

Biology Coursework 2004

Introduction

In this project, I will be looking at how long it takes Alginate balls to rise in a test tube of Hydrogen Peroxide and then testing to see if that rate is effected by the concentration of the Hydrogen Peroxide.

Variables

In this experiment I will be changing the concentration of Hydrogen Peroxide. I measured this variable by first measuring 40ml of Hydrogen Peroxide and then measuring 10ml of Water and adding that to my Hydrogen Peroxide, this was my independent variable. I kept the volume the same by always measuring 50ml before adding it to my test tube. I then dropped the ball in from one thumb space from the top of the test tube. Then as soon as it hit the contents of the test tube, I had some one else time it to make sure that it was fair. I then stopped it as soon as it hit the surface again.

Hypothesis

In this experiment, I predict that, the more dilute the Hydrogen Peroxide (H_2O_2), the longer that it will take for the Alginate Balls to rise to the surface again.

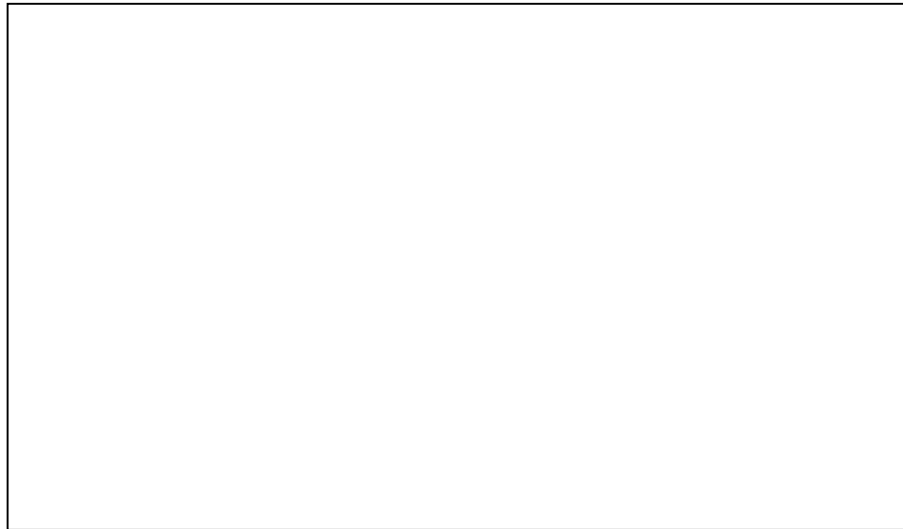
This I expect to happen because as the H_2O_2 is stronger, then when I drop my balls in it, then the H_2O_2 react with the enzyme inside the balls faster (because the outer layer is also a Semi Permeable Membrane). This causes oxygen to be produced a lot faster and so it would cause my balls to rise to the surface in a shorter time. So as the H_2O_2 becomes more dilute, then it will take longer enzyme and the Hydrogen Peroxide to react together, so it will take longer for the Oxygen needed to be produced so it will take longer for the my Balls to rise to the surface.

So when I have 100% H_2O_2 in the test tube I would expect to find the balls rising to the surface a lot faster. If I had 50% of H_2O_2 in my test tube as then I would expect it to cause my balls to take longer to rise to the surface.

Method

First I filled my three test tubes with pure H_2O_2 . Then I dropped in my balls into it. Then once I had three results for those tests, I added some water to it. My first measure of H_2O_2 was 50ml, so I decided to add 10ml of water to my H_2O_2 . I then after getting those three readings by dropping my balls, I added another 10ml after getting three more results for the last three test tubes. I did this, adding 10ml of water, three times in total and got the results that are below with a graph showing the average times.

Concentration	Of H ₂ O ₂	Time		
H ₂ O ₂	H ₂ O	1	2	3
100	0	9.16	9.75	8.52
80	20	10.14	10.46	10.16
60	40	11.64	10.36	10.75
40	60	13.19	12.57	13.10



Data Analysis

From the Data, I can see that the lower the concentration of the Hydrogen Peroxide, the longer it takes for the balls to rise back to the surface.

Conclusion

From the data that I have collected from the experiment I have found that I have managed to prove my hypothesis. From the data and the graph I have been able to prove that the more dilute that the Hydrogen Peroxide is, the longer that it will take for the alginate balls to rise back to the surface.

All this I have proved from the data that I got from my experiments and the Graph which I was able to make from the data that I collected.