



HOMESCHOOL SCIENCE EXPERIMENT



Observing the Effect of Temperature on Enzyme Activity

Enzymes are proteins that help speed up chemical reactions in living things.
In this experiment, you will observe how temperature affects the activity of an enzyme.

Name: _____ Date: _____

QUESTION

How does temperature affect the activity of the enzyme *catalase*?

HYPOTHESIS

If the temperature changes, then the activity of *catalase* will _____
because _____.

PROCEDURE

1. Prepare Temperature Baths

- Set up five water baths at the following temperatures: 0 °C (ice water), 20 °C (room temp), 30 °C, 40 °C, and 60 °C.

2. Prepare Enzyme Solution

- Mix 1 teaspoon of yeast with 2 tablespoons of lukewarm water. Stir gently and let it sit for 5 minutes.

3. Prepare Test Tubes

- Label your test tubes or clear cups with the temperatures: 0 °C, 20 °C, 30 °C, 40 °C, 60 °C.
- Add 2 mL of hydrogen peroxide to each tube.

4. Add Enzyme

- Add 1 mL of the yeast mixture to each tube.
- Quickly swirl each tube once to mix.

5. Incubate

- Place each tube into its matching water bath.

6. Observe and Measure

- Start the timer.
- Observe the bubbles (oxygen) produced.
- Record how long it takes to produce a steady stream of bubbles or how high the foam/bubbles rise after 60 seconds.

7. Clean Up

- Dispose of materials safely and wash your equipment.



SAFETY FIRST

Hydrogen peroxide can irritate skin and eyes.
Avoid contact and do not ingest. Wear safety goggles if available and wash hands after the experiment.

MATERIALS

- Hydrogen peroxide (3%)
- Catalase source (yeast)
- 5 test tubes or small clear cups
- Test tube rack or holder
- Thermometer
- Water bath or bowls
- Ice
- Warm water (about 40 °C / 104 °F)
- Room temperature water (about 20–25 °C / 68–77 °F)
- Stopwatch or timer
- Dropper or pipette
- Measuring spoons
- Safety goggles (recommended)
- Notebook and pencil

*Note: Yeast is a good source of catalase.
You can use instant dry yeast mixed with water.*

DATA TABLE

Temperature (°C)	Time to First Bubbles (seconds)	Height of Foam/Bubbles after 60 seconds (cm)	Observations
0			
20			
30			
40			
60			

Note: If no bubbles form, record "no reaction".

ANALYSIS QUESTIONS

- At which temperature was the enzyme activity the highest? _____
- At which temperature was the enzyme activity the lowest? _____
- What happened at 0 °C? _____
- What happened at 60 °C? _____
- Why do you think temperature affects enzyme activity? _____

CONCLUSION

Write a conclusion summarizing what you learned from this experiment.

