

## Science 9-Biology

### An Enzyme at Work Experiment



10

Name \_\_\_\_\_

Due Date \_\_\_\_\_

Show Me  Hand In

*Correct and Hand In Again By* \_\_\_\_\_

**Purpose:**

There is an **enzyme** called **amylase** in your saliva that works on **starch** particles to break them up. Starch particles are too large to be absorbed by your body. In this investigation you will observe this **enzyme** at work.

**Materials:**

- |                  |                      |
|------------------|----------------------|
| Stirring rod     | thermometer          |
| 4 test tubes     | 1 plain soda cracker |
| test tube rack   | IKI solution         |
| medicine dropper | Benedicts solution   |
| 250 ml beaker    | hot plate            |

**Procedure:**

1. Break a soda cracker into **6 pieces** all about the same size.
2. Crumble **one** of the pieces into a test tube. **Add 2 cm of water**. Test the cracker with **2 drops of IKI solution** to see whether it contains starch.

**Does the cracker contain starch?** \_\_\_\_\_ **How did you know?** \_\_\_\_\_

\_\_\_\_\_

3. Crumble another piece of the cracker into a clean test tube. **Add 2 cm of water**. **Add 2 cm of Benedicts Solution** and stir the mixture with the stirring rod. Then place the tube in a **boiling water bath for 3 minutes** to see whether the cracker contains any simple sugar.

**Does the cracker contain any simple sugar?** \_\_\_\_\_ **How did you know?** \_\_\_\_\_

\_\_\_\_\_

4. Collect at least **2 cm of saliva** in a clean test tube. Crumble in **a piece of the cracker** and stir the mixture with a clean stirring rod.
5. Make the **temperature of the water bath close to your temperature (37°C)**. Place the test tube in the water bath and leave it there for about **10 minutes**. **Then pour half the liquid in a second clean test tube.**
6. **Add 2 drops of IKI solution** to the liquid in **one of** the test tubes.

Is there still starch in the cracker? \_\_\_\_\_

7. **Add 2 cm of Benedicts Solution** to the liquid in the **second test tube** and **heat the test tube in a boiling water bath.**

Is there any simple sugar in the cracker now? \_\_\_\_\_ If yes, where did it come from? \_\_\_\_\_

8. Wash out the test tubes and return them to the appropriate place.

**Questions:**

1. At the **beginning of the experiment**, what **nutrient** did the cracker contain?  
\_\_\_\_\_
2. **After your saliva had digested the cracker**, what had the **starch** been changed into?  
\_\_\_\_\_
3. What **type** if **digestion** is this called? (*mechanical or chemical?*)  
\_\_\_\_\_
4. You **crumbled** the cracker in order to imitate the process of  
\_\_\_\_\_
5. Suggest **two reasons** why you **shouldn't** swallow your food too soon.  
\_\_\_\_\_  
\_\_\_\_\_