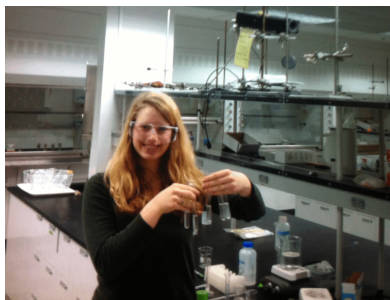


Comparing The Effects of Salivary Amylase on Starch

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Purpose: The purpose of this experiment was to examine the effects of boiling salivary amylase, an enzyme, on starch, versus diluting it with distilled water, and adding it to starch. I performed this experiment in order to observe which test makes it more difficult for salivary amylase to hydrolyze the starches. Boiling an enzyme denatures the proteins within, and the iodine test - which turns a starch blue with a continued presence of the starch - tells whether or not the starch has been broken down to saccharides.

Hypothesis: If the salivary amylase is boiled, then it will denature the enzyme and will no longer break down the starch to simpler sugars. If it is diluted to a certain point, such as 20% saliva, the salivary amylase will no longer be able to break down the saccharides.



Materials and Methods:

- 6 four-inch test tubes and rack
- 50, 150, and 400-mL beakers
- Ring stand
- Wax pencil
- At least up to 110 degrees C thermometer
- Hot plate
- 2% starch solution
- 10 mL saliva
- 0.1M iodine solution



The 2% starch solution contained 5 mL potato starch, dissolved in 250 mL water. 5 of the test tubes that were used each contained 3 mL of starch, each containing varying diluted amounts of saliva.

- Tube 1: 3 mL saliva + 0 mL distilled water
- Tube 2: 2 mL saliva + 1 mL DW
- Tube 3: 1 mL saliva + 2.5 mL DW
- Tube 4: 0.5 mL saliva + 2.5 mL DW
- Tube 5: 0.25 mL saliva + 2.75 mL DW

- Beaker 1: 3 mL saliva, boiled before the addition of 3 mL starch for 10 minutes
- Beaker 2: 3 mL saliva, boiled after the addition of 3 mL starch, for 10 minutes.

Results: In each of the distilled water and saliva mixtures, the starch still seemed to have been completely absorbed, despite the decreasing amounts of salivary amylase in each mixture. In the boiling test, both the 3 mL saliva boiled beforehand and the 3 mL saliva boiled with the starch solution showed that the starches had still been broken down.

Conclusions: In retrospect, boiling the salivary amylase for a longer period of time would likely denature the proteins, perhaps with a greater saliva sample to allow for more variability. Also, adding additional significantly more diluted saliva solutions could have an effect on whether or not the enzyme hydrolyzes the starches.

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