**Effectiveness of Enzymatic Detergent**

**Introduction**

In nature there are enzymes called proteases that "digest" or break down proteins. Some of these enzymes have been genetically engineered and added to our laundry detergents in the hope that they will "digest" the protein off of our clothing. Do they work? Do they assist in cleaning? In this experiment you can compare different detergents and their ability to "digest" protein.

What is gelatin? Gelatin consists of protein chains that are easily broken down into their amino acid monomers. Gelatin is prepared from collagen, a protein found in animal tendons and skin and taken out during the meat rendering process. Boiling collagen reduces the weight by about one-third and separates the protein strands by breaking bonds. When the boiled collagen is cooled, it does not revert back to collagen but sets to a gel we know as gelatin.

In this experiment, we will compare Gelatin digestion in three solutions to determine if some Laundry detergent might be more effective than others.

What is your hypothesis? Write it here:

**Materials**

1. Gelatin
2. Glass test tubes
3. 3 brands of detergent with droppers
4. Water
5. Test tube rack
6. Rubber stoppers

**Procedures**

Day 1

1. Collect three test tubes of Gelatin, Mark them as follows:
   1. Control
   2. D1 (Detergent 1)
   3. D2 (Detergent 2)
   4. D3 (Detergent 3)
2. Measure the height of the gelatin from the base of the tube to it’s highest point in cm in each tube, by placing both the end of the test tube and ruler on the table. Record this data on the next page.
3. Add 20 drops of detergent solution 1 to your D1 test tube.
4. Repeat step 3 with detergent solution 2 and test tube D2.
5. Repeat step 3 with detergent solution 3 and test tube D3.

Day 2

1. Record how long it has been since your last check in hours (approximate to the closest hour)
2. Measure the height of the gelatin from the bottom tip of the tube to it’s highest point in cm in each tube. Consistent measurements can be made by placing both the bottom tip of the test tube and ruler on the table. Record this data.
3. Return your tubes to their racks

Day 3 and Day 4

1. Repeat day 2’s steps to collect the day 3 and 4 data. Record this data.

Data Table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

Notes/Observations/Scratch work: