**Experiment:3**

**Mercurimetric Determination of Blood or Urine Chloride**

**Principle:**

\*Chloride ions in a serum or urine sample are titrated with a standardized mercuric nitrate solution.

\*Mercuric ions combine with chloride ions to form a soluble HgCL2 complex.

\*The appearance of a violet-blue color produced by diphenyl Carbazone indicator is used as the end point.

(mercuric ions combine with diphenyl Crabazone to form a violet colored complex).

\*The dissociation constant for HgCL2 is smaller than the dissociation constant for the Hg-diphenyl carbazone complex, so all the chloride ions must be complexed before the mercuric ions complex with diphenyl carbazone.

\*The mercuric nitrate solution is standardized by titrating against a standard solution of NaCL.

**Reagent:**

1-0.0009 M mercuric nitrate in 0.04 M HNO3 = Hg(NO3)2.

2-Diphenylcarbazone (indicator).

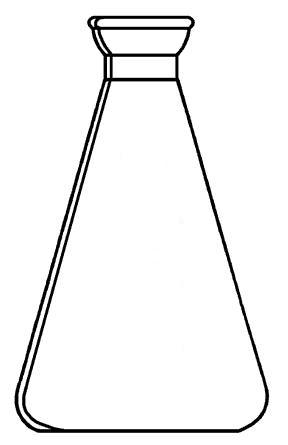
3-0.01 M NaCL.

4-10% Na2WO4 solution (Sodium Tungstate).

5-H2SO4 (Sulfuric Acid).

**Procedure:**

**I)Standardization of Hg(NO3)2:**

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1- 2 ml NaCL

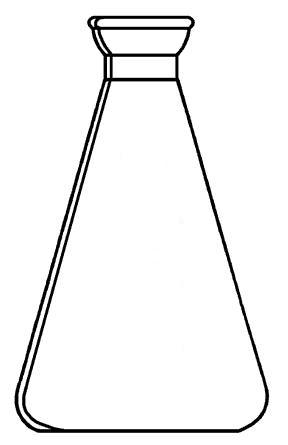
2- 4 drops indicator

***Erlenmeyer flask***

3- Titrate with Hg(NO3)2 until get faint purple color (end point).

**II)Determination of Chloride in Serum:**

**a)**

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1- 0.5 ml serum

2- 3.5 ml H2O

3- 0.5 ml Na2WO4

4- 0.5 ml H2SO4

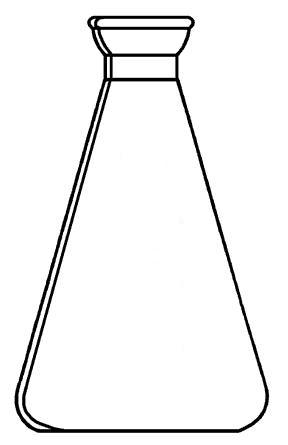
***Erlenmeyer flask***

5-Centrifuged then filtered to get Protein free filtrate (un known).

**b) Dilute the unknown (1:10)**

1 ml unknown + 9 ml distal water

**c)**

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1- 2 ml dilute unknown

2- 4 drops indicator

***Erlenmeyer flask***

3- Titrate with Hg(NO3)2 until get faint purple color

**Calculation:**

**A) calculate the concentration of Hg(NO3)2**

NaCL + Hg(NO3)2 2 HgCL + Na(NO3)2

M NaCL x V NaCL = 2 ( M Hg x V Hg )

0.01 x 2 = 2 ( MHg x 13.2 )

MHg = 0.00076 M

**b)calculate the concentration of chloride**

MCL x VCL = 2( MHg x VHg )

MCL x 0.2 = 2( 0.00076 x 5.7 )

MCL = 0.04332 M