**Lab sheet #2**

**-Proteins-I-**

**-Objective:**

1. To detect the presence of a protein or peptides.
2. To investigate the effect of different salt concentration on protein solubility.
3. To investigate the effects of strong acids on the protein solubility.
4. To identify the effect of heavy metal salt on protein.
5. To investigate the effect of high temperature on protein structure.

**-Methods:**

**1- Biuret test:**

1-Add 2ml of protein Albumin in one tube.

2-In another tube add 2ml of water.

3-Add 1 ml of biuret reagent to all tubes and mix well.

**2- Effect of salt concentration on the protein solubility:**

1- Label one tube as A.  
2-Add 2ml of albumin.  
3- Add drops of 0.1M NaCl solution, Concentrate your vision on the tube while adding.   
4-Record your results.  
5-In the same tube add few amounts of 100% solid (NH4)2SO4, shake it well.  
6- Record your results.Compare between the two results.

**3- Acid precipitation of proteins:**

1-Label two tubes A and B.  
2-**In tube A:** add 3 ml of con. 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 the albumin solution.  
5-Then add 5-7 drops of TCA solution CAREFULLY.  
6-Record your results.

**4- Precipitation of proteins by salts of heavy metals:**

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-**In tube B:** using a dropper add few drops of HgCl2 .

5-Record your results.

**5- Protein denaturation by heating:**

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. Note the change.

**-Results:**

**1- Biuret test:**

|  |  |
| --- | --- |
| **Tube** | **Observation** |
| Albumin (protein) |  |
| Water |  |
| **Conclusion:** ……………………………………………………………………………………… | |

**2- Effect of salt concentration on the protein solubility:**

|  |  |
| --- | --- |
| **Tube** | **Observation** |
| Albumin + NaCl |  |
| Albumin+100%saturate (NH4)2SO4 |  |
| **Conclusion:** ……………………………………………………………………………………… | |

**3- Acid precipitation of proteins:**

|  |  |
| --- | --- |
| **Tube** | **Observation** |
| Albumin + HNO3 |  |
| Albumin+ TCA |  |
| **Conclusion:** ……………………………………………………………………………………… | |

**4- Precipitation of proteins by salts of heavy metals:**

|  |  |
| --- | --- |
| **Tube** | **Observation** |
| Albumin + AgNO3 |  |
| Albumin+ HgCl2 |  |
| **Conclusion:** ……………………………………………………………………………………… | |

**5- Protein denaturation by heating:**

|  |  |
| --- | --- |
| **Tube** | **Observation** |
| Albumin+ heating |  |
| **Conclusion:** ……………………………………………………………………………………… | |