IT TAKES GUTS

Eggy Enzymes

Foods like chicken, fish and eggs all contain protein, which is mostly digested in the stomach. We all know that our stomach contains acid... but why is it there?

This experiment answers that question...

You will need

- 4 clear beakers
- 1 hard-boiled egg white
- 20 ml graduated cylinder
- 40 ml of 5% pepsin solution
- 40 ml of 0.2% hydrochloric acid (HCl) solution
- 20 ml of water
- White labels
- Marker pen

Steps

1. Slice the egg white into four, and put a quarter into each beaker.
2. Put the following solutions into each beaker, and label them appropriately:
   - *Water* – 20 ml of water
   - *Pepsin* – 20 ml of the 5% pepsin solution
   - *HCl* – 20 ml of the 0.2% HCl solution
   - *Pepsin plus HCl* – 20 ml of the 5% pepsin solution and 2 drops of the 0.2% HCl solution
3. Let the beakers stand at room temperature for 48 hours... and then examine the egg, noting which solution broke it down most effectively.

Follow-up

You should find that the solution containing HCl plus **pepsin** was the most effective.

This is because HCl in the stomach not only directly breaks down proteins, by breaking down particular bonds in their structure, but also activates pepsin. This **enzyme** then helps to break down another type of bond in the proteins, thereby speeding up the overall process of their digestion.

In this way, HCl and pepsin combine their powers, breaking down the proteins together, and working more effectively than if they were to act on their own.