

# Gastric secretions

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# Objectives

- Describe the various type of gastric cells and the secretion of each cell type
- Mention the component of gastric juice and the function of each component
- Role of hormone and other factors influencing gastric secretion
- Describe the different mechanism involved in the control of gastric secretion

# enterogastrone hormones

- Motilin
- Somatostatin
- Glucose dependent insulinotropic peptide
- Vasoactive intestinal peptide
- Cholecystokinin
- Secretin
- somatostatin

# Gastric secretions

- Cephalic phase

Smell

Think

Sight

taste

1/3 of gastric juice

# Cephalic phase

- Stimulatory

Cerebral cortex, hypothalamus, dorsal nucleus vagus ( DNV), stomach parietal and chief cells, HCL and pepsinogen respectively

- Inhibitory

Activate the sympathetic ( stress , emotion)

T1 to L2 greater splanchnic nerve

Not directly inhibit chief or parietal

- Parietal cells intrinsic factor, HCl anti septic
- Chief cells pepsinogen
- G cells Gastrin
- Mucous glands mucous
- Delta cells somatostatin
- Ecl histamine

# Gastric phase

- 2/3 of gastric juice

Vagovagal reflex ( long reflex)

- Stretch receptors, afferent nerve of vagus, DNV, efferent vagus, HCL and pepsinogen

- Submucosal plexuses ( short reflex)

HCL And Pepsinogen and myenteric plexuses for contractility

- Antrum

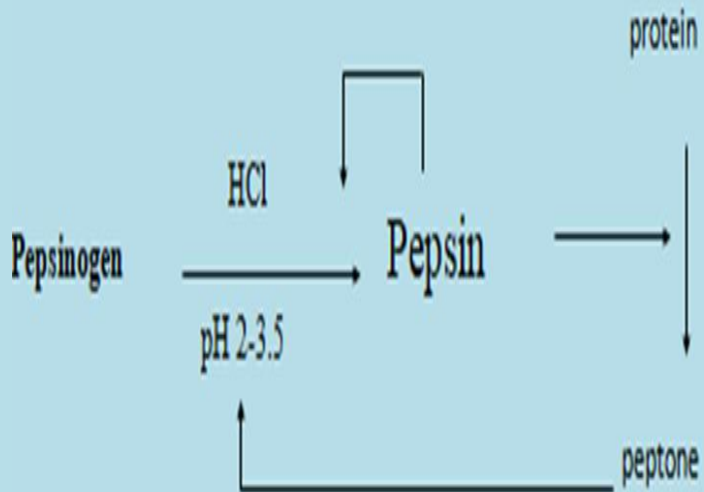
Paternal digestive protein, Entero endocrine G cells, gastrin (hormone), CCK2 receptors parietal cells, increase  $\text{Ca}^{2+}$ , hydrogen potassium pump ( $\text{H}^{+}$  lumen and  $\text{K}^{+}$  inside )

- Entire body and antrum

Chief cells gastrin CCK1, increase  $\text{Ca}^{2+}$ , exocytosis pepsinogen, converted to active pepsin with presence of  $\text{HCl}$

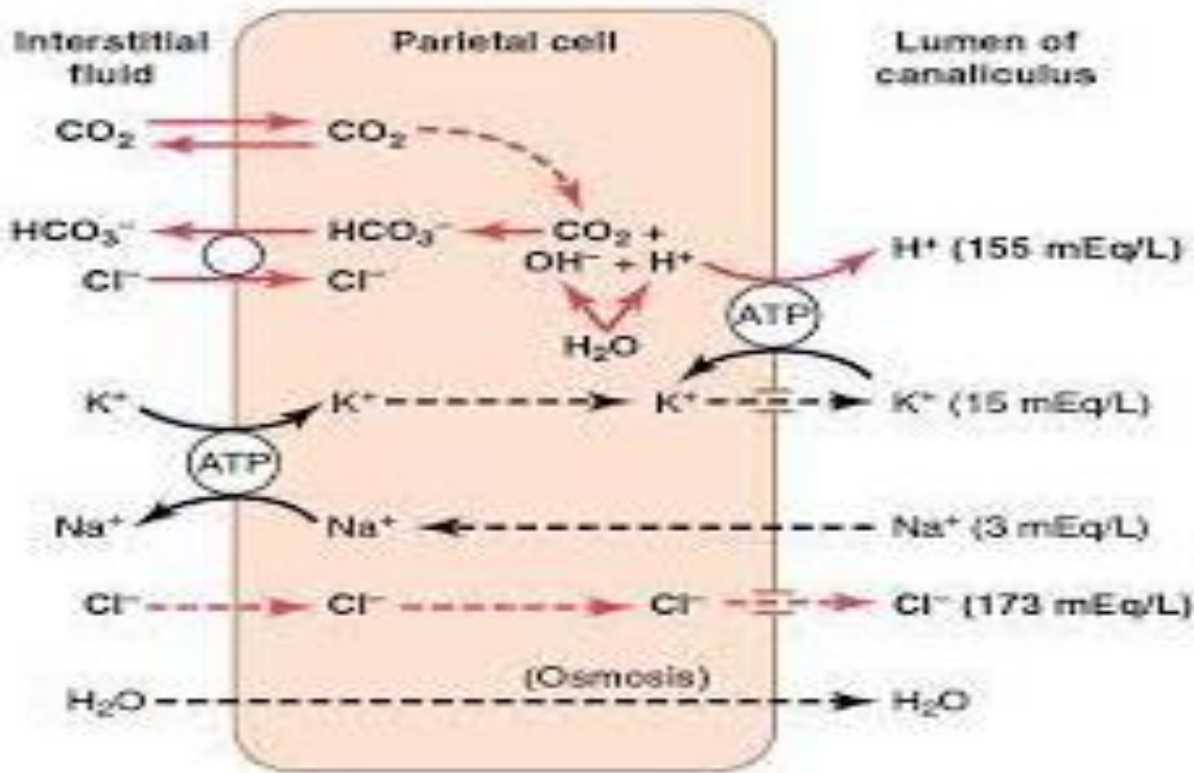


# Pepsinogen



- Concentration of proteins affect  $H^+$  the higher the protein the higher the pH
- Mechanically the concentration of protein affect the  $H^+$  and thus pH

# HCL secretion



- omeprazole Inhibits gastric secretion  
GERD ( gastroesophageal reflex disease)  
Alkaline tide

# Continued Gastric phase

Inhibitory

Stimulate sympathetic emotional  
( HCL and pepsinogen)

Somatostatin

Antral ( D cells), high  $\text{Con H}^+$ , somatostatin  
SST receptors G cells, inhibit gastrin

- Ach M3 receptors D cells, inhibits somatostatin
- Gastrin CCK2 receptors D cells, inhibits somatostatin
- Ach M3 receptor G cells, enhance gastrin
- Gastrin releasing peptide ( bombesin) enhance gastrin

# Regulating of Parietal cells secretions

- Somatostatin SST receptors , Inhibit H<sup>+</sup> pump
- Ach M3 receptor, stimulate H<sup>+</sup> pump
- Histamine H2 receptors, stimulate H<sup>+</sup> pump
- Prostaglandin ( PGE<sub>2</sub>) EP3 receptors, inhibit hydrochloric acid production

# Regulating Chief cells secretions

- Histamine H2 receptors, stimulate pepsinogen
- Ach M3 receptors, stimulate pepsinogen
- Secretin S cells in duodenum to acidic chyme, Stimulate pepsinogen

# Enterochromaffin cells

- Ach M3 receptors, stimulate histamine
- Somatostatin SST receptors, inhibit histamine
- Gastrin. stimulate histamine
- Histamine stimulate pepsinogen from chief cells and HCL from G cells
- Somatostatin from the corpus or body of stomach

Ach M3 receptor inhibit the D in body cells and prevent somatostatin from inhibiting the histamine in ECL

# Mucous barrier

- Foveolar cells
- Mucus neck cells

95% water

Electrolytes  $\text{HCO}_3$

Phospholipids

Mucin proteins

Prevents corrosive damage by hydrochloric acid and pepsin



# Gastrin

- G cells antrum stomach and upper part of small intestine
- Mucosa and submucosa secretion and motility increase
- Secretions growth of gastric mucosa sometimes insulin release
- Factors increase

Food protein digest protein

Gastric distention

Vagus stimulation gastrin releasing peptide