

PHARMACEUTICAL INORGANIC CHEMISTRY- BP104T

UNIT: 3 (GASTROINTESTINAL AGENTS)

CLASS: 2

TOPIC: ANTACIDS – IDEAL PROPERTIES OF ANTACIDS, COMBINATIONS OF ANTACIDS

Antacids: (anti - against; acidus - acid) are weak alkaline compounds used to neutralize hydrochloric acid in the stomach.

Antacids are the substances which reduce gastric acidity resulting in an increase in the pH of stomach and duodenum. Gastric acidity occurs due to excessive secretion of HCl in stomach due to various reasons. The pH of the stomach is 1.5- 2.5 when empty and raises to 5-6 when food is ingested.

Ideal properties of Antacids:

- The antacid should not be absorbable or cause systemic alkalosis
- The Antacids should be water soluble and have fine particle size
- The antacid should not be a laxative or causes constipation
- The antacid should exert its effect rapidly and over a long period of time
- The antacid should buffer in the pH 4-6 range
- The reaction of the antacid with gastric HCl acid should not cause a large evolution of gas
- The antacid should probably inhibit pepsin

Classification of Antacids:

Antacids are classified into two main categories

I. Based on chemical nature of antacids

Absorbable antacids	Non-absorbable antacids
The absorbable antacids (chemical antacids) show the most rapid onset of action and provide faster relief of symptoms.	The non-absorbable antacids though less prone to cause a rebound effect
However they may cause an "acid rebound"	Moreover as these antacids are more potent and effective in a semi liquid or liquid form than in a capsule or table
Examples: Sodium bicarbonate. Magnesium oxide, Magnesium carbonates, Calcium carbonates	Examples: Aluminum phosphate, Aluminum hydroxide, Magnesium silicate, Magnesium hydroxide, Aluminum magnesium combination.

II. Based on pharmacological action

Systemic antacids	Non-systemic antacids
Non-systemic antacids are compounds that are not absorbed into the systemic circulation. These agents do not produce metabolic alkalosis	Systemic antacids are absorbed into the systemic circulation.
Examples: Aluminum hydroxide Magnesium hydroxide	Examples: Sodium bicarbonate

COMBINATIONS OF ANTACIDS:

It is known that no antacid is available in the market which satisfies the requirements of an ideal antacid. Many preparations which are having combination of antacids are being marketed.

Some combination preparations are as follows:

1. Aluminum hydroxide magnesium carbonate co-dried gel: It is a co-precipitate of aluminum hydroxide and magnesium carbonate dried to contain a proportion of water for antacid activity. Dose: Up to 1gm of composition acts as an antacid.
2. Algicon tablets: The tablets are chewable, prepared by Aluminum hydroxide magnesium carbonate co-dried gel (360mg), magnesium alginate (500mg), magnesium carbonate (320mg) and potassium bicarbonate (100mg). Dose: 1 or 2 tablets after meals and at bedtime.
3. Simeco tablets: Contains aluminum hydroxide magnesium carbonate co-dried gel (282mg), magnesium hydroxide (85mg) and activated dimethicone (25mg).
4. Aluminum hydroxide gel – magnesium trisilicate combinations: It is one of the most commonly used combinations. It has laxative, constipation and protective effect.
5. Magaldrate: It is a combination of aluminum hydroxide and magnesium hydroxide. It contains the equivalent of 28% - 39% magnesium oxide and 17% - 25% of aluminum oxide.
6. Calcium carbonate containing antacid mixtures: Calcium hydroxides with aluminum hydroxide gel products have a rapid onset of prolonged action

2 MARKS QUESTIONS

1. What are antacids? Give examples
2. What are the ideal properties of antacids

5 MARKS QUESTIONS

1. What are antacids? Classify them with suitable examples
2. What are the combinations of antacids?

10 MARKS QUESTIONS

1. What are antacids? Classify them with suitable examples and write few combinations of antacids