Food Additives and Their Effect on Enzyme Activity

Santjer, Breckan (School: Aberdeen Central High School)

The enzyme amylase is known for its ability to break down starch and produce simple sugars out of it. Sodium propionate is a preservative that is used to prevent the build up of mold and bacteria in breads and cakes. The purpose of the experiment is to research the possible effects of preservatives on enzymes, more specifically amylase. The data collected at this experiment could help infer the rate of starch breakdown in the human body under certain concentrations of preservatives. The experiment aims to help tell the exact rate at which the amylase can break down starches and help diabetics dose correctly for this change of breakdown. When the amylase and the propionate are in the same environment, the enzyme amylase is prevented or slowed down from breaking down starch present in the environment. It should also be noted that the reaction will still occur without the enzyme just at a slower rate. This is because an enzyme simply catalyzes the reaction and is not necessary for the reaction to occur. In the presence of iodine, the starch will turn to a black color, however, if the starch breaks down, the color will turn more opaque and back to the original color of the iodine before the starch interacts with it. With this being said, Iodine is able to give us a gradual indication as to how much starch is not broken down in the environment. Benedict’s solution is able to test the amount of sugar that is in the environment when it is raised to a higher temperature. It will go from a light blue color to a deep red depending on the amount of sugar that has been produced through the breakdown of starch. The procedure of my experiment consisted of using Benedict's Solution to determine if the enzyme amylase was effective to test for any error.

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