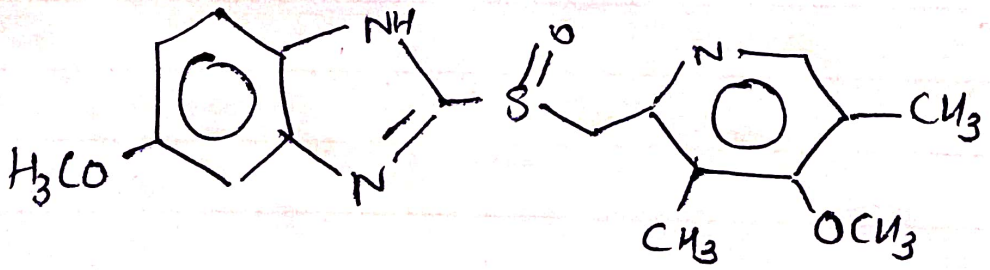
# Gastric Proton Pump Inhibitors

In our Stomach lumen, A pump named $K^+$-ATPase (Potassium-ATPase) pump is present. This pump is mainly present in the Parietal Cells. They secrete acid in Stomach for food Breakdown.

→ If Parietal Cells secretes access amount of HCl acid, then $K^+$-ATPase Pump / Proton Pump Inhibitors can be used.

Example :- Omeprazole,
Lansoprazole,
Rabeprazole
Pantoprazole

★ Omeprazole :-




5-methoxy-2-(((4 methoxy-3, 5-dimethyl-2-pyridinyl) methyl) Sulfinyl)-1H benzimidazole

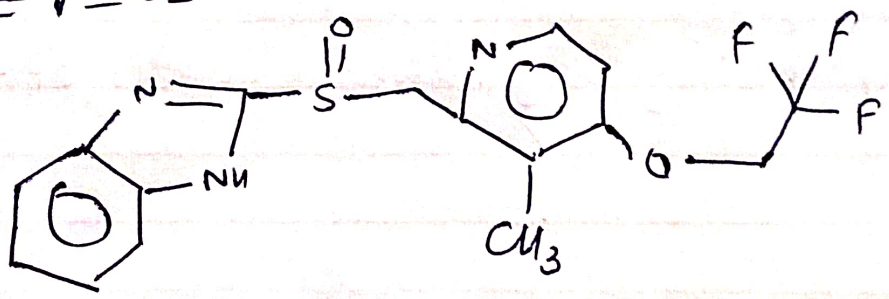
MOA :- of omeprazole is a proton pump inhibitors that suppresses or ~~don~~ decreases gastric acid secretion by inhibition of $H^+/K^+$- ATPase in gastric parietal Cell.

→ omeprazole blocks final step in acid production. thus, reducing gastric acidity.

Metabolism :- 77% of oral dose of omeprazole is Excreted in urine as metabolites.

Uses :- For treatment of heartburn, duodenal ulcer, gastric ulcer etc.

## ☆ Lansoprazole :-




2-[[[-3 methyl-4-(2,2,2-trifluoroethoxy)-2-pyridyl] methyl] Sulfinyl]-1H-benzimidazole

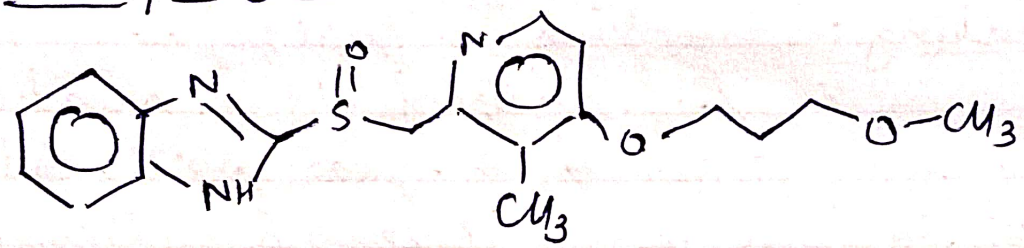
MOA :- Lansoprazole belongs to Class of antisecretory compounds. Suppress gastric acid Secretion by specific inhibition of the $H^+/K^+$ + ATPase enzyme System at Secretory Surface of parietal Cell.

→ It block final step in acid production.

Metabolism : Metabolized in liver and Excreted in bile and urine, with plasma half-life of about 1.5 hours

Use - In peptic ulcer, gastrointestinal bleed with NSAID use.

## ✡ Rabeprazole :



2 [[4-(3-methoxypropoxy)-3-methyl-2-pyridinyl] methyl] Sulfinyl] 1H-benzimidazole.

MoA : It suppress gastric acid secretion by inhibiting gastric $H^+/K^+$ ATPase pump at surface of gastric parietal cell.

→ It blocks the final step of gastric acid secretion.

Metabolism : Metabolized in liver.

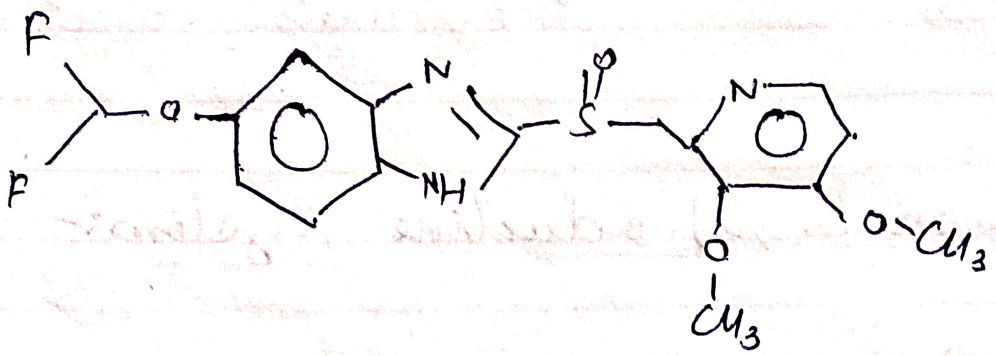
→ 90% drug Eliminated in urine

Uses : → For treatment of acid-reflux disorders.

→ Peptic ulcer disease.

→ H. Pylori Eradication.

## ☆ Pantoprazole :



6-(difluoromethoxy)-2-[(3,4-dimethoxypyridin-2-yl) methanesulfinyl]-1H-1,3-benzodiazole.

**MOA :** Pantoprazole is proton pump inhibitor (PPI) that suppresses final step in gastric acid production by forming a covalent bond to 2 sites of ATPase Enzyme System at surface of Parietal Cell.

**Metabolism :** Metabolized in liver through CYP System.

**Uses :** treatment of Erosive Esophagitis.