

# Testing Spit Samples

**Overview:** Digestion starts in your mouth as soon as you start to chew. Your saliva is full of enzymes. They are a kind of chemical key that unlock chains of protein, fat, and starch molecules. Enzymes break these chains down into smaller molecules like sugars and amino acids.

In this experiment, we will examine how the enzymes in your mouth help to break down the starch in a cracker. You will test the cracker to confirm starch content, then put it in your mouth and chew it for a long time in order to really let the enzymes do their job. Finally, you will test the cracker for starch content and see what has happened as a result of your chewing.

## Materials

- soda crackers
- paper plates (2)
- craft stick
- iodine ( 0.5 oz. bottle)
- plastic pipette (1 mL)
- water
- latex gloves
- marker

## Experiment

1. Label the plates with the marker. One will be for the water sample and one will be for the spit sample
2. Take a cracker from the package and put it on the “water” plate. Use your thumb or a spoon to mash it up, making the pieces as small as possible.
3. Add a small amount of water with the pipette. Mix everything up with the craft stick to make a mash of cracker.
4. Now fill the pipette with iodine. When iodine comes in contact with starch, it changes in color from reddish-brown to a dark bluish-black.
5. Take the pipette and squeeze a few drops onto the cracker mash in various spots. Record what you see in your experiment data.
6. Take another cracker and chew it up for about 2 minutes. Do you notice any flavor changes as you are chewing? If so, note this. Be particularly aware of any sweet flavors.
7. Spit the mash onto the plate labeled “spit” once you have chewed for 2 minutes.
8. Use the pipette of iodine to add a few drops of iodine to the chewed mash. Note any change in color. If there is no starch, the iodine will stay reddish-brown in color. If starch is present, you will see the color change to a very dark blue-black as it did in step 2. Record what you see in your data.

## Spit Samples Data Table

Item Tested	Chewed or Not?	Observations with Iodine

### Lesson Reading

This lab gives you a good idea of what happens in digestion, which starts as soon as food enters your mouth. Actually, the process can start even before this as your body prepares for food. Have you ever had a wonderful smell make your mouth water? This is your body's way of getting ready to get to work digesting that delicious food.

Once you take a bite, the enzymes start to do their job of breaking large, more complex molecules into smaller particles. In this experiment, starch gets broken down into simple sugars that your body could easily move around and use as fuel.

There are three sets of saliva-secreting glands in your mouth. They include a gland in the back of your throat called the parotid gland, one in your lower jaw called the submandibular gland, and the sublingual gland, which is under your tongue. The three work together to secrete up to 2 liters of saliva each day.

### Exercises

1. What is the first step in the digestive process?
2. How does saliva help to digest food?
3. Name one or more of the main salivary glands and where they are located.

**Answers to Exercises: Testing Spit Samples**

1. What is the first step in the digestive process? (chewing or mastication)
2. How does saliva help to digest food? (It contains enzymes that break down starch in foods.)
3. Name one or more of the main salivary glands and where they are located. (parotid gland is near the back of the throat, submandibular gland is in the lower jaw, sublingual gland is under the tongue)