

Student Name: _____
 Date: _____

Enzyme Activity Sheet

Intro Activity

Put one pipette full (1ml) of hydrogen peroxide into a test tube or vial. Cut a small sliver of fresh potato and drop it into the hydrogen peroxide. What do you notice happening? Why is this going on?

There are lots of questions you could ask about this reaction but this activity addresses two chief questions that you will try to answer.

Activity One

Question:

What things make bubbles when immersed in hydrogen peroxide?

Task:

As a group, design experiments to test which things (potato, meat, soil, sand, or salt.) make bubbles in hydrogen peroxide. Think about how to make the comparison as accurate as possible.

Aim	Write down the question you are trying to answer.
Hypothesis	Predict (or guess) what you think will happen.
Method	Describe how you will perform the experiment.
Results	Set up a table to collect results.
Conclusion	Analyze your results and use them to answer the question.



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Activity Two

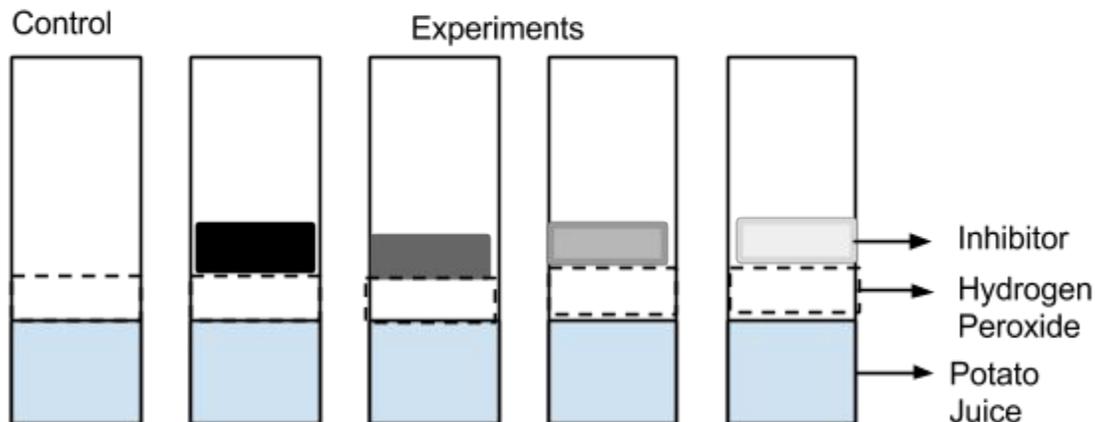
Question:

Can we slow down or stop the reaction of hydrogen peroxide and potato juice?

Task:

We will blend and separate potato juice. Mixing potato juice and hydrogen peroxide makes foam filled with bubbles. As a group, design a protocol to test the effect of different chemicals and conditions on the reaction. Don't forget to do a proper "**control**" experiment.

eg:



Summary:

Summarize the results of all the tests to show the effect of chemicals and conditions on the reaction.



Concluding Activity

Task:

Test to see if we can change the structure of a protein.

Test 1:

- ___ 1) Add an eyedropper full of potato juice to the test tube or vial.
- ___ 2) Add an eyedropper full of acetone (best known as nail polish remover) to the potato juice.
- ___ 3) Cap the test tube or vial and shake it well.
- ___ 4) Observe any changes and note below.
- ___ 5) Add an eyedropper full of hydrogen peroxide to the test tube or vial.
- ___ 6) Observe any changes and note below.

Observations	
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Test 2:

- ___ 1) Add an eyedropper full of egg white to the test tube or vial.
- ___ 2) Add an eyedropper full of acetone to the egg white.
- ___ 3) Cap the test tube or vial and shake it well.
- ___ 4) Observe any changes and note below.

Observations	
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Answer to Observations:

The potato juice doesn't change appearance when we add acetone because the concentration of the active protein, ***catalase***, is very small.

The egg white has a far greater concentration of proteins (in particular ***albumin***) and turns into a white hard solid just like cooked egg white. Acetone has completely changed the structure of the proteins in egg white.

Bad conditions destroy the complex structure of proteins. When the proteins in egg white lose their structure, they turn white and gel together. When the catalase in potato juice loses its structure, it can no longer break down hydrogen peroxide.

Where else have you seen egg white turn white like this?

