

Background information:

Where is your liver? It is **inside your abdomen, up under your ribcage** **How big is it?** Your liver is the **largest solid organ in your body**. By the time you are grown up, it will be about the size of a football.

What does it do?

The liver does many jobs, but here are three big ones:

1. It cleans your blood.
2. It produces an important digestive liquid called bile.
3. It **stores energy** in the form of a sugar called glycogen.

The liver produces **ENZYMES**, which work to break down harmful substances in the body. There are many types of enzymes in living organisms. **CATALASE is one type of enzyme that breaks down harmful hydrogen peroxide (H_2O_2) into oxygen gas (O_2) and water (H_2O).** Catalase is produced in living things. When this chemical reaction occurs, you can see the oxygen gas bubbles escaping and causing the reaction to foam.

Purpose: To observe and describe a chemical reaction produced by our liver. What effect does damaging liver tissue have on catalase enzymes?

Hypothesis:

Materials and procedures:

1. Cut 3 small piece of liver and 3 small piece of cooked liver
2. Place one piece of liver in a test tube
3. Place one piece of cooked liver in a test tube
4. Place one drop of detergent in each test tube
5. Fill a dropper with hydrogen peroxide (3%), and release into tube one.
6. Measure the height of foam (cm)
7. Record your observations
8. Repeat for tube two.
9. Repeat experiment two more times.

Results:

Write equation for the decomposition reaction below:

	Temperature (before and after)	Height Foam (cm)	Observations	Enzyme Present? (yes / no)
Cooked Liver				
Fresh Liver Test 1				
Fresh Liver Test 2				
Fresh Liver Test 3				

Height of foam (cm)

Discussion and Conclusion: (50 points)

1. What is the function of the liver?
2. What is the role of the catalase enzyme?
3. Write the chemical reaction that the catalase enzyme is responsible for:
4. After adding hydrogen peroxide to the liver, what happens that indicates a chemical reaction is taking place?
5. Why does this occur? (look at the PRODUCT of the reaction)
6. Explain the difference in results between the cooked liver and the healthy liver

In your journal: In paragraph format: Describe what you learned about the liver, and the role enzymes play in living organisms. Why is our liver important? Use the internet to find out and describe common liver diseases and ways to keep our liver healthy.

***Bonus question: (+5)** Research, describe, and diagram another chemical reaction that takes place in our body!