**Spit Lab ( 60 min)**

**Background Information:** Many enzymes are present in your digestive system. Each enzyme breaks down a specific type of macromolecule. Amylase works to break down some complex carbohydrates, such as starch, into maltose (a simple sugar). In this experiment, Iodine will be used to test for the presence of starch. A positive test for starch with iodine is blue/black or brown. Benedict’s Solution will be used to test for the presence of sugars. A positive test for sugar with Benedict’s Solution is orange.

**Purpose:** To observe the effects of amylase on carbohydrates.

**Hypothesis:** Based on the information above, predict the effect of amylase on the carbohydrates.

If\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Procedure:**

1. Ms. Clark demonstrates a test for starch and sugars by adding Benedict’s Soluction or Iodine to un-chewed crackers.
2. Observe any change in color of the indicators. Record your observations on table 1
3. Chew cracker for 4 minutes \*DON’T SWALLOW
4. Record any change in taste and the time it changed in table 2
5. Ms. Clark will call students to spit their **bolus** (mass of chewed food) into a test tube and add 10 drops of **Benedict’s solution or Iodine.**
6. Observe any color changes on table 1.
7. Wipe down the lab tables.

**Table 1: Indicator test for sugar and starch on crackers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indicator | Un-chewed Cracker (color) | Chewed Cracker (color) | Positive indicator for **starch** (check) | Positive indicator for **sugar** (check) |
| Benedict’s Solution |  |  |  |  |
| Iodine  |  |  |  |  |

**Table 2: Change in taste as cracker is chewed**

|  |  |
| --- | --- |
| Change in taste | Time |
|  |  |
|  |  |
|  |  |
|  |  |

**Analysis:**

1. Describe your observations of the experiment.

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1. What happened to the carbohydrates?

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1. What did the carbohydrates get converted to?

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4. If you had eaten a food high in protein and very little carbohydrate in it, how would your results have changed?

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5. The enzyme in saliva is called alpha amylase. This enzyme works best in a pH of 6.2 to 7.4. What do you think happens when the alpha amylase enzyme gets into your stomach?

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6. What problems would you anticipate in a person that is unable to produce alpha amylase in their saliva?

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