Tikrit university
college of pharmacy

Inorganic Pharmaceutical Chemistry

م.م.احمد رافع احمد م.د.علي حسين مصطفى

م.م.صباح فرحان محمد الصيدلاني محمود شاكر جابر

Preparation and standardization of 0.1N Hcl

Hydrochloric acid,is an aqueous solution of hydrogen chloride. It is a colorless solution with a distinctive pungent smell. It is classified as a strong acid that causes both functional and histologic damage on contact with tissue surfaces generally at a pH below . 3 The extent of injury is modulated by duration of contact; ability of the caustic to penetrate tissues; volume, pH, and concentration; the presence or absence of food in the stomach.

- Following exposure to an acid, hydrogen(h(ions desiccate epithelial cells, producing an eschar and resulting in a histologic pattern of coagulation necrosis.This process leads to edema, erythema, mucosal sloughing,ulceration, and necrosis of tissues.Dissociated anions of the acid (Cl–) also act as reducing agents, further injuring tissue.

Prerequisites for preparation and standardization of 0.1 N HCL

Glasswares: Burette, stand for burette, a conical flask, volumetric volumetric pipette to makeup volume, beaker, flask, funnel, glass rod, washed bottle, etc

- Chemicals: Concentrated HCl, sodium carbonate (Na_2CO_3, methyl red indicator, etc.

Preparation of 0.1N Hcl

Dilute 0.9 mL of HCl with distilled water to a final volume of 100 mL usinga 100ml volumetric flask

$$N_1 \times V_1 = N_2 \times V_2$$

N1: :the normality of concentrated HCl used

V1:the volume of concentrated HCl to be used for dilution

N2 :the requested normality of HCl (1 N in our experiment

V2 :final volume after dilution (100) mL in our experiment

Calculation the N of concentrated Hcl

$$N = \frac{\% * sp.gr. * 1000}{eq.wt.}$$

- N :the normality of the concentrated acid
- % :the weihtg by weihtg concent ration of the acidsp.
- Gr. : the specific gravity of the acideq.
- Wt. :the equivalent weight of the acid

Standardization

to Chemical principle: Sodium carbonate reacts with hydrochloric acid according the following equation: $Na_2CO_3 + 2HCl \rightarrow 2NaCl + CO_3 + H_2O$

Anhydrous sodium carbonate is used as theprimary standard

▪methyl red is used as the indicator

yellow *faint pink*

Ph=4.4 *PH=6*

Procedure

- Wash the burette with the D. W. And the titrant HCl.
- fill the btturee with HCl to a level (adjust it.
- dissolve the primary standard (Na2CO3) in enough D. W.(100 mL) using the conical flask .
- add 2 drops of methyl red.
- start titration by adding HCl drop wise with continuous stirring until the soltiuon becomes fiaint pink.
- heat the solution to boiling so that the colour changesback into yellow cool, and titrate again until the faint pink colour is no longer affected by boiling.

Calculation

$$\underbrace{N \times V}_{HCl} = \frac{\underbrace{wt.}_{Na_2CO_3}}{eq.wt.} \times 1000$$

N :the normality of HCl to be calculated

V : the volume of HCl used in mL

wt. : the weight of soduim carbonate in g

Eq. Wt. : the equivalent weight of sodium carbonate