

# CATHARTICS

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These are used to relieve constipation or bring out defecation.

→ Laxative = The term used for mild cathartic.

→ Purgative → Used for the strong cathartics.

⇒ In normal habits, peristalsis movement lead to defecation. peristalsis stimulate bowel & relieve content.

⇒ On ignoring urge to defecate by any reason it leads to constipation as fecal matter become dry due to absorption of  $H_2O$  for long time and stool become hard. c further lead to haemorrhoids.

→ The call for motion should not be ignored but this condition  $\&$  persist then mild purgative or laxative can be taken.

⇒ Cathartics are used in following conditions.

1) Relieve acute constipation

2) Avoid hazardous rise in B.P during defecation.

3) For ease defecation in painful haemorrhoids.

4) Remove solid material b/f x-ray or endoscopy.

## Classification

mild Purgative

Strong Purgative

Bulk producing drug

Stool softener

Irritant/stimulant Purgative

Saline cathartics / Purgative / osmotic laxatives

## Mild Purgative (Laxatives)

These are those agent  $\leq$  promote defecation causing minimum adverse effect.

### (I) Bulk forming drugs

These are the agent  $\leq$  promote evacuation by increasing the stool bulk-volume and water content

e.g. Isapgol, Bran, Agar-Agar, methyl cellulose, psyllium seed, sod. carboxy methyl cellulose.

(b) stool softner (emollient)

→ It penetrate, lubricate, and soften the stool.

eg. D-octyl sodium sulphosuccinate (anionic surfactant)  
liquid paraffin (mineral oil)

Strong purgative

⇒ It cause complete evacuation of bowel and bowel become atonic (inactive)

⇒ There is need for purgative for motion, for these reason this is not normally used.

→ It is given in worm infestation along with drugs for killing the worms and to remove solid material b/f X-Ray examination.

→ These purgative also cause labour pain hence not used during pregnancy.

(a) Irritant / stimulant purgative

→ phenolphthalin

→ Senna glycoside, Aloe

→ Cascara, castor oil

→ Bisacodyl

→ Calomel (no longer used)

→ Oxyphenisatin

(b) Saline cathartics / Purgatives (osmotic laxative)

⇒ sodium containing

- sodium biphosphate
- sodium phosphate
- potassium sodium tetrates

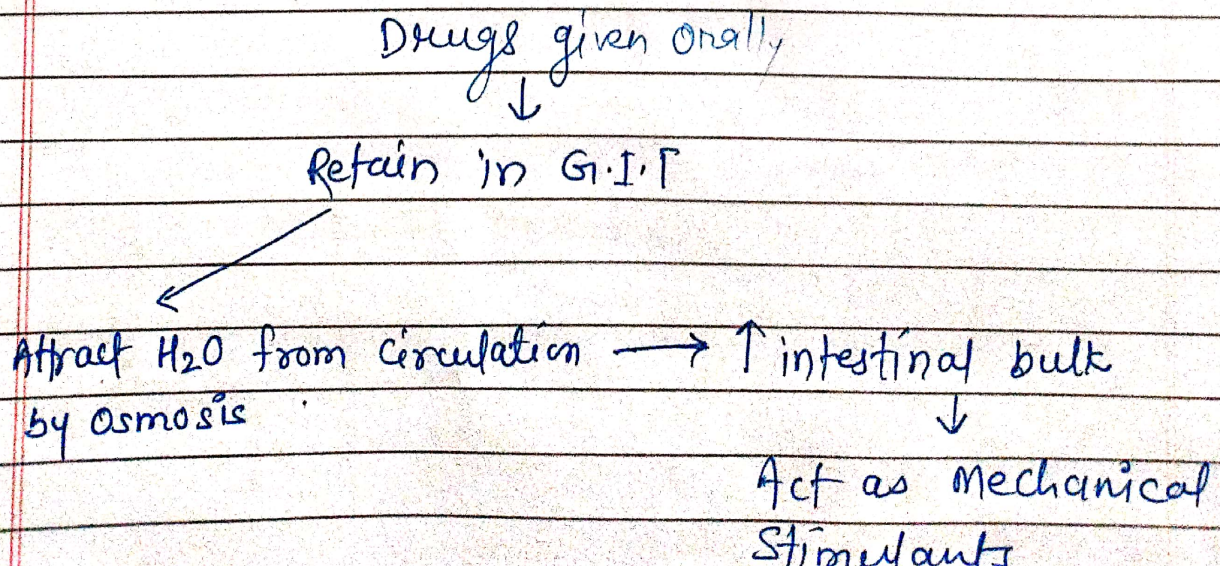
⇒ Magnesium containing

- Magnesium hydroxide  
(milk of magnesia)
- Magnesium citrate
- $MgSO_4$

⇒ Sulphur as cathartics

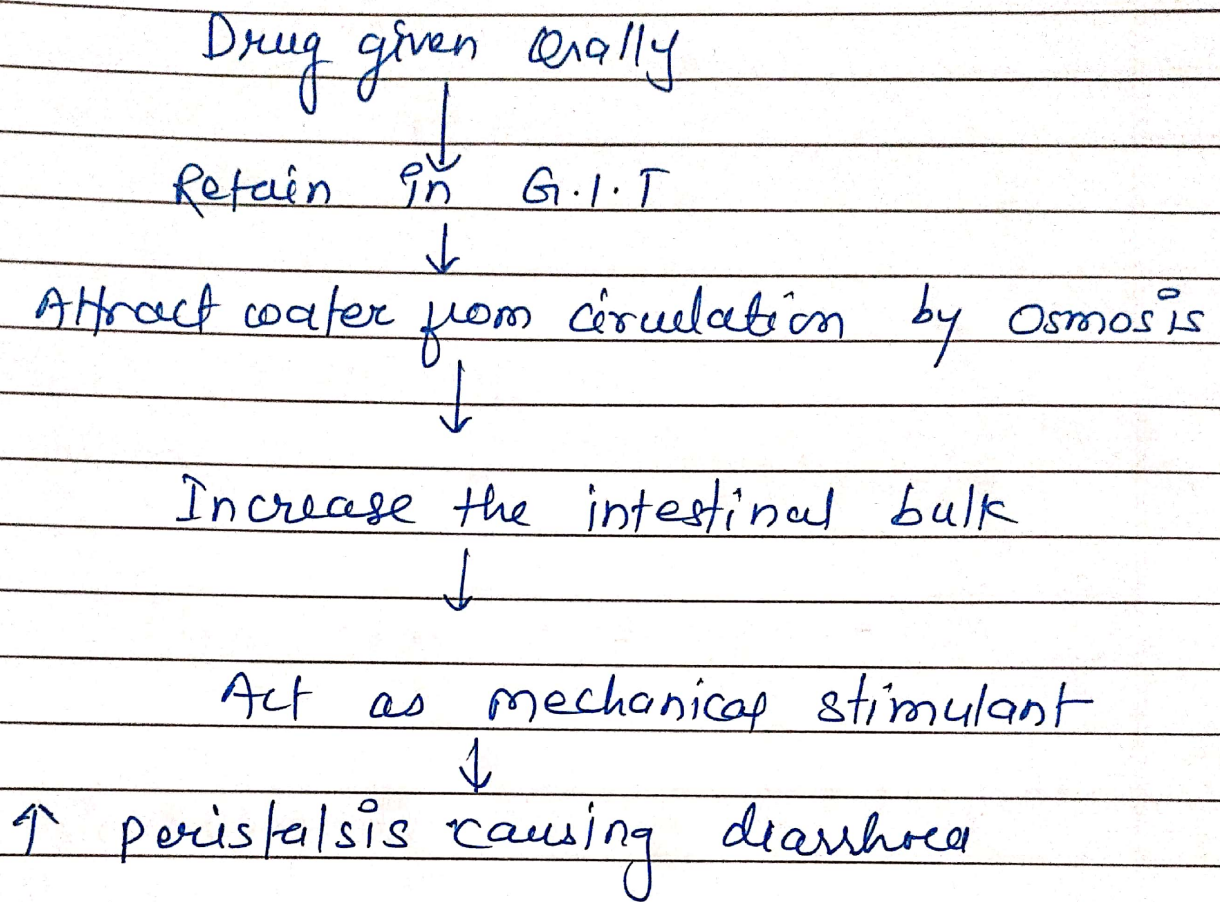
- ⇒ Non-official cathartics →
- sod. sulphate
  - pot. phosphate
  - pot. bitartrate
  - calomel

Mechanism of saline Cathartics



# Mechanism of cathartics

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\* Saline purgative stimulate the loss of excess water (watery stool) hence it should be taken a large amount of  $H_2O$ .

Ex. (1)  $MgSO_4$

(2) Sodium potassium Tartrate.

# Magnesium Sulphate

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Synonyms : Epsom salt

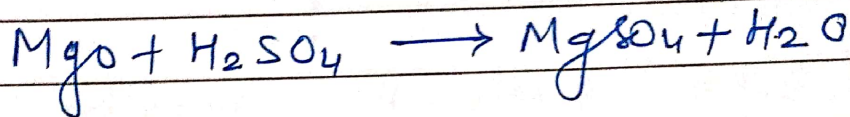
M. formula:  $MgSO_4 \cdot 7H_2O$

M. weight 120 gm.

Preparation

↓

Made by neutralizing hot, dilute  $H_2SO_4$  with magnesium oxide or  $MgCO_3$ .



Physical property

→ Small, colourless, needle like crystal.

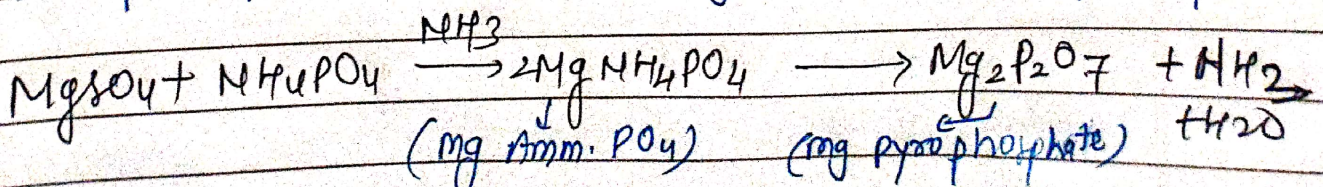
→ Odourless

→ Taste is cooling saline or bitter

→ Efflorescent in nature when exposed in air.

Chemical Property

When  $MgSO_4$  react with  $NH_4PO_4$  in presence of  $NH_3$  it forms magnesium ammonium phosphate precipitate to give magnesium pyrophosphate.



Assay

6.3 gm sample + 50 ml H<sub>2</sub>O

↓  
Add strong ammonium chloride (10 ml)  
(NH<sub>4</sub>Cl)

↓  
Titrant = 0.05 M disodium EDTA

↓  
Indicator is " (magenta black II)

↓  
End point = Blue colour

⇒ Tests for purity

→ Arsenic limit test

— Iron —

— Heavy metal — " —

— chloride — " —

— sulphate — " —

⇒ Storage

stored in well closed container

⇒ Medicinal use

1) for constipation

2) Evacuation of gall bladder (in case of cystitis)

3) Treatment of electrolyte deficiency

4) Osmotic laxative → Anticonvulsive properties.

5) Used to control seizure.

# Sodium Orthophosphate

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→ formula =  $\text{Na}_3\text{PO}_4$

→ Salt of sodium and phosphate

→ Also k/as Trisodium phosphate or tribasic sodium phosphate.

⇒ m. wt → 358.14

Types of sod. ortho  $\text{PO}_4$

(1)  $\text{NaH}_2\text{PO}_4$  (mono sod.  $\text{PO}_4$ )

(2)  $\text{Na}_2\text{HPO}_4$  (disod.  $\text{PO}_4$ )

(3)  $\text{Na}_3\text{PO}_4$  (Trisod.  $\text{PO}_4$ )

## Properties

→ Transparent, colourless crystal

→ Solubility → in  $\text{H}_2\text{O}$  Not in alcohol

→ It forms sodium Pyrophosphate on heating

## Mechanism

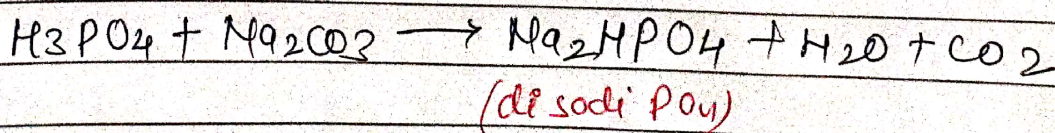
→ ↑ osmotic pressure in intestine.

→ Draw water into bowel, softening stool

→ stimulate intestinal motility leading to Bowel evacuation.

## Preparation

(1) By combining sodium carbonate & hot phosphoric Acid





## Uses

- (1) Bowel Preparation b/f colonoscopy / surgery
- (2) Relief of occasional constipation.

## Side effect

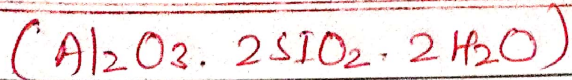
- (1) Electrolyte imbalance  
i.e. Hypernatremia,  
Hypokalemia  
Hypocalcemia
- (2) Dehydration (due to excess water loss)
- (3) Gastrointestinal distress  
→ Cramps  
bloating  
Nausea, vomiting.

## Contraindication

- (1) Kidney disease or impaired renal function
- (2) Heart disease / Hypertension
- (3) Dehydration / electrolyte disorders

# Kaolin

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→ It is native hydrated aluminium silicate free from impurities

## → Properties

① Soft, white/yellow powder  
-white

→ clay like earthy taste

→ clay like odour

→ water insoluble, including dil. acid & alkali

→ Practically inert

Dose : 15-75 gms.

Storage : In well closed containers

## Uses

① It is used internally for its adsorptive properties as well as ability to coat irritated intestinal mucosa.

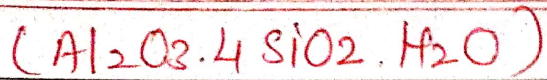
② Used in symptomatic treatment of diarrhoea, enteritis, colitis and dysentery.

③ Used in treatment of food and alkaloid poisoning as adsorb toxins.

④ Used in dusting powder, cosmetics etc.

# Bentonite

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→ It is colloidal Hydrated Aluminium silicate which occurs naturally.

→ Bentonite have  $SiO_2$ ,  $Al_2O_3$ ,  $FeO_2$ ,  $CaO$ ,  $MgO$  and some sodium and K.

## Properties

- very fine pale or cream coloured powder
- Odourless
- free from grit
- earthy taste
- Insoluble in  $H_2O$
- It swells to about 12 times a:

## Uses

- (1) used as protective colloid to stabilize emulsion mainly suspends other insoluble powders.
- (2) emulsifier for o/w emulsion.
- (3) used as base for many pharmaceutical preparation.
- (4) Ingredient of Calamine lotion is used as protective.
- (5) It has its swelling factor.