

Nutrition

Volunteer's Worksheet

Recommended Application for this Lesson

- School visit
- Chemistry Camp

Materials needed

- Food pyramid handout (color copy, attached at the end)
- Hydrogen peroxide
- Petri dishes
- Cooked and uncooked samples of:
 - Carrot
 - Apple
 - Kiwi
 - Sweet potato
 - Pineapple
 - Grapes
- Tang
- Orange juice
- Orange soda
- Starch
- Iodine
- Paper towels
- Droppers
- Small cups (for drink samples)



Notes

- This lesson requires preparation the night before with the cooked food samples.
- Because there is food involved with this lesson, it's crucial to tell the students not to eat or drink any of it.

Introduction

- Explain that today they will learn about the chemicals that help us stay healthy and fit
- Ask the students if they know about the food pyramid – What are the different categories? Approximately how many servings of each?
 - While going through each category, have a picture of the food pyramid (at the end of this worksheet) to follow along with them.
- Definition of enzymes – chemicals that help animals and plants to live and grow
- Specific type that we will be discussing today – catalase
- Catalase breaks down hydrogen peroxide to water and oxygen

Directions

Finding catalase in food samples

- The students will be given two Petri dishes (6 wells) – one with cooked samples, other with uncooked
 - Food samples: carrot, apple, sweet potato, pineapple, grape
- Have the students add 10-15 drops of hydrogen peroxide to each sample and record what happens
- Review with the students after they have completed the activity – were there any trends they observed?

Introduction

- Introduce vitamin C – one function is that it boosts our immune system.
- Explain that vitamin C aids in the development of collagen and ask the students if they know what collagen is.
- The students will find out which out of three drinks contains the most vitamin C.

Detecting vitamin C in drinks

- Have them first make a prediction by circling their choice
- The students will have a Petri dish, with three wells containing starch.
- The volunteers add 2 drops of iodine to each of the starch samples. Have the students record what happens.
- Have the students add drops of three different drinks (Tang, orange juice, orange soda) to three different wells until the solution turns from purple to clear. Record the drops.
- Which drink took the fewest amount of drops to turn the solution clear? That one contains the most vitamin C.

Final Review

- Nutrition is crucial to living healthy and for growing.
- The chemicals (ex. enzymes and Vitamin C) that are in food are important for us to incorporate into our diets.
- If finished early, ask the students if they have any questions for the volunteers (lesson or about being a scientist)

Volunteer Notes

- Return the supplies to their respective locations at the Chemistry LEAD bench
- Take a quick inventory of what you used to be sure there is an adequate supply for another member to conduct this lesson
 - If a certain supply is low, be sure to email the Lab Bench Manager so we can replenish the stock

Thank you so much for your time and energy! We hope you had fun!

Nutrition

Today we will be talking about nutrition! First, let's review the Food Pyramid. It's a guide for us on how much of different kinds of food we need in order to stay healthy. Do you know the different types of food on the pyramid? How many servings of each type do we need in a day?

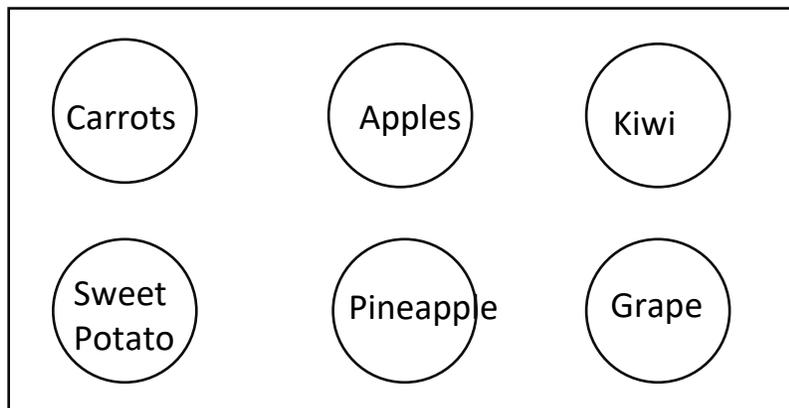


Our bodies need different chemicals in order to be healthy and grow. We consume all sorts of different food to receive the right amount of these chemicals. We will be talking about two types of these chemicals today: **enzymes** and **Vitamin C**.

Enzymes are chemicals that make sure that living things, like plants and animals, have the things they need in order to live. They conduct many different processes, such as breaking down food. We will be looking at one type of enzyme, **catalase**, which is able to break down **hydrogen peroxide** into **oxygen** and **water**.

Finding catalase in food

In each well of your dishes is a different type of food:



One dish contains cooked fruits and vegetables while the other is uncooked.

Add 10-15 drops of hydrogen peroxide to each of the fruits and vegetables. In the table below, mark which samples contain the catalase enzyme.

Vegetable or Fruit	Carrot	Apple	Kiwi	Sweet Potato	Pineapple	Grapes
Uncooked						
Cooked						

By eating fruits and vegetables, we are able to have more catalase in our bodies that makes water and oxygen for us to live!

Vitamin C is another important chemical for us to have. It boosts our immune system to prevent us from getting sick and also aids in the development of collagen. Where do you find collagen in your body?

We are now going to find out which of three drinks contains the most **vitamin C** by using **starch** and **iodine**. Which one do you think will contain the most **vitamin C**? **Circle** your prediction here:

Tang

Orange juice

Orange soda

Detecting vitamin C in Drinks

1. In your dish, you have starch in three wells. A volunteer will come and add 2 drops to each of the wells. Write down what happens.
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2. Add a drop of each juice to its respective well until the solution turns clear. Record the number of drops in the table below.

Well #	Sample	Drops Added
1	Tang	
2	Orange juice	
3	Orange soda	

The drink that contains the most amount of **vitamin C** required the fewest drops to turn the starch/iodine solution from **purple** to **clear**.

Which drink contains the most **vitamin C**?