When looking at all of my data I found that all of the eggs changed in some way. All of the eggs looked different except for the egg in the water.

## **Conclusion**

My hypothesis was correct. In the beginning, I thought that the egg in the Coca Cola would be the most affected egg and that was true. If I were to do this experiment again I would use different types of liquids. I would also have only waited 24 hours instead of 72. If I, or another scientist were to continue to research more about this topic, we would research details about what's in toothpaste and how it cleans our teeth and how it helps our teeth from decaying. I would also research if there is a type of bacteria that can prevent tooth decay. This experiment is valuable to our world because it can help people understand that the amount of sugar that they put onto your teeth can affect your teeth for life. It is also important because people will be able to understand what drinks to avoid if they want a healthy mouth.

## **Bibliography**

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