

Miscellaneous AgentsExpectorant

- These are the agents which help in the elimination of bronchial secretion from the respiratory tract.
- Expectorants are used in the treatment of respiratory disorders.

ExpectorantSedatives

which cause irritation on the gastric mucous which produce cough thereby bronchial secretion is removed.

e.g.: - Ammonium chloride,
potassium iodine

Stimulant

which cause stimulation of the cell in the respiration tract which directly or indirectly causes secretion of bronchial fluid.

e.g.: - Terpin hydrate.

Ammonium chloride :-

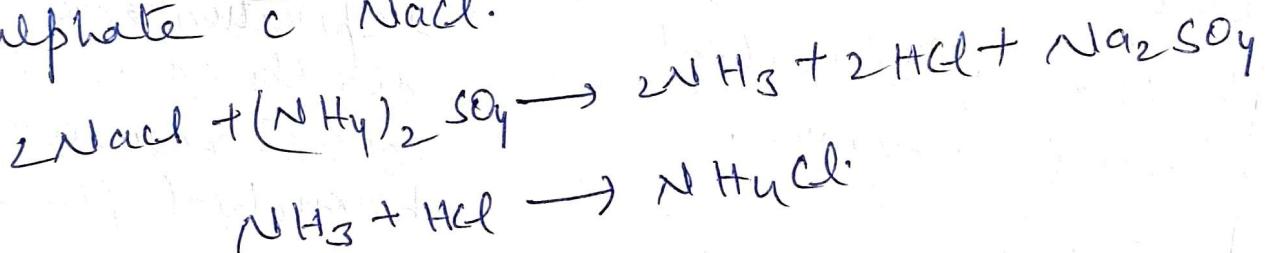
formula : NH_4Cl

Mol. wt. :- 53.49

- It is having not less than 99.5% of NH_4Cl which is calculated with reference to substance dried over silica gel for 4 hours.

Preparation :-

- ① Commercially, it is prepared by neutralizing ammonia with HCl.
- The solⁿ is evaporated till crude, vitreous, crystalline mass of NH₄Cl is obtained.
- $$\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$$
- ② It is also prepared by treating ammonical gas liquor with lime & liberated NH₃ is passed into HCl solⁿ. The crude NH₄Cl obtained is known in commerce as salt ammonia & occurs as tough, crystalline masses.
- ③ NH₄Cl is also produced by heating ammonium sulphate C NaCl .



Properties :-

- It is white, fine or coarse crystalline powder.
- It is odourless.
- Cooling saline taste.
- Hygroscopic
- NH₄Cl solⁿ is incompatible with alkalis, carbonates of alkaline earths & lead salts.

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Tests for purity :-

It is tested for As, Fe, heavy metals, less on drying & sulphate Ash.

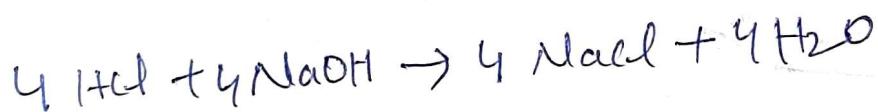
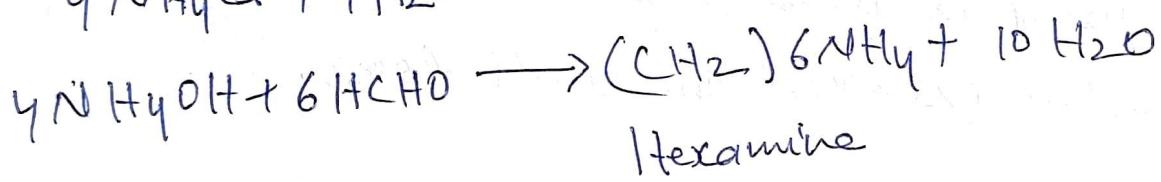
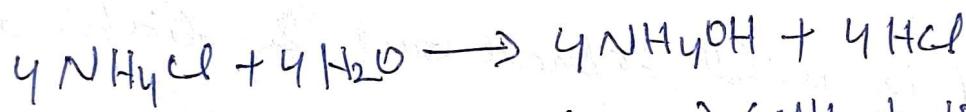
The pH of a 5% w/v solⁿ is b/w 4.5 & 6.0.

Storage :-

It is stored in highly closed container.

Assay :-

It is based on acid-base titration in a specified weight of substance is dissolve in water & treated with formaldehyde solⁿ liberating equivalent amount of HCl.



$$100.0 \text{ ml } 1\text{N} \text{ NaOH} = 53.49 \text{ gm of NH}_4\text{Cl}$$

$$1 \text{ ml of } 0.1\text{N} \text{ NaOH} = 0.005349 \text{ gm of NH}_4\text{Cl}$$

Procedure :-

Weigh accurately about 0.1 gm of sample, dissolve in 20 ml of water & add a mixture of solⁿ of Formaldehyde solⁿ neutralized to dilute phenolphthalein solⁿ &

20ml of water.

- Allow the reaction to take place for 2 minutes & titrate slowly with 0.1N NaOH by using soln of phenolphthalein as an indicator. Appearance of pink color is the end-point.

Factor :-

$$1 \text{ ml of } 0.1\text{N NaOH} = 0.005349 \text{ gm of NH}_4\text{Cl}$$

Uses :-

- ① It is used in maintaining acid-base eqbm. of body fluids.
- ② It is used as diuretic.
- ③ It is used in mild expectorant & diaphoretic when administered in small doses.

Potassium Iodide :-

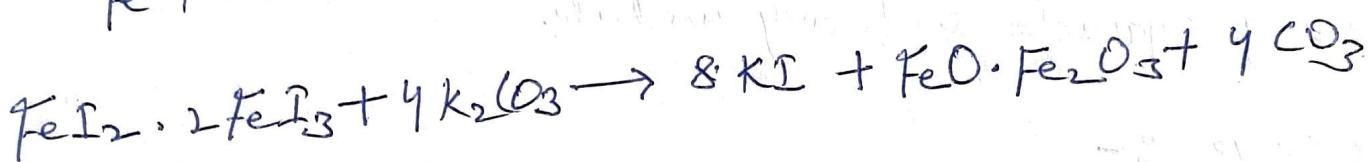
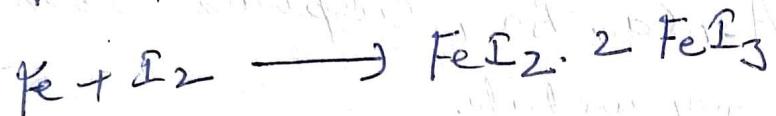
Formula : KI

Mol. Wt. : 166.0.

It is having not less than 99.0% of KI, which is calculated to reference to the substance dried to a constant weight at 105°C .

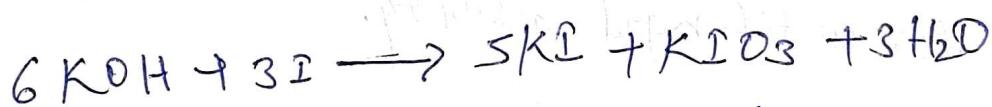
Preparation :-

① It may be obtained by the action of iodine on moist iron filings to form ferro-ferric iodine (FeI_3 or $\text{FeI}_2 \cdot 2\text{FeI}_3$) which then gets decomposed with potassium carbonate.



Ferroso-ferric oxide is filtered out. The filtrate is concentrated to get KI. The salt may be purified by recrystallization.

② It is also prepared by treating a hot aqueous soln of KOH with iodine in slight excess to form a mixture of KI & potassium iodate:



Properties :-

- Colourless
- Transparent / opaque crystals / white granular powder
- Odourless
- Saline & bitter taste
- soluble in water, glycerine & acetone.

Identification :-

It gives streak which are characteristic of potassium & iodine.

Tests for purity :-

It is tested for As, Ca, Ba, sulphate loss on drying cyanide & heavy metals.

Storage :-

It should be stored a well closed container.

Uses :-

- ① It is used internally for supplying iodine for K₁ of thyroid deficiency in tablet form.
- ② It is also used as expectorant & saline diuretic.
- ③ It has also antifungal activity.

Incompatibility :-

KI has been incompatible to salts of iron, bismuth, copper, lead, mercury.

Poison & Antidote

Poison :-

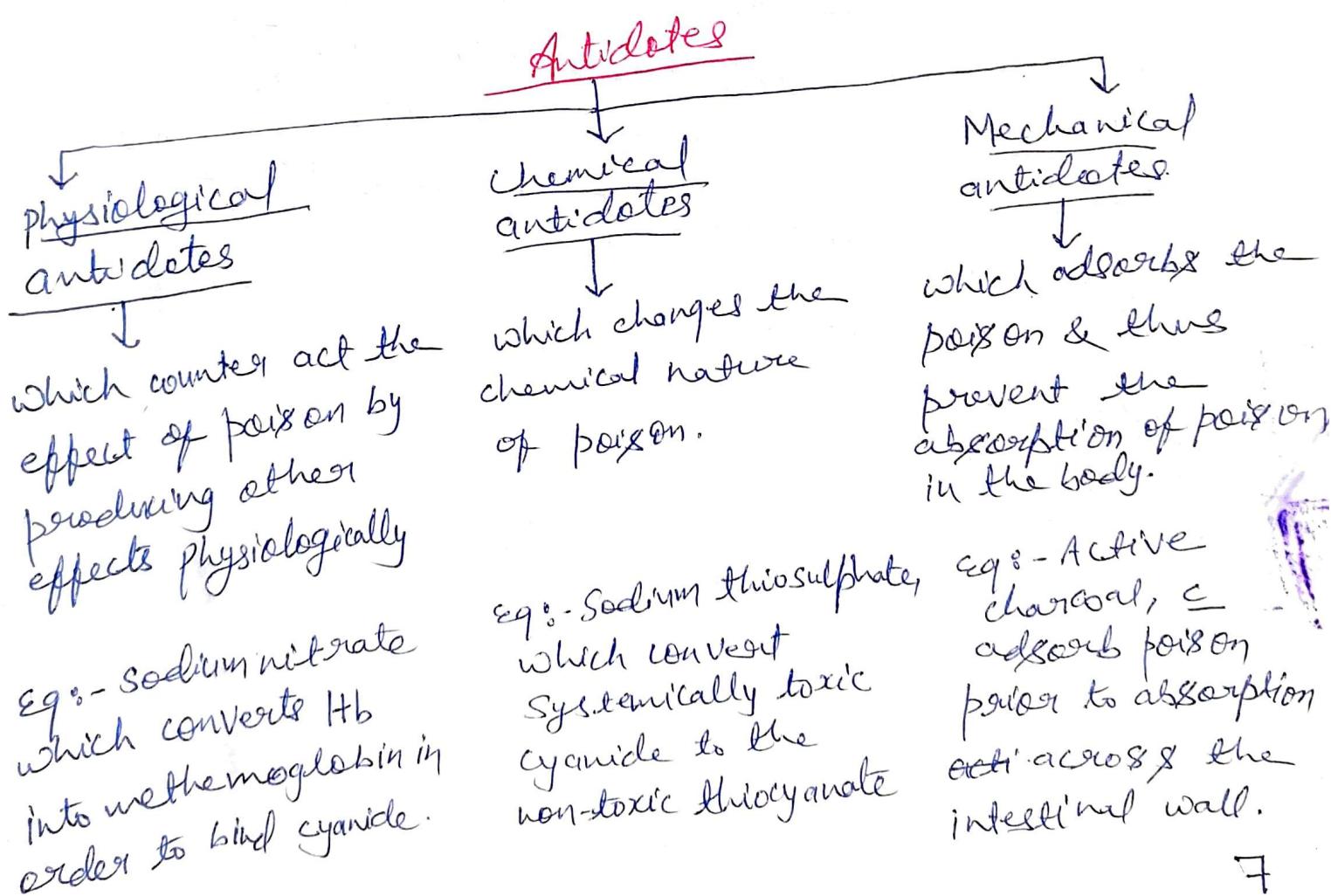
A poison may be defined as any substance when 6

Administrator produces ill health disease or death, (4)
acute poison may be accidental, acceptance, suicide, or
criminal.

- poisons are substances that are harmful when they get into the body.
- poisoning occurs when a toxin is swallowed, breathed in, absorbed or injected into the skin, or gets into the eyes.
- poisoning can be a medical emergency.

Antidotes

- The specific agent \leftarrow counteract a poison is known as antidotes



Cyanide poisoning :-

- cyanide poisoning is poisoning that results from exposure to a number of forms of cyanide.
- For cyanide poisoning two inorganic antidotes such as Sodium nitrite & sodium thiosulphate are used. Both are used in conjunction with each other.

Sodium Nitrite

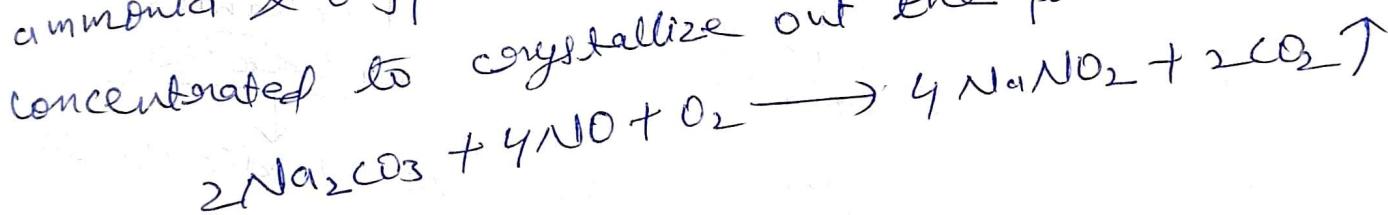
Formula : NaNO_2

Mol. wt. : 68.99

It contains not less than 97% & not more than 101.0%.
 NaNO_2 is reference to substance dried over silica gel.

Preparation :-

We can obtain NaNO_2 by the catalytic oxidation of ammonia & oxygen in sodium carbonate soln. The soln is concentrated to crystallize out the product.



Properties :-

- white granular powder.
- saline taste.
- water soluble, sparingly soluble in alcohol
- chemically it acts as reducing agent & gets oxidized in acidic medium.

Uses :-

- ① It is used as vasodilator, but now it is replaced by

organic nitrites, nitroglycerin etc.

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- ② Used as antidote in cyanide poisoning & has a hypotensive effect.
- ③ It has relaxant action on smooth muscles
- ④ It prevents rusting of surgical instruments by immersing them in a dilute soln & it is also used as food preservative.

Sodium Thiosulphate

Mol. Formula : $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$

Mol. wt. : 248.18.

It contains not less than 99.0% & not more than 101.0% of $\text{Na}_2\text{S}_2\text{O}_3$.

Preparation :-
It can be prepared by boiling sodium sulphate with Sulphur.



Properties :-

- white crystalline solid
- odourless
- Highly water soluble

Assay :-

It is assayed by titration with std. Iodine soln with starch as an indicator.



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- Uses :-
- ① Used as an antidote for cyanide poisoning.
 - ② Used as reducing agent.
 - ③ Used in the management of extravasation of other antineoplastic.
 - ④ Used for its antifungal properties.

Emetics

— chemical compounds which can be administered to induce vomiting.
e.g.: Ipecac Syrup.

Mode of action :-

— the act of emesis is controlled by the vomiting centre in the medulla & close to it is other visceral centres in the medulla oblongata.

Copper sulphate

Mol. Formula : $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

Mol. wt. : 159.6.

It contains NLT 98.5% & NMT 101.0% of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

Preparation :-

— It is obtained by heating granulated copper in the presence of air with Sulphuric acid. The oxygen of air assists the reaction.



The soln is filtered & evaporated to crystallize
when crystals of CuSO_4 separate out.

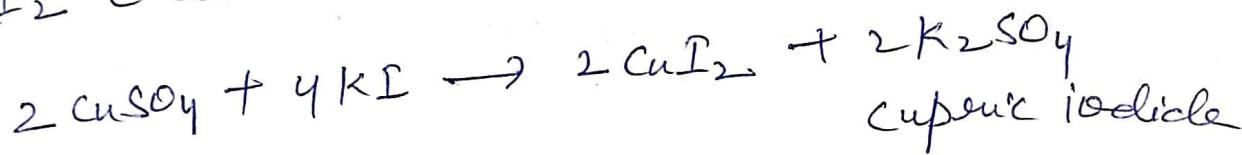
Properties :-

- exist in deep blue crystalline granules/powders.
- soluble in water
- very soluble in boiling water.
- slowly soluble in glycerol & almost insoluble in alcohol.

Assay :-

copper iodide which formed in the reacn b/w copper sulphate & potassium iodide & decomposes to yield

Cu_2I_2 & the liberation of free iodine.



Storage :-

It has to be protected from air, heat & moisture.

Uses :-

- (1) Emetic
- (2) chemical antidote in phosphorus poisoning.
- (3) Used as astringent.
- (4) work as fungicide.
- (5) It is an ingredient of Benedict's & Fehling's reagent

Sodium Potassium Tartrate

Mol. formula : $C_4H_4NaKO_6$

Mol. wt. : 210.158

Properties :-

- soluble in water.
- slightly soluble in alcohol.
- Melts at 75°C.

Uses :-

- ① Mild purgative.
- ② Ingredient of Fehling's solⁿ.
- ③ It is used in silvering mirror.