Amylase **Lab Marcus Stevens January 11, 2016**

1. Introduction

In this lab, amylase, an enzyme, was tested in a starch agar plate with various concentrations (100%, 10%, 1%, .1%, .01%, & 0%) along with water. This experiment measured the efficiency of the enzyme’s function while being amalgamated with water. Amylase is an oral enzyme that begins the digestive process in the mouth by breaking down starch while chewing. This is why a starch agar plate is used. The separate experiment that corresponded with the first one tested the efficiency of amylase while mixed with water and an oral liquid, raspberry iced tea. Unlike the first test, this experiment had varying concentrations of the iced tea, not the amylase (0%, 20%, 40%, 60%, 80%, & 90%). Pure saliva was also placed in the center well in both agar plates.

**Purpose #1:** The purpose of this experiment is to discover if different concentrations of amylase, a digestive enzyme, affect its function’s efficiency when mixed with water in a starch agar plate.

**Purpose #2:** The purpose of the second experiment is to see if different concentrations of the liquid variable, raspberry iced tea, affects the efficiency of the amylase enzyme when mixed with water.

**Hypothesis #1:** When different concentrations of amylase are mixed with water in a starch agar plate, the different concentrations applied to the water will not affect the efficiency of the enzyme.

**Hypothesis #2:** When various concentrations of an oral liquid, raspberry iced tea, are amalgamated with amylase and water, the different concentrations will not affect the function of the amylase.

1. Materials and Methods (Procedure)

**Materials:** Two starch agar plates, Straw, Amylase enzyme, Liquid variable, Water, Ruler, Test Tubes, Pipets, Saliva, & labeling marker.

**Procedure:** Refer to worksheet.

1. Results

**Data Tables:**

|  |  |
| --- | --- |
| **Variable [ ]** | **Diameter after 24hrs** |
| **0%** | **1cm** |
| **20%** | **1.5cm** |
| **40%** | **0cm** |
| **60%** | **0cm** |
| **80%** | **0cm** |
| **90%** | **0cm** |
| **Saliva** | **2cm** |

|  |  |
| --- | --- |
| **Enzyme [ ]** | **Diameter after 24hrs** |
| **0% (water)** | **0cm** |
| **.01%** | **.75cm** |
| **.1%** | **.5cm** |
| **1%** | **.75cm** |
| **10%** | **1.5cm** |
| **100%** | **1.5cm** |
| **Saliva** | **1.25** |

1. Conclusions

It was hypothesized that when different concentrations of amylase are mixed with water in a starch agar plate, the different concentrations applied to the water will not affect the efficiency of the enzyme. According to the data recorded, this statement can be disregarded. As clearly represented in the *Amylase Well Diameter* graph, when the amylase concentration increases by a factor of 10, the diameter of the well zone on the starch agar plate increases as well. Therefore, the different concentrations of amylase do have a measurable effect on the productivity and efficiency of the enzyme’s function.

From this conclusion, it can be inferred that the acquired saliva that was used in this experiment, to represent a real-life situation, has a high concentration of amylase. This is represented by the graphs above as well. For example, since the higher concentrations of amylase had larger diameters, and the diameters of saliva were also significantly larger than the smaller concentrations, it is concluded even further that saliva has a high concentration of amylase.

The second experiment hypothesized that when various concentrations of an oral liquid, raspberry iced tea, are amalgamated with amylase and water, the different concentrations will not affect the function of the amylase. This was also deemed false. This is evident in the graph above. It shows that the lower concentrations of raspberry tea produce a larger diameter, and the higher ones stunt the enzyme’s productivity, almost eliminating the chemical reaction that creates the ring around the well. Therefore, it is highly unlikely that the variable used in this experiment had no effect on the amylase’s efficiency.

There were not many limitations in this lab, however, since there was only one trial for each experiment, these experiments may have not represented the data to its full extent. A limitation in the second experiment, with the liquid variable, is that this experiment might not accurately reflect what ultimately happens inside the mouth when the digestion process begins. This is possible because saliva tends to have a high concentration of amylase, therefore, the variable, which had a reaction that stunted the function of amylase, may not affect the reactions of amylase inside the mouth as significantly because of how abundant and concentrated the amylase is.