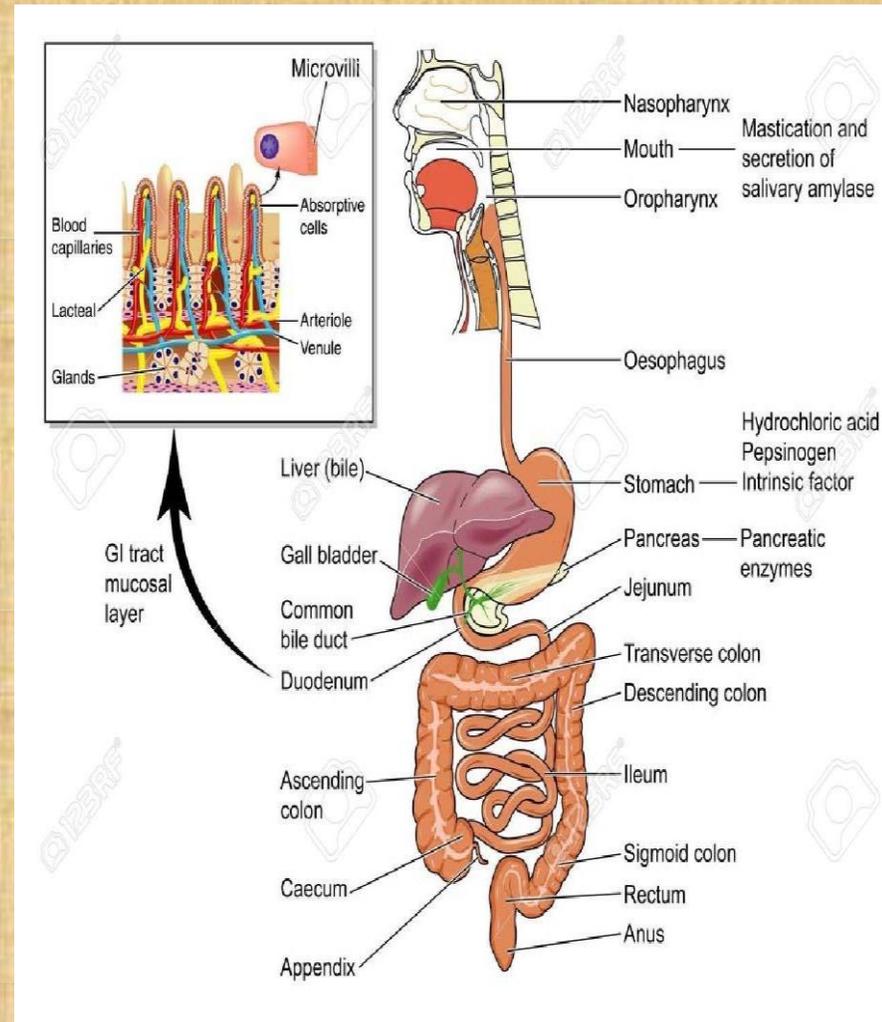


Gastrointestinal agents

Acidifying agents Dil.hydrochloric acid

Introduction:

- ❖ The digestive system is the gastrointestinal tract (GIT)
- ❖ It starts from the oesophagus to the anus.
- ❖ The main portion of GIT includes the stomach, small intestine, large intestine and the rectum with the exit anus.
- ❖ Whenever the functions of GIT go wrong, disease occurs.



classification

1. **Acidifying agents** eg.dil.hydrochloric acid

2. **Antacids** egs. Sodium bicarbonate

Aluminium hydroxide gel

Magnesium hydroxide mixture

3.**laxative ,cathartics and purgatives**

Egs.Magnesium sulphate

Sodium orthophosphate

4.**Adsorbant and protectives**

Kaolin,bentonite

5. **Antimicrobial agents**

Potassium permanganate

Boric acid

Hydrogen peroxide

Chlorinated lime

Iodine and its preparations

Hyperchlorhydria/ hyperacidity

Whenever excess secretion of acid takes place in the stomach, this causes the imbalance in acid enzyme ratio, thereby finally leading to hyperacidity and ulcers.

Antacids are used in treatment of Hyperchlorhydria.

Hypochlorhydria

Whenever inadequate secretion of acid takes place in the stomach, this causes achlorhydria or hypochlorhydria.

Acidifying agents/acidifiers are used in treatment of Hypochlorhydria

Acidifying agents/acidifiers:

The drugs or agents which are used to increase metabolic acidosis and gastric hydrochloric acid. They are also known as acidifying reagents or acidifiers.

e.g. **Dilute HCl**

Antacids:

These are drugs or substances which are alkaline substances and used for neutralizing excess acid in the stomach of the patients suffering from hyperacidity.

e.g. **Sodium bicarbonate, aluminium hydroxide gel, Magnesium carbonate, milk of magnesia, Tribasic Calcium Phosphate, Magnesium hydroxide**

Acidifying reagents/acidifiers:

These are drugs or agents which are able to increase acidity in GIT. Some of the drugs are used to increase metabolic acidosis whereas some of these are used to increase the gastric hydrochloric acid. They are also known as acidifying reagents or acidifiers.

- ❖ **Gastric acidifiers:** These are drugs which are used to restore temporarily the acidity of stomach in patients suffering from achlorhydria or hypochlorhydria.
- ❖ **Urinary acidifiers:** These are the drugs which are used to render acidic urine to enable treatment of some type of urinary tract disorders.
- ❖ **Systemic acidifiers:** These are the drugs which are able to neutralize the alkaline body fluids, particularly blood, in patients who are suffering from systemic alkalosis.
- ❖ **Acids:** Acids are used as pharmaceutical aids in the preparation, laboratory quality control etc.

Dilute Hydrochloric acid:

Formula : HCl (10%w/w)

Mol. Wt: 36.46

Ingredients: Hydrochloric acid and purified water.

❖ Hydrochloric acid is commonly known as **spirit of salt** . It is an aqueous solution of hydrogen chloride in water and is having not less than 35% w/w and not more than 38 % of HCl.

Method of Preparation:

1. It is manufactured by the action of **sulphuric acid on sodium chloride**. Calculated quantities of concentrated sulphuric acid and sodium chloride are heated in the cast iron pans of a salt cake furnace. The hydrochloric acid gas is formed which is passed in a tower , which is sprayed with water. The dilute hydrochloric acid is collected at the bottom. It is again circulated to the tower to absorb more hydrogen chloride so that it gets concentrated. The acid so produced is then purified. NaHSO₄ formed in the process is mixed with some more quantity of sodium chloride, and heated strongly in the muffle furnace to get more hydrogen chloride gas.



2. During the manufacture of caustic soda by electrolysis of sodium chloride solution, large quantities of hydrogen and chlorine are obtained as **by-products**. These gases are combined to yield hydrogen chloride.



Properties:

1. It is a colourless liquid , strongly acidic.
2. It is miscible with water, alcohol having a specific gravity of 1.18
3. It is a strong acid and attacks metals, forming their hydrochlorides with the evolution of hydrogen gas.
4. Even in high diluted form, it is very strongly acidic to litmus.

Assay:

4 g of HCl is transferred into a stoppered flask which is having 40 mL of water. Now the solution is titrated with 1 N NaOH, using Methyl orange as an indicator.



Simple acid-base
neutralization reaction.

Storage:

It should be stored in well closed container of glass or other material at a temperature not exceeding 30 °C.

Uses:

- It is mainly used as a **pharmaceutical aid** or as an **acidifying agent**.
- Used as **gastric acidifier** when levels of hydrochloric acid in gastric juice are low.
- Externally used as a solvent, catalyst in basic pharmaceutical and as acidifier.