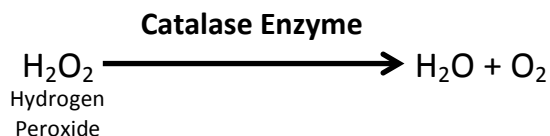


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Lab 5: Environmental Effects on Enzyme Activity

TEMPERATURE

Catalase Reaction:



Materials:

Basic Setup:

Distilled water (room temp, pH 7) Filter paper "dots" Beakers Timer
Forceps Dry, granulated yeast 3% hydrogen peroxide solution

For Assigned Environmental Factor:

Temperature: Distilled water at three different temperatures (exact temps to be given)

pH: Distilled water altered to three different pHs (exact pHs to be given)

Amount of Reactant: 3%, 5%, and 10% hydrogen peroxide solutions

Methods:

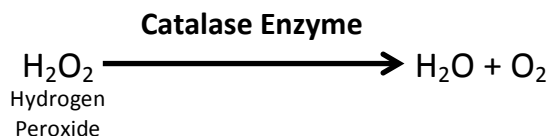
1. Note the temperatures of the three types of water that you will be using today. (You will need to know the temperatures in order to complete your graph!)
2. Dissolve 20-30 grains of yeast in neutral (pH 7) room temperature 100mL distilled H₂O. (Stir this regularly to keep yeast suspended in water).
3. Dilute 10mL 3% hydrogen peroxide in room temperature 90mL H₂O (makes 100mL total).
4. Using forceps, dip a filter paper dot in the yeast solution until saturated.
5. Drop the yeast-saturated filter paper dot into the diluted peroxide solution.
6. Start the timer as soon as the dot hits the solution.
7. Time how long it takes for the dot to sink and then rise back up to the surface, record this time.
8. Dump out the hydrogen peroxide solution.
9. Repeat this procedure from steps 2-7 twice more with fresh peroxide and yeast-saturated dots.
10. As a control, dip a filter paper dot into 100% water (instead of dipping in yeast solution) and drop it into the peroxide solution. Observe whether or not it rises. If the dot rises, then redo your experiment. If it dot DOES NOT rise, then your experiment has been executed accurately.
11. Collect the flask with the hot water. Repeat steps 3-9.
12. Collect the flask with the cold water. Repeat steps 3-9.
13. Be sure to clean up and replace any materials as instructed.

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Lab 5: Environmental Effects on Enzyme Activity

Amount of Reactant (Hydrogen Peroxide)

Catalase Reaction:



Materials:

Basic Setup:

Distilled water (room temp, pH 7) Filter paper "dots" Beakers Timer
Forceps Dry, granulated yeast 3% hydrogen peroxide solution

For Assigned Environmental Factor:

Temperature: Distilled water at three different temperatures (exact temps to be given)
pH: Distilled water altered to three different pHs (exact pHs to be given)
Amount of Reactant: 3%, 5%, and 10% hydrogen peroxide solutions

Methods:

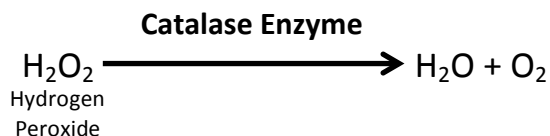
1. Dissolve 20-30 grains of yeast in room temperature 100mL distilled H₂O. (Stir this regularly to keep yeast suspended in water).
2. Dilute 10mL 3% hydrogen peroxide in neutral (pH 7) room temperature 90mL H₂O (makes 100mL total).
3. Using forceps, dip a filter paper dot in the yeast solution until saturated.
4. Drop the yeast-saturated filter paper dot into the diluted peroxide solution.
5. Start the timer as soon as the dot hits the solution.
6. Time how long it takes for the dot to sink and then rise back up to the surface, record this time.
7. Dump out the hydrogen peroxide solution.
8. Repeat this procedure from steps 2-7 twice more with fresh peroxide and yeast-saturated dots.
9. As a control, dip a filter paper dot into 100% water (instead of dipping in yeast solution) and drop it into the peroxide solution. Observe whether or not it rises. If the dot rises, then redo your experiment. If it dot DOES NOT rise, then your experiment has been executed accurately.
10. Collect the flask with the **5% hydrogen peroxide solution**. Repeat steps 3-9 but use the 5% hydrogen peroxide instead of 3% in #3.
11. Collect the flask with the **10% hydrogen peroxide solution**. Repeat steps 3-9 but use the 5% hydrogen peroxide instead of 3% in #3.
12. Be sure to clean up and replace any materials as instructed.

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Lab 5: Environmental Effects on Enzyme Activity

pH (Acid, Neutral, Base)

Catalase Reaction:



Materials:

Basic Setup:

Distilled water (room temp, pH 7) Filter paper "dots" Beakers Timer
Forceps Dry, granulated yeast 3% hydrogen peroxide solution

For Assigned Environmental Factor:

Temperature: Distilled water at three different temperatures (exact temps to be given)

pH: Distilled water altered to three different pHs (exact pHs to be given)

Amount of Reactant: 3%, 5%, and 10% hydrogen peroxide solutions

Methods:

1. Note the pHs of the three types of water that you will be using today. (You will need to know the pHs in order to complete your graph!)
2. Dissolve 20-30 grains of yeast in room temperature 100mL distilled H₂O. (Stir this regularly to keep yeast suspended in water).
3. Dilute 10mL 3% hydrogen peroxide in neutral (pH 7) room temperature 90mL H₂O (makes 100mL total).
4. Using forceps, dip a filter paper dot in the yeast solution until saturated.
5. Drop the yeast-saturated filter paper dot into the diluted peroxide solution.
6. Start the timer as soon as the dot hits the solution.
7. Time how long it takes for the dot to sink and then rise back up to the surface, record this time.
8. Dump out the hydrogen peroxide solution.
9. Repeat this procedure from steps 2-7 twice more with fresh peroxide and yeast-saturated dots.
10. As a control, dip a filter paper dot into 100% water (instead of dipping in yeast solution) and drop it into the peroxide solution. Observe whether or not it rises. If the dot rises, then redo your experiment. If it dot DOES NOT rise, then your experiment has been executed accurately.
11. Collect the flask labeled "Acid" and note its actual pH. Repeat steps 3-9.
12. Collect the flask labeled "Base" and note its actual pH. Repeat steps 3-9.
13. Be sure to clean up and replace any materials as instructed.