

Gastric secretions

Dr. Arwa Rawashdeh

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

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

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

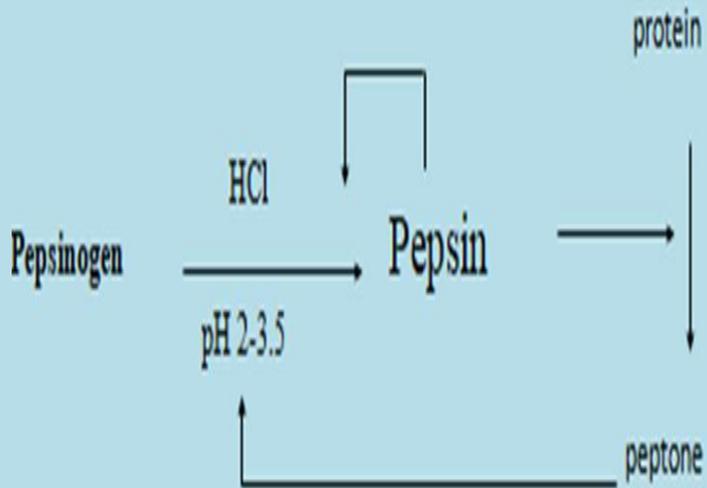
- Antrum

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

- Entire body and antrum

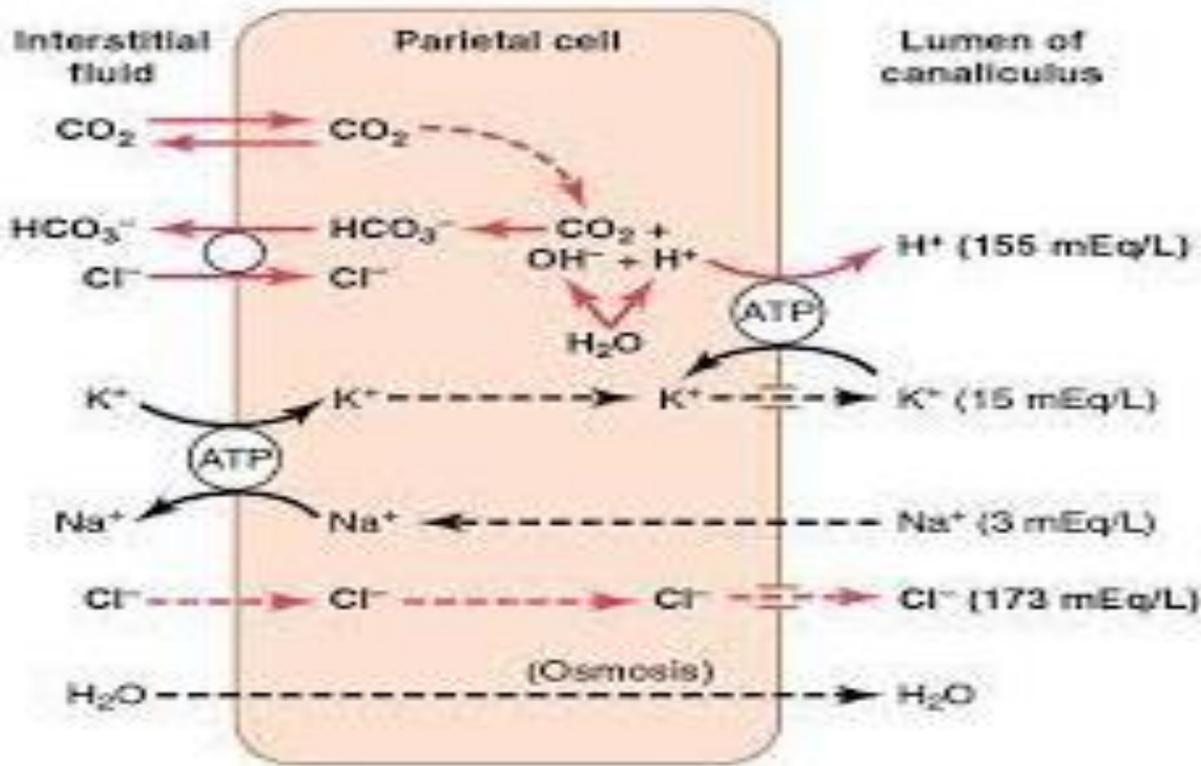
Chief cells gastrin CCK1, increase Ca^{2+} , exocytosis pepsinogen, converted to active pepsin with presence of HCl

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)

Continued Gastric phase

Inhibitory

Stimulate sympathetic emotional
(HCL and pepsinogen)

Somatostatin

Antral (D cells), high 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⁺ pump
- Ach M3 receptor, stimulate H⁺ pump
- Histamine H2 receptors, stimulate H⁺ pump
- Prostaglandin (PGE₂) 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 HCO_3

Phospholipids

Mucin proteins

Prevents corrosive damage by hydrochloric acid and pepsin