

Effect of various factors on protein solubility and structure

Experiment (1): Effect of salt concentration

Materials:

Chemical

0.1 M NaCl, egg albumin, solid ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$, distilled water.

Equipment and Glassware

Test tubes, rack, pipette, pipette pump

Protocol:

1. In a tube add 2 ml of albumin.
2. Add drops of 0.1M NaCl solution, concentrate your vision on the tube while adding.
3. Record your results.
4. In the same tube add few crystals of 100% solid $(\text{NH}_4)_2\text{SO}_4$, shake it well.
5. Record your results.
6. Compare between the two results.

Results:

Tube	Observation
Albumin + 0.1 M NaCl	
Albumin + 100% solid $(\text{NH}_4)_2\text{SO}_4$	

Experiment (2): Effect of strong acids

Materials:

Chemical

Concentrated nitric acid, trichloroacetic acid (TCA), egg albumin, distilled water.

Equipment and Glassware

Test tubes, rack, pipette, pipette pump.

Protocol:

1. Label two tubes **A** and **B**.
2. **In tube A:** add 3 ml of conc. nitric acid (HNO₃) *CAREFULLY*.
3. Then, using a dropper add drops of albumin on the inner wall of tube A to form a layer up the acid.
4. **In tube B:** Add 3 ml of TCA solution *CAREFULLY*.
5. Then add 5-7 drops of the albumin solution.
6. Record your results.

 **Results:**

Tube	Observation
Albumin + conc. nitric acid	
Albumin + TCA	

Experiment (3): Effect of salts of heavy metals **Materials:****Chemical**

AgNO₃, HgCl₂, egg albumin, distal water.

Equipment and Glassware

Test tubes, rack, pipette, pipette pump.

Protocol:

1. Label two tubes **A** and **B**.
2. In tube **A** and **B** add 1 ml of Albumin sample.
3. **In tube A:** using a dropper add few drops of AgNO₃.
4. Record your results.

 **Results:**

Tube	Observation
Albumin + AgNO ₃	

Experiment (4). Effect of high temperature:

 **Materials:****Chemical**

Egg albumin, distal water.

Equipment and Glassware

Test tubes, rack, pipette, pipette pump, water bath.

Protocol:

1. Take 3 ml of protein Albumin.
2. Place it in a boiling water bath for 5-10 minutes
3. Remove aside to cool to room temperature.
4. Note the change.

 **Results:**

Tube	Observation
Albumin + heating	