

UNIT-IVExpectorants

These are the drug that help in removing sputum from respiratory tract either by

(i) Increasing fluidity of sputum

(ii) Increasing volume of fluid.

these sputum have to be expelled out by coughing.

cough

→ Cough is a protective reflex to expell out the foreign partical from air passage.

→ cough can be stimulated by Mechano or chemo receptor in throat, respiratory passage or stretch receptor in lungs

Types of cough(i) Useful cough / Productive cough

These cough serve to drain the airway hence it's suppression is not desirable, may even be harmful.

(ii) Useless / non-productive cough

It is dry, does not produce sputum This should be suppressed.

On the Basis of Activity Expectorants are two types.

- ① Sedative expectorants
- ② Stimulant expectorants.

① Sedative Expectorants

These are stomach irritant expectorants, are able to produce their effect through stimulation of gastric reflex.

1) e.g. Bitter drugs → Ipecac
Senna, Indian Squill

2) Inorganic Compound → Antimony potassium
tartrate,
Ammonium chloride,
Sod. citrate, KI.

② Stimulant Expectorants

→ It stimulate the secretory cells of respiratory tract directly or indirectly

→ Since these drugs stimulate secretion, more fluid in respiratory tract and sputum is diluted.

e.g. Eucalyptus, Lemon etc.

Mechanism of action

These agent act by two ways.

(a) ↓ viscosity of bronchial secretion so as to remove cough easily.

(b) ↑ amount of respiratory fluid by demulcent action, it remove non-productive cough easily.

Potassium Iodide (KI)

M. formula = KI

M. wt = 166 g/mol

Boiling point = 1330°C

Melting point = 681°C

→ KI is a metal halide salt having ionic bond b/w K^+ & I^- .

Properties

Colour → colourless / transparent crystal / white

odour → odourless

Taste → Bitter

Solubility → H₂O / Alcohol

* It is hygroscopic in nature.

Preparation of KI

① It is prepared by treating slight excess of iodine in hot aqueous solution of KOH.

↓

The pale yellow solution is precipitated evaporated to dryness

↓

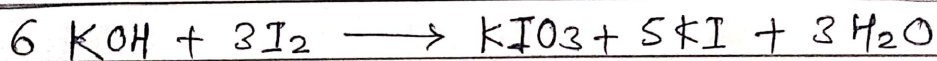
Residue is heated in charcoal to reduce to iodate.

↓

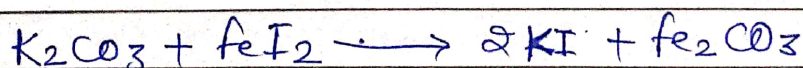
Product is extracted in H_2O

↓

filter and filtrate is evaporated to crystallization.

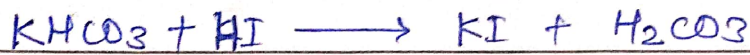


② By Potassium Bicarbonate



↓ ↓ ↓ ↘
 pot. carbonate ferrous iodide potassium iodide ferrous carbonate

③ By reacting Potassium Bicarbonate \bar{c} HI



Other properties of "KI"

(1) It is slightly hygroscopic in nature.

(2) It's solution is neutral or slightly alkaline to litmus.

(3) On long exposure to air it becomes yellow due to liberation of iodine and small quantity of iodate may be formed.
- Light and exposure moisture accelerate decomposition.

(4) Iodine readily dissolve in an aq. solution of KI, forming a black brown solution containing potassium tri-iodide



USES

(1) Expectorant \rightarrow used as an expectorant mixture.

(2) Source of iodine \rightarrow used for prophylaxis and treatment of simple goiter.

(3) Antifungal: used as an antifungal agent in Veterinary practice.

(4) Iodine solⁿ: Are Antimicrobials.

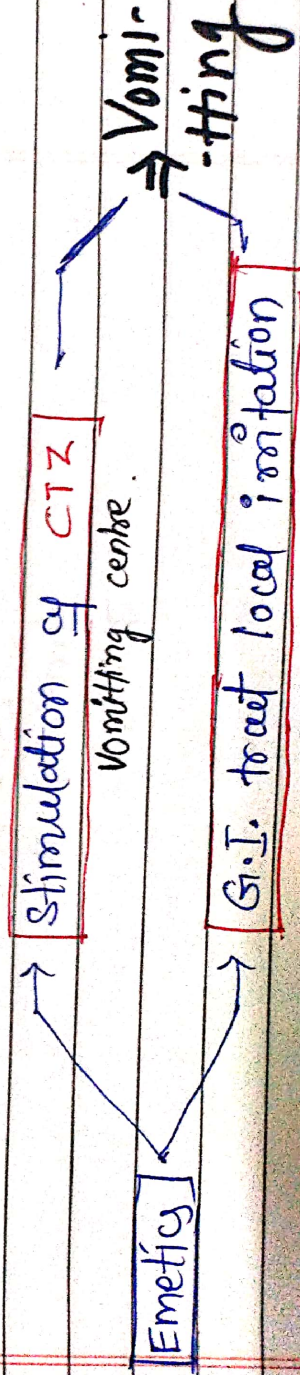
EMETICS

- Emetics are derived from word emesis
= means Vomiting.
- Vomiting is forced expulsion of contents present in stomach through mouth sometime through nose.
- Emetics are the drugs = give rise to forced emesis by = the content of stomach get expelled t/h oral cavity.
- They are important in case of poisoning.
- Emetics are used generally in ~~p~~

Mechanism of Action

(1) They act by directly or by stimulation of chemoreceptor trigger zone (CTZ) in the floor of 4th ventricle in Medulla

(2) They act also by reflex action by irritation of gastro intestinal tract.



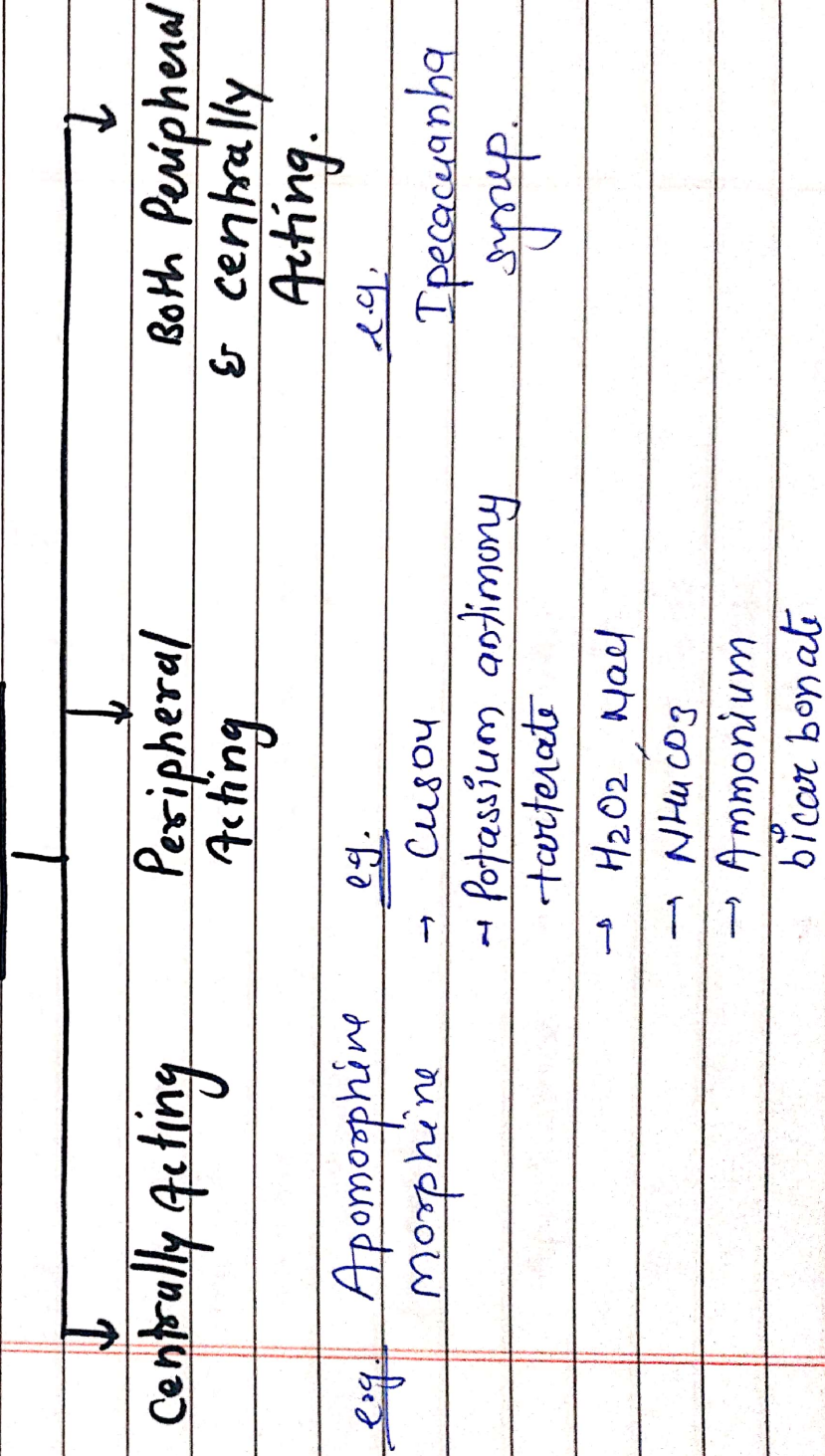
Natural Emetics

- ① Salt water / warm water
 - mild emetic
 - 2 spoonful salt in a glass of H₂O.
- ② Mustard seeds
 - 1 table spoonful ground mustard seed in half glass of water.

CLASSIFICATION OF EMETICS

(on the basis of site of action)

EMETICS



Contraindication

- (1) Patient suffering from CNS depression, coma, pregnant women & children
 - (2) In corrosive poisoning - acid & alkaline
- * So these agent must be carefully administered with proper therapeutic drug monitoring.

COPPER SULPHATE

Synonym = Cupric Sulphate

M. formula = $CuSO_4$

M. wt. = 249.7

storage = Must be protected from air

Property

Appearance → Deep blue

Taste → Crystalline, effervescent
Metallic

odour → Odourless

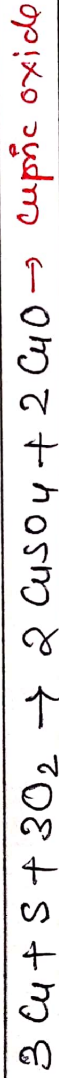
solubility → Soluble in boiling H_2O
Insoluble in alcohol

Preparation

Sulphure is heated with copper granules giving production of copper sulphate and cupric oxide, ↓

C is then treated w/ H_2SO_4 ↓
 $CuSO_4$

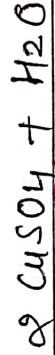
Copper ↓



↓

Sulphure

↓



USES

(1) Used as emetic (but not choice of drug)

Sodium Potassium Tartrate

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Synonyms : Rochelle Salt, Seignette salt.

M. formula : $C_4H_4O_6KN_9 \cdot 4H_2O$

M. wt. : 283.22 g

Storage : It must be stored in air's tight container.

Test of identification

(1) On heating the salt \rightarrow Burning sugar odour.

(2) When equal volume of acetic acid is added white precipitate is formed.

PHYSICAL PROPERTY

Appearance \rightarrow Large colourless, prismatic crystal

Taste \rightarrow Saline

Odour \rightarrow Odourless

solubility \rightarrow water insoluble in alcohol.

Preparation

= Potassium bitartrate reacts \bar{c} sodium carbonate

$KHC_4H_4O_6 + Na_2CO_3 \rightarrow C_4H_4O_6KN_9 \cdot 4H_2O$

pot. bitartrate

sod. pot. carbonate

USES

- (1) Emetics, Saline cathartics
- (2) mild laxative
- (3) Diuretics
- (4) Alkaliser
- (5) food additive
- (6) Breaking emulsion