

# PATHOPHYSIOLOGY

## B.PHARM II SEM

### (PEPTIC ULCER)

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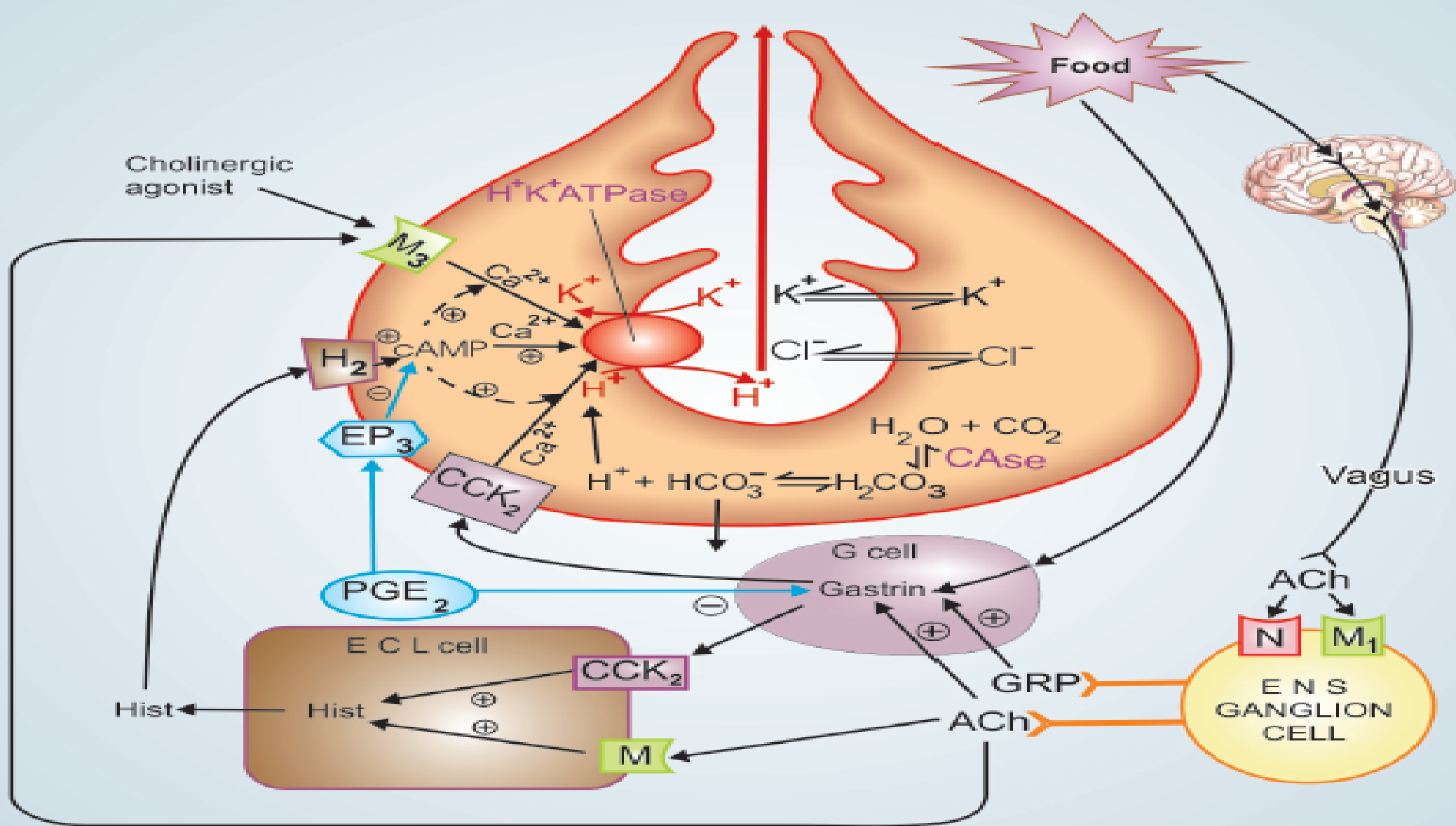
Peptic ulcer occurs in that part of the gastrointestinal tract (g.i.t.) which is exposed to gastric acid and pepsin, i.e. the stomach and duodenum.

- The etiology of peptic ulcer is due to imbalance between

- 1) Aggressive (acid, pepsin, bile and H. pylori)
- 2) Defensive (gastric mucus and bicarbonate secretion, prostaglandins, nitric oxide, high mucosal blood flow, innate resistance of the mucosal cells) factors.

- **Gastric ulcer-** acid secretion is normal or low, while deficient mucosal defence (mostly impaired mucus and bicarbonate secretion) plays a greater role.

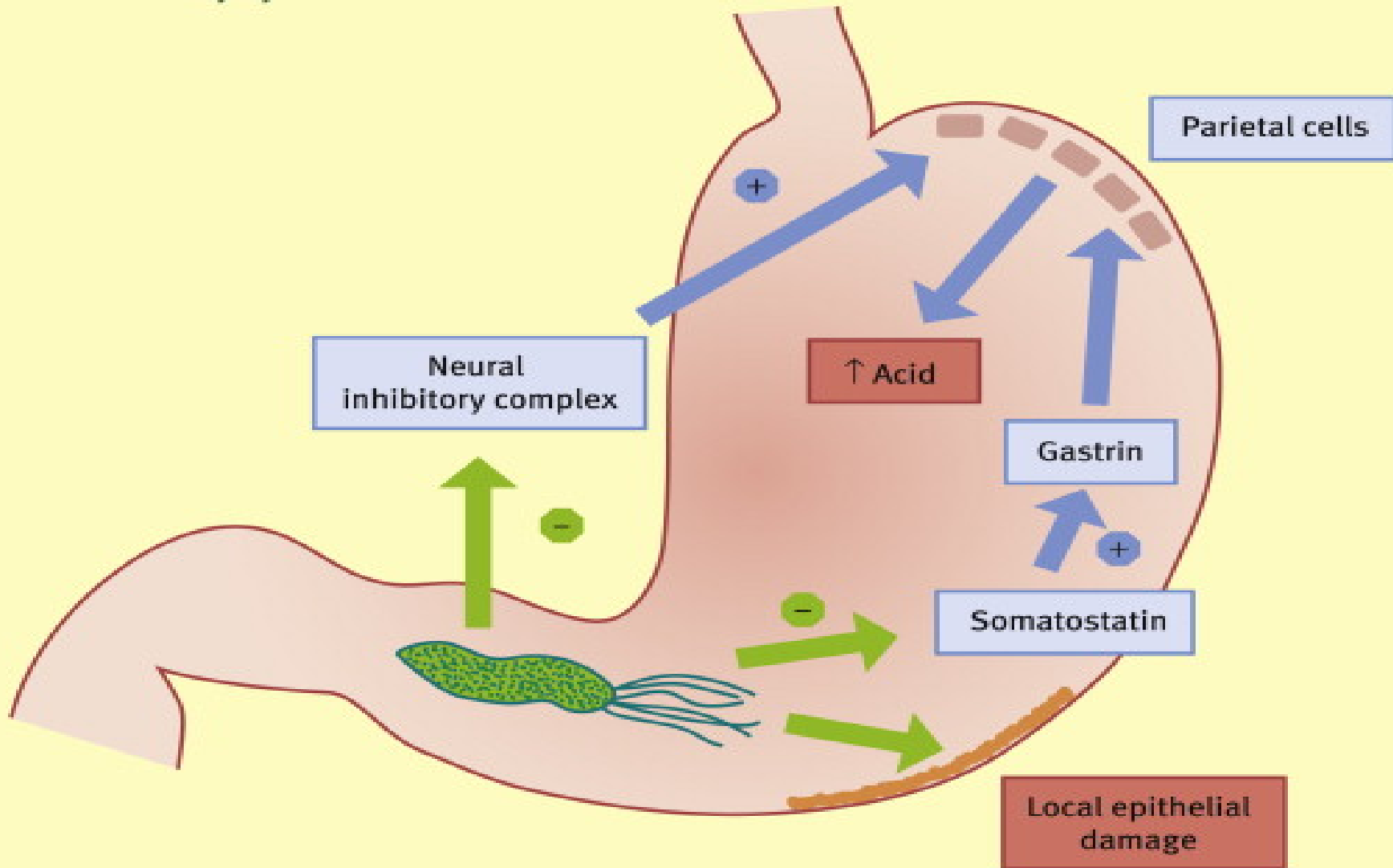
- **Duodenal ulcer-** acid secretion is high in about half of the patients but normal in the rest.



**: Secretion of HCl by gastric parietal cell and its regulation**

C.Ase.—Carbonic anhydrase; Hist.—Histamine; ACh.—Acetylcholine;  $CCK_2$ —Gastrin cholecystokinin receptor; M.—Muscarinic receptor; N—Nicotinic receptor;  $H_2$ —Histamine  $H_2$  receptor;  $EP_3$ —Prostaglandin receptor; ENS—Enteric nervous system; ECL cell—Enterochromaffin-like cell; GRP—Gastrin releasing peptide; + Stimulation; - Inhibition

## Pathways involved in the pathophysiology of *Helicobacter pylori* infection associated peptic ulcer disease



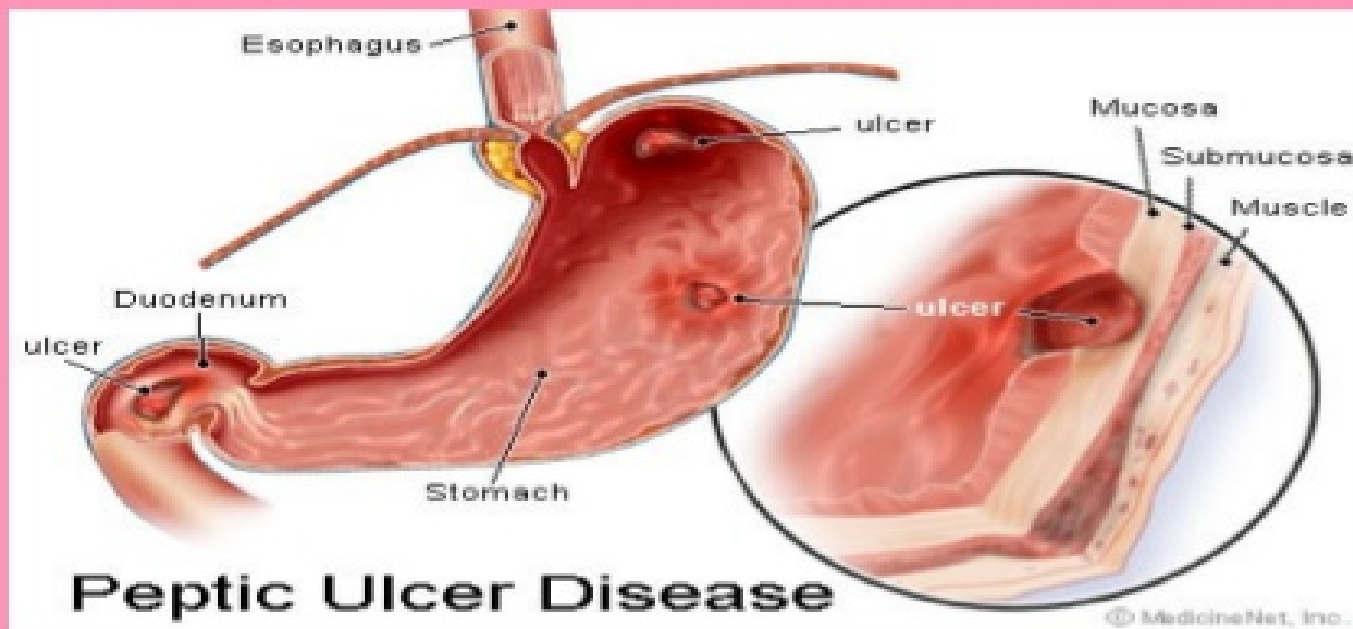
Peptic ulcer (especially duodenal) is a chronic remitting and relapsing disease lasting several years.

The goals of antiulcer therapy are:

- Relief of pain
- Ulcer healing
- Prevention of complications (bleeding, perforation)
- Prevention of relapse.

## ***Definition:***

- Peptic ulcer is a hole or open sore in the lining of the stomach, duodenum (beginning of the small intestine) or oesophagus.



# Approaches for the treatment of peptic ulcer are:

## 1. Reduction of gastric acid secretion

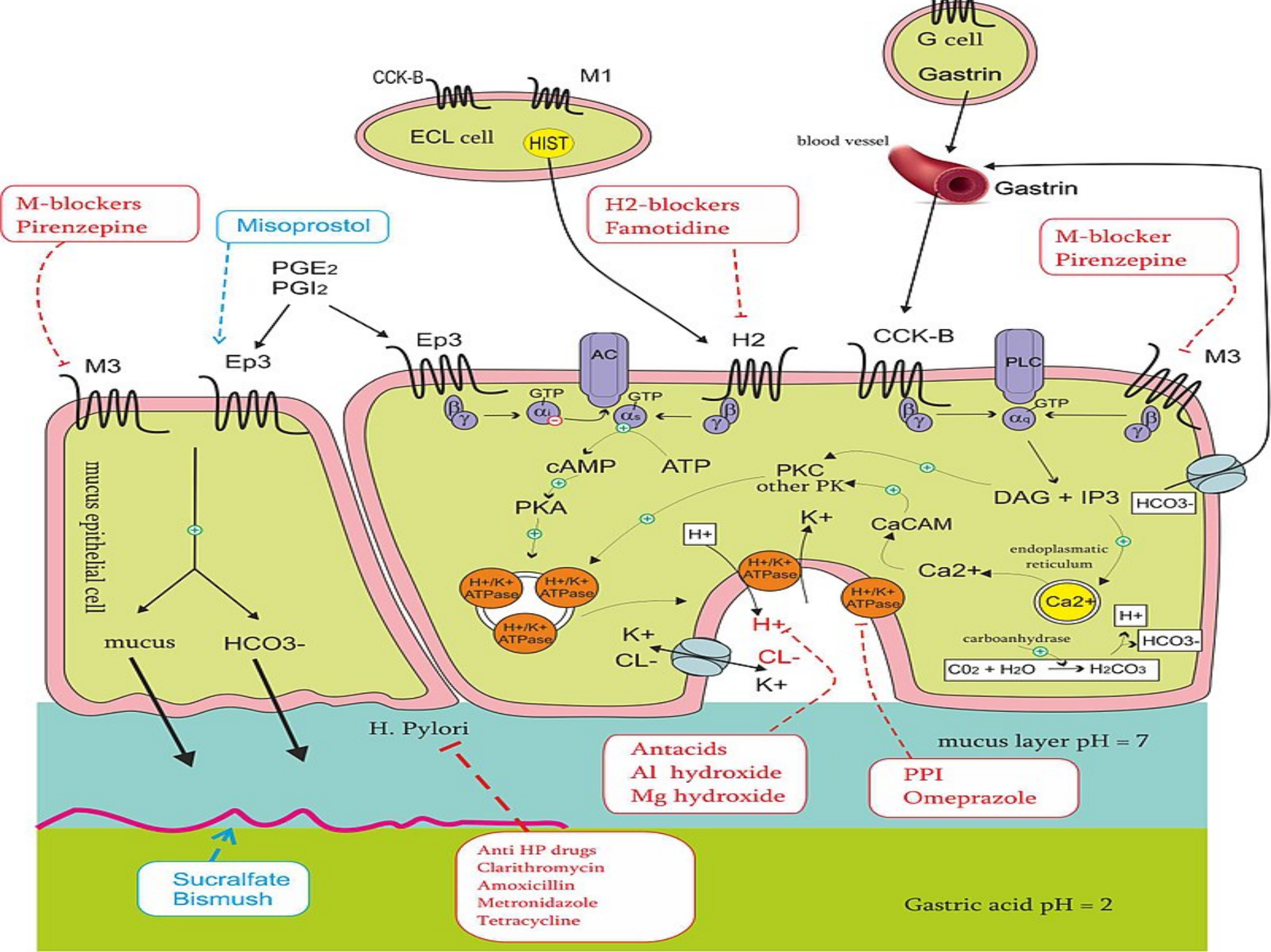
(a) H<sub>2</sub> antihistamines: Cimetidine, Ranitidine, Famotidine, Roxatidine

(b) Proton pump inhibitors: Omeprazole, Esomeprazole, Lansoprazole, Pantoprazole, Rabeprazole, Dexrabeprazole

(c) Anticholinergic drugs: Pirenzepine, Propantheline, Oxyphenonium

(d) Prostaglandin analogue: Misoprostol





## 2. Neutralization of gastric acid (Antacids)

(a) Systemic: Sodium bicarbonate, Sod. citrate

(b) Nonsystemic: Magnesium hydroxide, Mag. trisilicate,  
Aluminium hydroxide gel, Magaldrate, Calcium carbonate

3. Ulcer protectives: Sucralfate, Colloidal bismuth  
subcitrate (CBS)

4. Anti-H. pylori drugs: Amoxicillin, Clarithromycin,  
Metronidazole, Tinidazole, Tetracycline