

SUGARY DRINKS AND MY TEETH

A Lesson in Hygiene

Lynne Middleton, Interim State 4-H Curriculum Specialist, 4-H Youth Development
Jennifer Richards, Extension Curriculum Specialist, Tennessee 4-H Youth Development



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Skill Level

- Beginner (4th-5th graders),
- Intermediate (6th-8th graders)

Educational Standards Met

Learner Outcomes

The learner will be able to:

- Understand how sugar affects their teeth.
- Understand the importance of effective tooth brushing techniques.

Time Needed - 30-60 minutes

Materials Needed

- Five raw white eggs
- Five plastic or Styrofoam cups
- Masking tape
- Water
- A dark-colored sugar-free drink like Gatorade G2
- A dark-colored fruit juice like grape juice
- A dark-colored flavor of soda: Cherry Coke or regular Coca-Cola
- Orange juice
- Tongs
- Student worksheet (one per student)
- Answer keys

Authors

Lynne Middleton, Interim State 4-H Curriculum Specialist, 4-H Youth Development

Jennifer Richards, Extension Curriculum Specialist, Tennessee 4-H Youth Development

Introduction to Content

This is the fifth lesson in a six-part series to teach youth about hygiene. This lesson will teach youth about the effects that sugar has on teeth. Youth will determine which is the unhealthiest beverage for their teeth.

Terms and Concepts

Personal hygiene – keeping your body smelling and feeling clean and healthy

Calcium – the hard, white substance that makes up our bones

Crown – the top part of the tooth

Gumline – where the gum and the tooth meet

Root – the anchor that keeps a tooth in place

Enamel – the outer layer of the tooth, made of calcium

Dentin – the layer underneath the tooth's enamel surface.

Pulp – the mass of connective tissue that resides within the center of the tooth, directly below the layer or dentin

Introduction to Methodology

Students will participate in an activity that analyzes the impacts of grape juice, water, Gatorade, orange juice and cola on teeth. Youth will complete an experimental worksheet where they create a hypothesis for each liquid.

Opening Questions/Setting the Stage

Say, “Last time we were together, we talked about hygiene. Can anyone tell me what you learned?” Let students answer.

Say, “Today we are going to do an experiment to see what effect beverages have on our teeth. By the end of today’s lesson, you will have an idea of how teeth are damaged by different beverages.”

Experience

Say, “I’m handing out a worksheet for you to write your answers. We will do the actual experiment together, but I want you to first predict what you think will happen. This is known as a hypothesis.”

Pour the drink into the cup with the matching label. Water should go into the cup labeled, “Water.” Gatorade should go into the cup labeled “Gatorade,” and so on.

Add one unbroken egg to each of the cups. Make sure that the liquid covers the entire egg.

Set the cups to the side.

Say, “We will come back and look at the eggs in a little while. In the meantime, let’s talk about what you think will happen to the eggs.”

Say, “The hard part of the shell protects the soft parts of the egg. Just like the hard enamel on your teeth protects the tender pulp on the inside. Both eggshells and teeth are made of calcium. Calcium is a hard, white substance that makes up our bones. Sugar and acids are harmful to our teeth. Acids dissolve enamel, giving bacteria a way to begin decaying your teeth. Sugar also promotes decay, forming cavities in teeth. If teeth are not properly cleaned and the sugar remains on the surface of the tooth, the enamel will break down and cause permanent damage.”

Say, “Let’s look at this diagram of a tooth and fill in the blanks about the function of each part of the tooth.”

Ask students to fill in the blanks on the first page and then make some hypotheses on the second page.

Use the tongs to pull the eggs out of the liquid, go over the answers, and discuss.

Strategies to Increase Student Engagement

- Have the cups labeled with each liquid. You may be able to use a Sharpie marker to identify them: grape juice, water, Gatorade, orange juice and Coke.
- Allow students to help pour the beverages into the cups.
- Allow students to help pull the eggs out of the cups.

Teacher Notes

Share

Say, "Share with the person next to you something you learned today."

Process

Ask, "Explain to the person next to you the process of what happened with each of the liquids."

Generalize

Ask, "Did the outcome of the experiment surprise you? Why or why not?"

Apply

Ask, "What does this experiment teach us about taking care of our teeth?"

Supplemental Information

Educational Standards Met

CCSS.ELA-Literacy.RI.4.1

Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CCSS.ELA-Literacy.RI.4.3

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

CCSS.ELA-Literacy.SL.4.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics and texts, building on others' ideas and expressing their own clearly.

References

“What do sugary drinks do to your teeth?”
Science Experiments for Kids, Homeschool Mom Blog.
Accessed September 2022.

TIPPS Life Skills

- Gather relevant information for decision-making. (HANDS)
- Follow instructions. (HEART)
- When reading, consider ideas, thoughts, information, or messages that have been written. (HEART)
- Involve oneself in helping others, demonstrate concern. (HEART)

Student Worksheet

Name: _____ Date: _____

Identify the basic parts of the tooth. Fill in each blank.

Crown

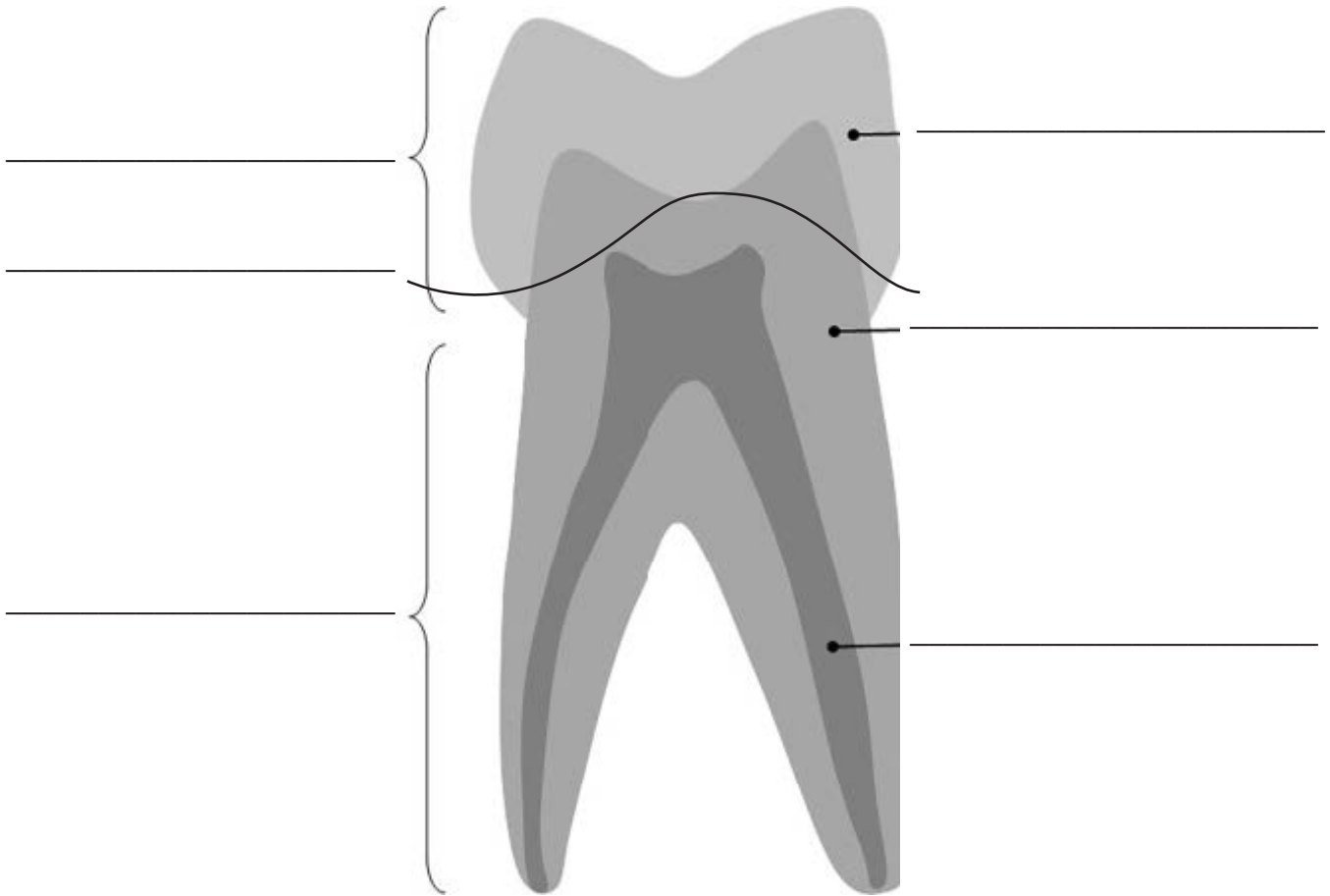
Root

Dentin

Enamel

Pulp

Gumline



1. The top part of the tooth is called the _____.
2. The _____ is where the gum and the tooth meet.
3. The _____ acts as the anchor that keeps the tooth in place.
4. The _____ is the outer layer of the tooth, made of calcium.
5. The _____ is the layer underneath the tooth's enamel surface.
6. The _____ is a mass of connective tissue that resides within the center of the tooth, directly below the layer or dentin.

Which liquid do you think will do the most damage to the teeth? _____

Fill in the following chart.

	Fill this section in BEFORE the eggs are pulled out of the liquid.	Fill this section in AS the eggs are pulled out of the liquid.
Beverage Type	Hypothesis - What will happen to the egg that is submerged in this liquid?	Observations
Grape Juice		
Water		
Gatorade		
Orange Juice		
Coca-Cola		

Following the experiment, answer the following questions.

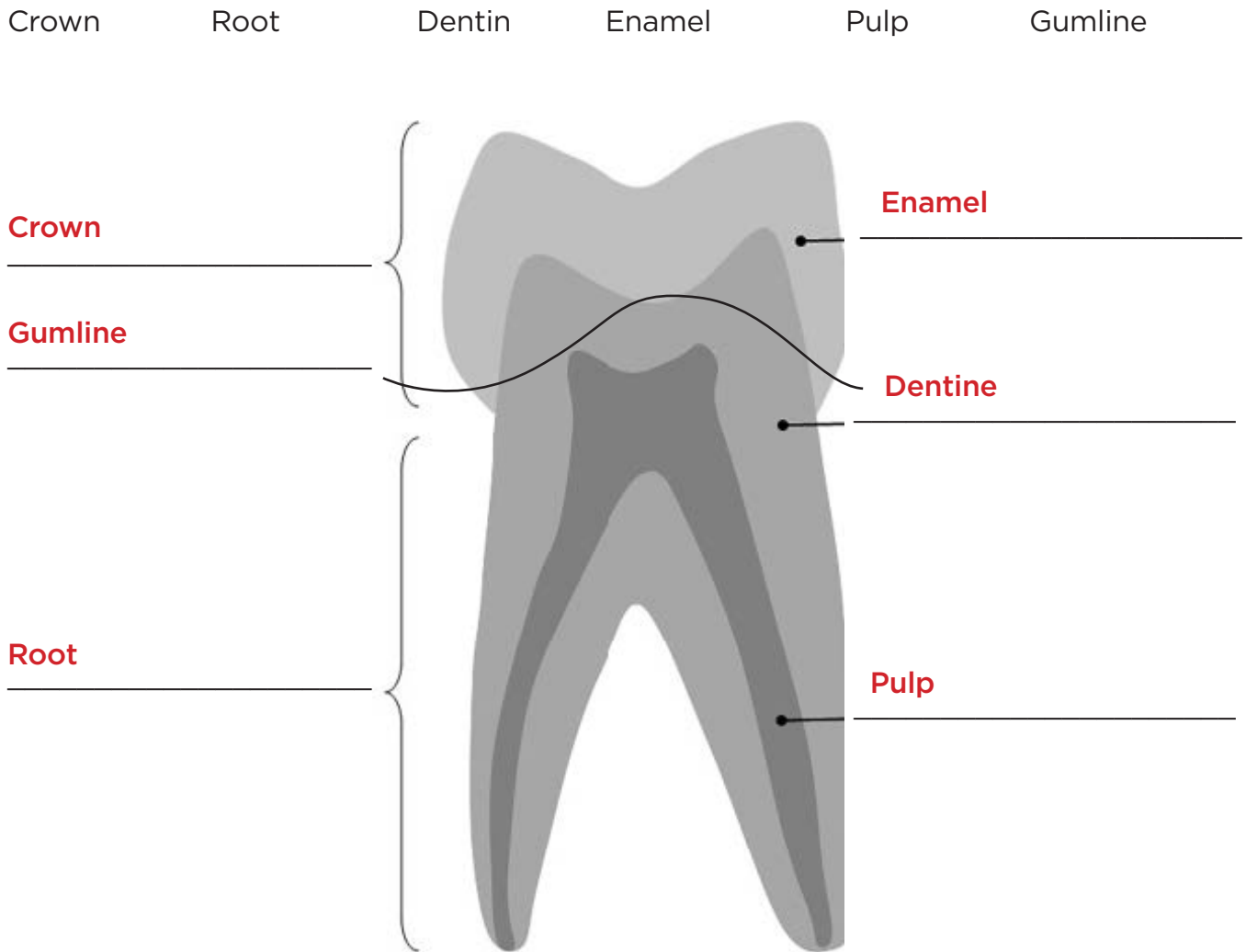
What is your conclusion? _____

Which liquid would do most damage to the teeth long term? Circle your answer.

Grape Juice Water Gatorade Orange Juice Coca-Cola

Were your hypotheses correct? Circle the answer. Yes No Some

Answer Key



1. The top part of the tooth is called the **crown**.
2. The **gumline** is where the gum and the tooth meet.
3. The **root** acts as the anchor that keeps the tooth in place.
4. The **enamel** is the outer layer of the tooth, made of calcium.
5. The **dentin** is the layer underneath the tooth's enamel surface.
6. The **pulp** is a mass of connective tissue that resides within the center of the tooth, directly below the layer or dentin.

Which liquid do you think will do the most damage to the teeth?_____

Answer Key

Fill in the following chart.

	Fill this section in BEFORE the eggs are pulled out of the liquid.	Fill this section in AS the eggs are pulled out of the liquid.
Beverage Type	Hypothesis - What will happen to the egg that is submerged in this liquid?	Observations
Grape Juice		The grape juice will cause the egg to stain more. It will be darker, but its lower sugar content will not decay the teeth as much as the Coke will.
Water		The water has no effect on the egg because water is both colorless and sugarless.
Gatorade		The Gatorade egg will have a slimy/slippery feel to it, but the color will wipe off easily.
Orange Juice		The orange juice will break down some of the calcium, but it will not cause long-term decay as much as the Coke will.
Coca-Cola		The Coke will not only change the color of the egg, but it will also break down some of the calcium in the shell. This is because Coke contains the greatest amount of sugar.

Following the experiment, answer the following questions.

What is your conclusion? The grape juice, orange juice, and Coke will stain the teeth. According to the General Dentistry Journal, Coca-Cola is 10 times more harmful to the teeth than any fruit juice. The experiment shows that the discoloration from grape juice is worse and longer lasting, but neither the grape juice nor the orange juice will cause decay as quickly as the soda will.

Which liquid would do most damage to the teeth long term? Circle your answer.

Grape Juice

Water

Gatorade

Orange Juice

Coca-Cola

Were your hypotheses correct? Circle the answer.

Yes

No

Some



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