CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
Jacob T. Kartinen

Project Number
J0508

Project Title
The Effect of Enzyme Concentration upon the Catalytic Reaction Rate of a Potato Extract

Abstract

Objectives/Goals
This experiment will show if the amount of catalase enzyme directly affects its reaction rate.

Methods/Materials
Potatoes were cut and peeled and mixed with purified water in a blender. The extract was filtered and poured into a graduated cylinder and kept cool. The enzyme extract was then added to make the percent solutions. The substrate (3% hydrogen peroxide) was put into a 250 mL beaker. A coffee filter was then used to soak up the enzyme extract for 5 seconds. The enzyme soaked coffee filter was then placed into the substrate solution and timed to see how long it took for the coffee filter to rise. The process was repeated for each enzyme solution.

Results
The 100% solution responded with the fastest time. As expected, the 90% solution was the second fastest, and the 80% came in third.

Conclusions/Discussion
My hypothesis was correct. At 100% it had the fastest reaction time. The 90% was the second fastest. This happened because the pH of the water affected the catalase enzyme#s reaction time. The pH of the water has to be at a balance with the enzyme or else one will overpower the other. Since, the amount is large in this test the perfect balance was with the 100% while the 90% and 80% were close behind. With the 80% the balance was slightly off, but with the 90% it was very close. After the 80% the enzyme in the other solutions was being overpowered by the pH of the water.

Summary Statement
This experiment will show if the amount of catalase enzyme directly affects its reaction rate.

Help Received
No help received for project.