

ANTACIDS:

- ✓ These are drugs which are usually alkaline substances and are used to neutralize the excess acid in the stomach of patients suffering from hyperacidity.(a condition in which the level of acid in the gastric juices is excessive, causing discomfort.)
- ✓ Production of gastric HCl is a continuous process. It means use of antacids is also a continuous process.
- ✓ Strong alkaline bases will damage the mucosal layer.
- ✓ The action of antacids should be gradual without evoking rebound acidity. Also antacids should not have any side effects.
- ✓ Antacids give symptomatic relief from pain by neutralizing excess of hydrochloric acid. So they find use in treatment of ulcers by reducing pain.

Classification of Antacids

1) Systemic (absorbable) antacids

These are soluble, readily absorbable and capable of producing systemic electrolytic alteration and alkalosis. eg. Sodium bicarbonate

2) Non-Systemic (non-absorbable) antacids

These are not absorbed to a significant extent and thus do not alter an appreciable systemic effect. This group is further divided into following:

a) Aluminium containing antacids e.g Aluminium hydroxide, Aluminium phosphate, Basic aluminium carbonate, Dihydroxyaluminium aminoacetate

b) Calcium containing antacids e.g Calcium carbonate, Tri basic calcium phosphate

c) Magnesium containing antacids e.g Magnesium carbonate, magnesium hydroxide, magnesium citrate, magnesium oxide, magnesium peroxide, magnesium trisilicate, magnesium phosphate.

d) Combination antacid preparations e.g. Aluminium hydroxide gel and magnesium hydroxide
Aluminium hydroxide gel and magnesium trisilicate

Semithicone containing antacids
Calcium carbonate containing antacids

Ideal requirements of Antacids:

- **It should be insoluble in water and has fine particle form.**
- **It should not be absorbable or cause systemic alkalosis.**
- **It should be able to exert its effect gradually and over a long period of time.**
- **It should not be a laxative or cause constipation.**
- **It should not cause any side effect.**
- **It should be stable and readily available.**
- **The reaction between antacid and gastric hydrochloric acid should not produce large volume of gas.**
- **The antacid should buffer in the pH range 4-6.**
- **Antacid should probably inhibit pepsin, the proteolytic enzyme.**

Aluminium hydroxide gel

It is an aqueous white viscous suspension of hydrated aluminium oxide having varying amounts of basic aluminium carbonate.

The preparation may sometimes have methyl oil, peppermint oil, glycerine, sucrose or saccharin as flavouring and sweetening agents and upto 0.05% sodium benzoate as preservative.

Preparation:

It is prepared by adding hot solution of potash alum slowly with constant stirring to a hot solution of sodium carbonate. After complete removal of CO₂, the precipitated aluminium hydroxide is filtered.

It is washed properly with hot water until it gets free from sulphate ion and the precipitate is suspended in distilled water to the required strength.



Precaution: Alum solution is added to solution of sodium carbonate and not vice versa.

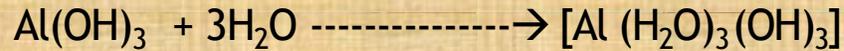
Properties:

It is a white viscous suspension.

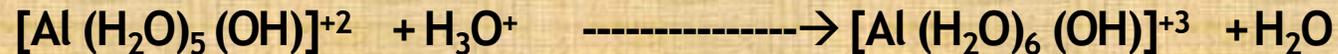
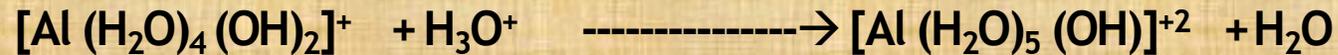
Aluminium hydroxide gel gives astringent aluminium chloride when it reacts with gastric hydrochloric acid. This results in nausea, vomiting and constipation.



Aluminium hydroxide gel is a popular antacid and brings about neutralization of gastric acid by following mechanism.



Base

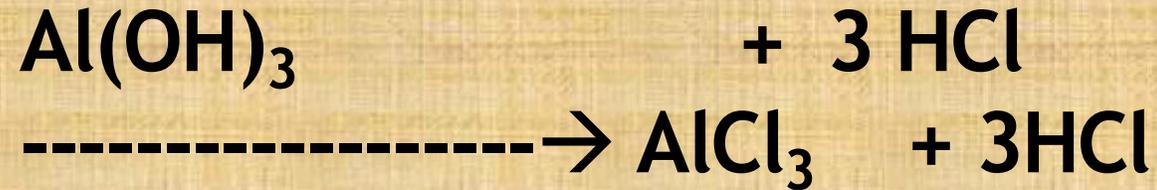


Mechanism:

- ❖ **Aluminium hydroxide gel is non-absorbable and exert very little systemic effect.**
- ❖ **If the gel is formed by precipitation in a carbonate or bicarbonate reaction mixture, there may be some evolution of CO₂ when the carbonate or bicarbonate anions react with gastric acid. But this reaction is very slow , so patient will not feel discomfort.**
- ❖ **Other drugs should not be taken with antacid, simultaneously, as there is loss of antacid property.**
- ❖ **End product of neutralization of aluminium hydroxide gel with hydrochloric acid is Aluminium chloride, which is water soluble astringent salt. This may cause constipation, nausea, vomiting.**

USES

It is a very effective slow acting antacid.



It does not get absorbed in elementary canal and does not produce carbondioxide.

Used in treatment of intestinal toxaemia and hyperchlorhydria.

It does not cause systemic alkalosis.

Aluminium Phosphate

Mol.Formula- AlPO_4 Mol.wt- 122

It is a white crystalline powder insoluble in water and soluble in organic solvents like alcohol, ether and chloroform

This product is a suspension of hydrated AlPO_4 with an assay range of 19 – 21% Aluminum as AlPO_4 . It functions by coating the stomach wall. It does not neutralize stomach acids. Aluminum phosphate adsorbs the gall salts and stomach gas. Since the product does not chelate alimentary phosphate, it does not deplete phosphate from the stomach.