CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J0504

Project Title
Turning Up the Heat on Hydrogen Peroxide

Abstract

Objectives/Goals
The objective of my project was to learn at what temperture does catalase break down hydrogen peroxide most efficiently.

Methods/Materials
Timer, Potato and Potato Peeler, Filter paper, Hydrogen peroxide, Tweezers, Water/ice cubes, Beaker/test tubes, Cylinder tubes, Funnel, Bowls(for water), Cheese cloth, Weighing scale, Blender, Kettle/stove, Thermometer.

Results
From my experiment I learned that at 37 degrees celsius, normal body temperature, the catalase breaks down the hydrogen peroxide at the fastest rate.

Conclusions/Discussion
While doing this experiment you learn how temperature affects the reaction rate of hydrogen peroxide and catalase when reacted together. The hypothesis that I stated was correct, which said that if the temperature is 37 degrees celsius, normal body temperature, the reaction between hydrogen peroxide and catalase would be the fastest. During my experiment as temperatures went up the reaction time continued to decline, but when the temperature went higher than 37 degrees Celsius the reaction time rose back up again thereby proving my hypothesis. The data collected could have been more precise if laboratory conditions and equipment were used verses my homemade lab. The reaction that occurs is called a substrate enzyme reaction which means that the enzyme hooks on to a substrate and then goes into the process of breaking it down. The hydrogen peroxide is the substrate, and the enzyme is the catalase together producing water and oxygen. The data shows the ideal temperature for catalase is body temperature, this works out perfect for the human body because when humans begin to build up too much hydrogen peroxide it needs to be broken down, or else it could damage cells. Amazingly, we produce hydrogen peroxide, use it, and decompose it and all three are essential to our health.

Summary Statement
In my experiment, at body temperature catalase decomposes hydrogen peroxide at the fastest rate, which is essential to our bodies.

Help Received
I required help from my parents with the heated pot, but I preformed the testing on my own.