




Proteins



Protein are complex compound with high molecular weight built up by a large number of amino acid molecules through peptide bonds.



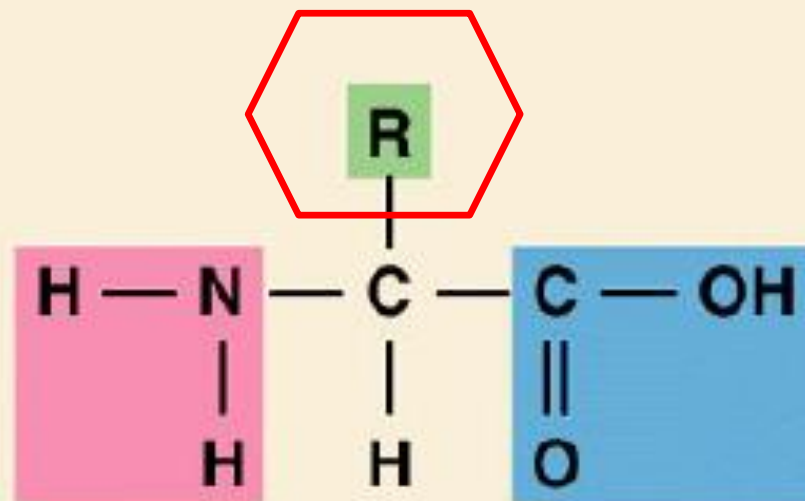
R group



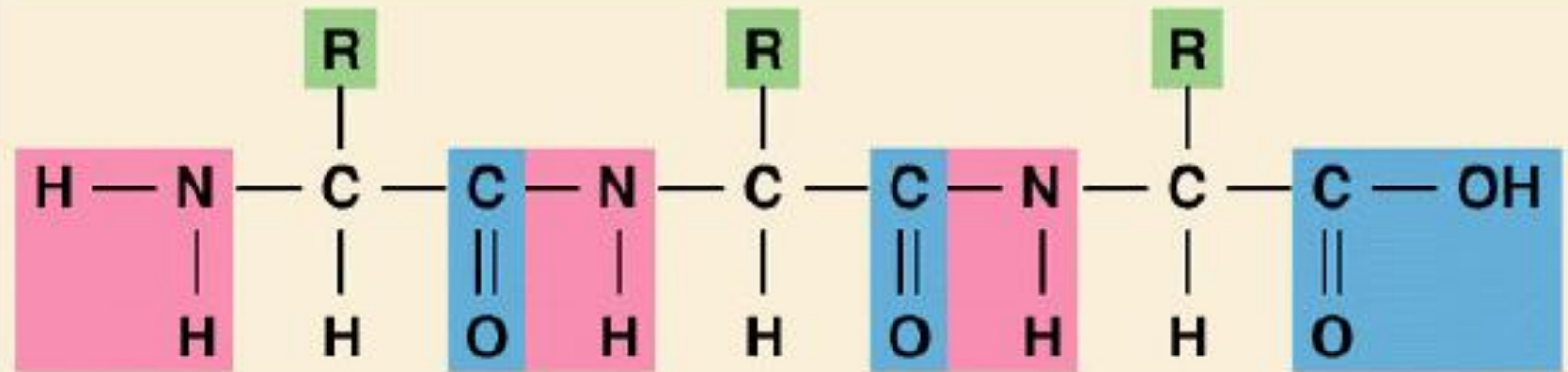
Amino group



Carboxyl group



Amino acid



Peptide linkages

Qualitative test of protein

Test For Protein

- 1- Colour Reaction.
- 2-precipitation Reaction.
- 3- Heat Coagulation Test.

1- Colour reaction:

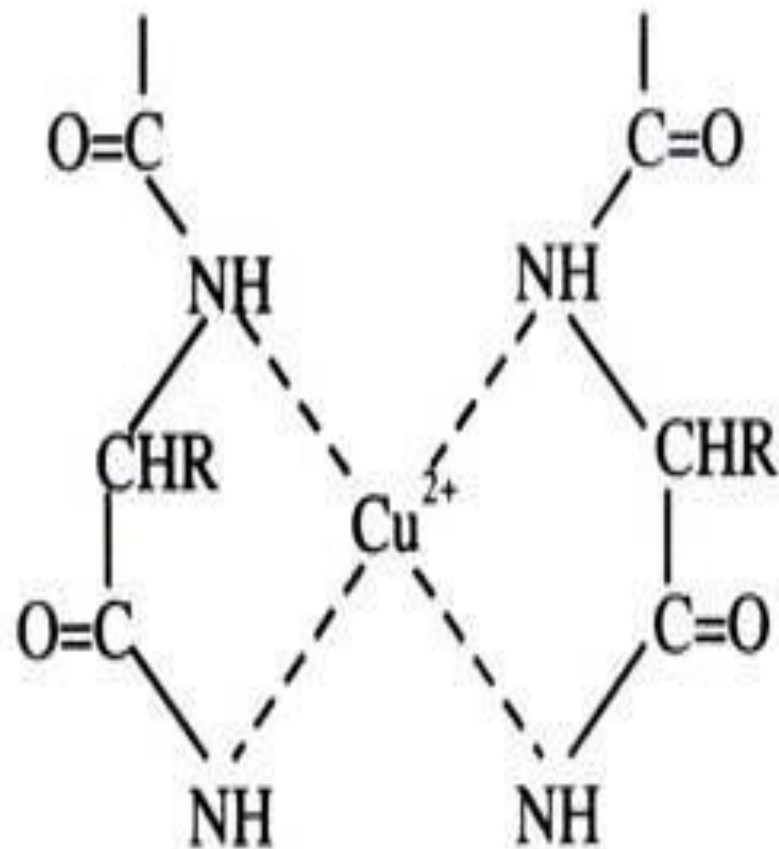
Biuret Test

Is a characteristic of all proteins and peptides having at least 2 peptide bonds , it is negative for free amino acid which dont contain any peptide linkage.

Principle:

The peptide bond in protein , reacts with Cu^{+2} ions in a **basic** solution to form a **deep violet complex**.

The peptide linkages in proteins resemble those in biuret reagent $\text{H}_2\text{NCONHCONH}_2$ and also form deep violet complexes with basic Cu^{+2} ions in solution.



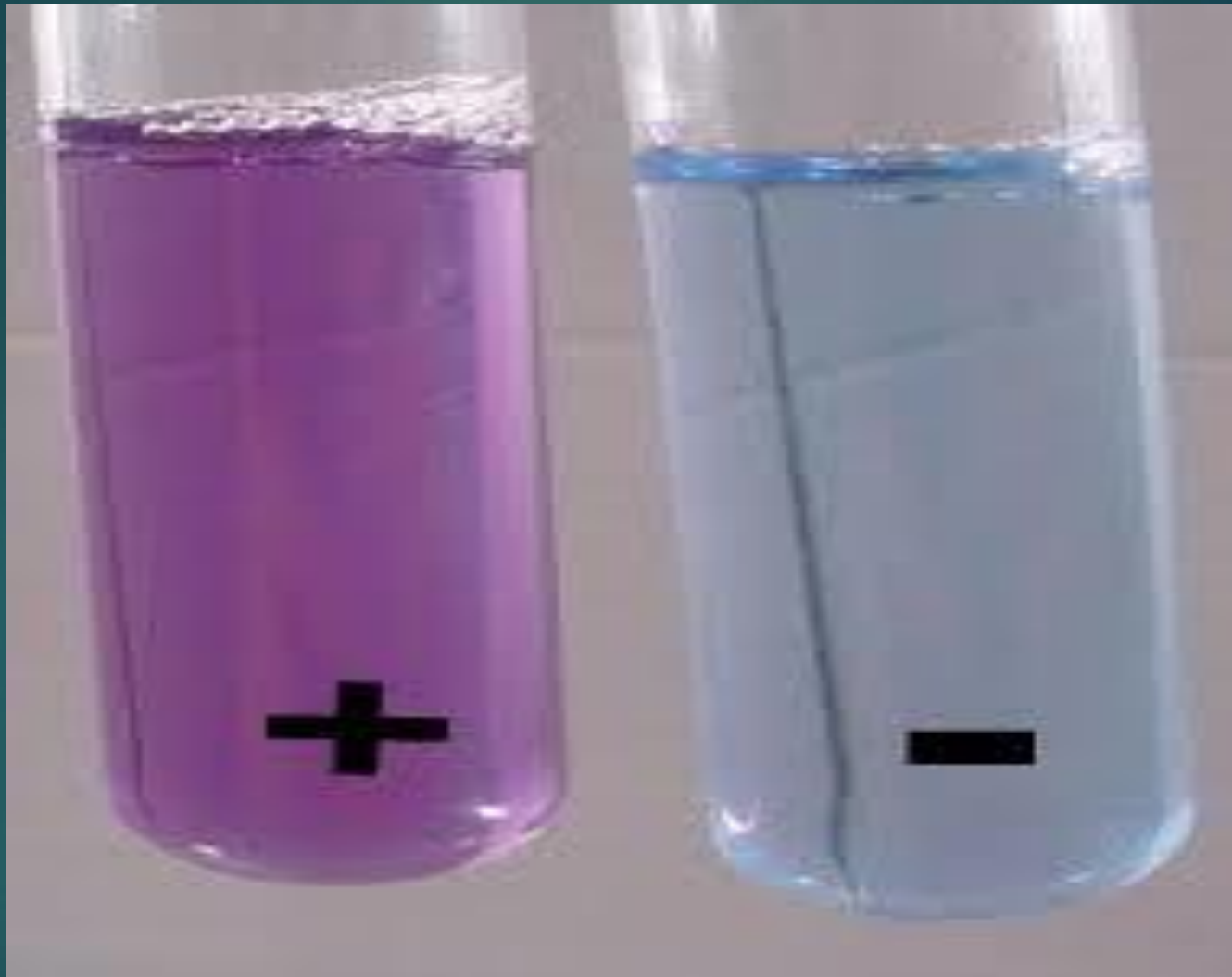
Protein-copper(II) ion complex, also called the biuret complex

Procedure

- 1- 1ml of protein.
- 2- 1 ml of 10% NaOH (mix well).
- 3- 5 drops of 0.5 % copper sulphate (CuSO_4)
mix well to produce violet colour .

Note:

Avoid adding an excess of copper sulphate solution , so that the blue colour of the cupric hydroxide which is formed may mask the violet colour of the biuret reaction.





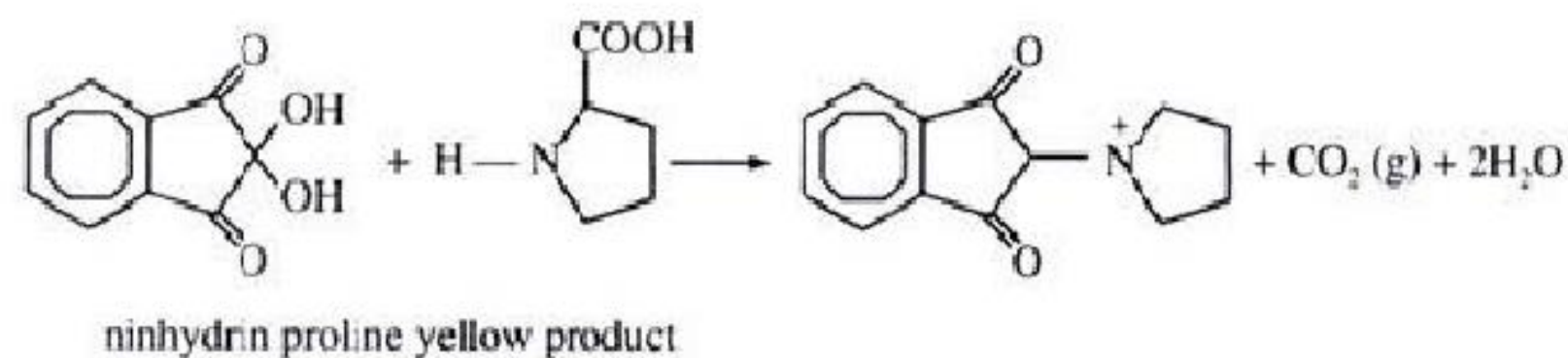
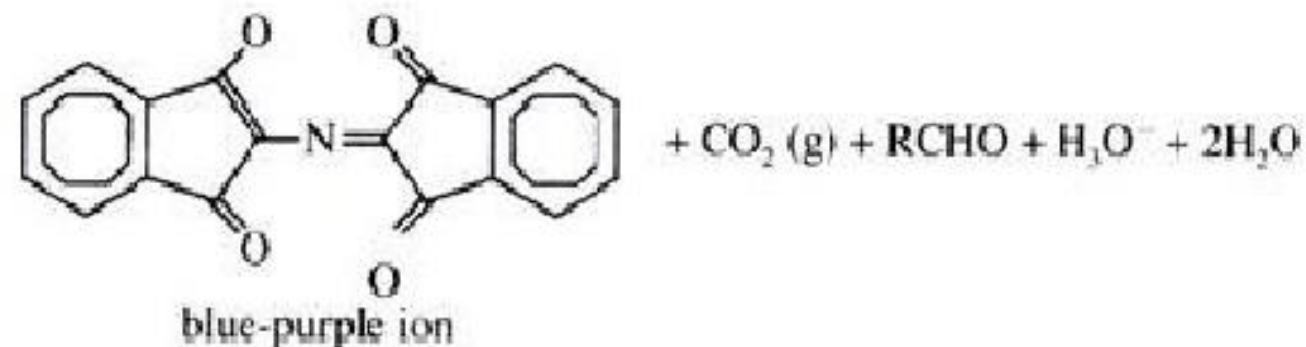
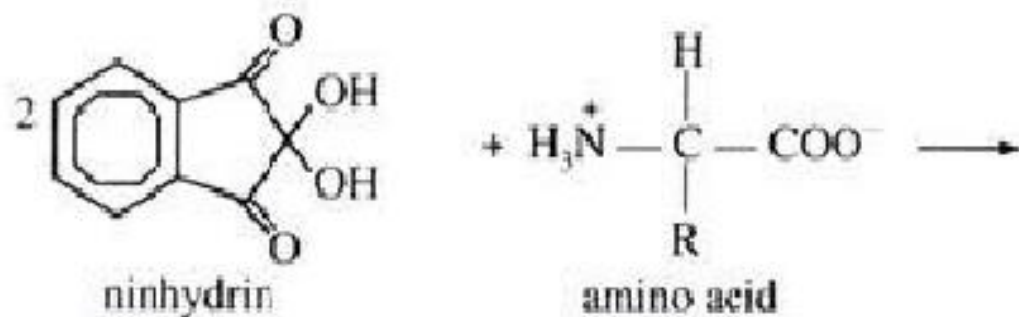
Ninhydrine Test

The most generalized test we will likely use is the Ninhydrine test. It is a reaction involving the amine group of molecules.



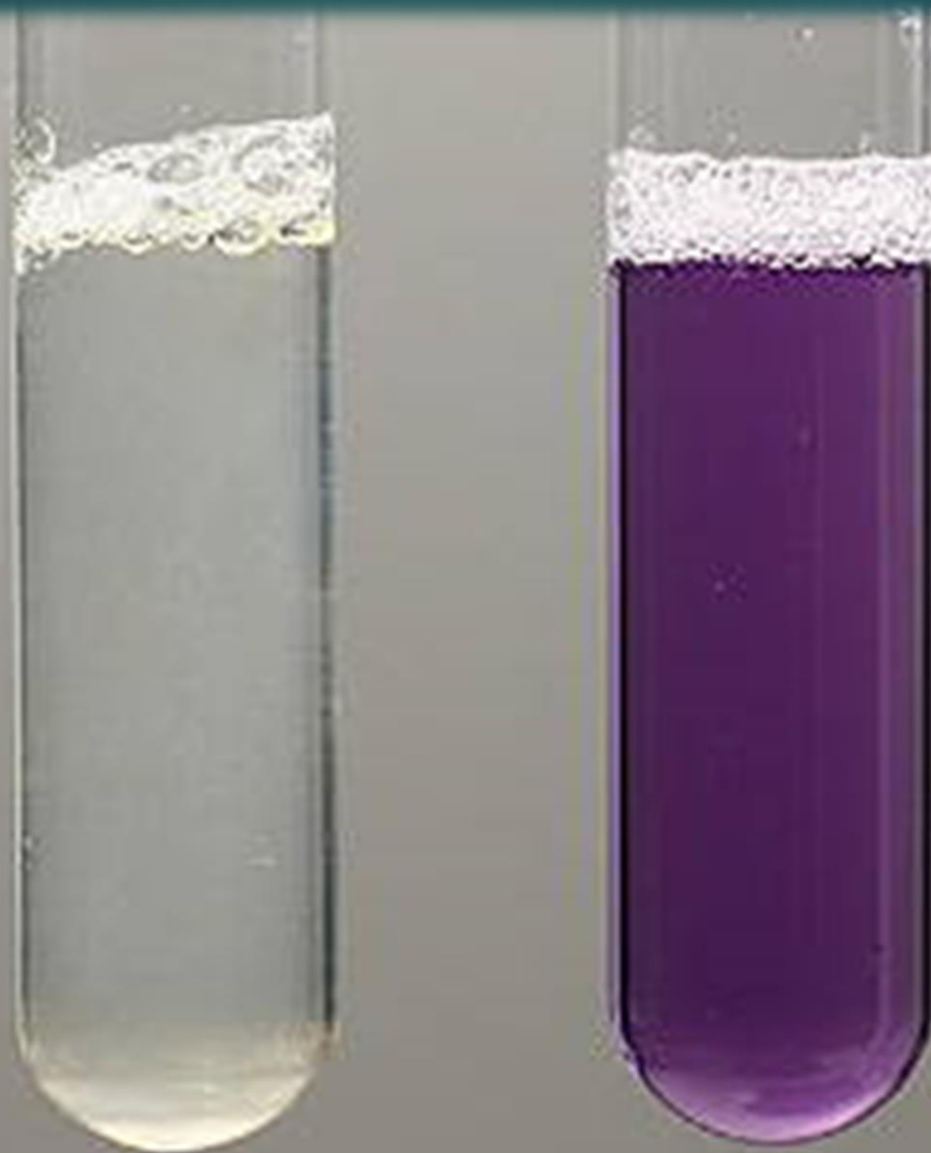
Principle:

Ninhydrine a powerful oxidizing agent , reacts with all α -amino acids between pH (4 - 8) to give a blue colored compound.



Procedure

- 1- 1 ml of protein or amino acid.
- 2- 2 ml of 0.2% solution of ninhydrine , boil for two minutes and then allow to cool. Blue colour is produced.



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Report

Test	A	P	C	G	Conclusion
Biuret Test	+	+	+	+	
Ninhydrine Test	+	+	+	+	



► Thanks