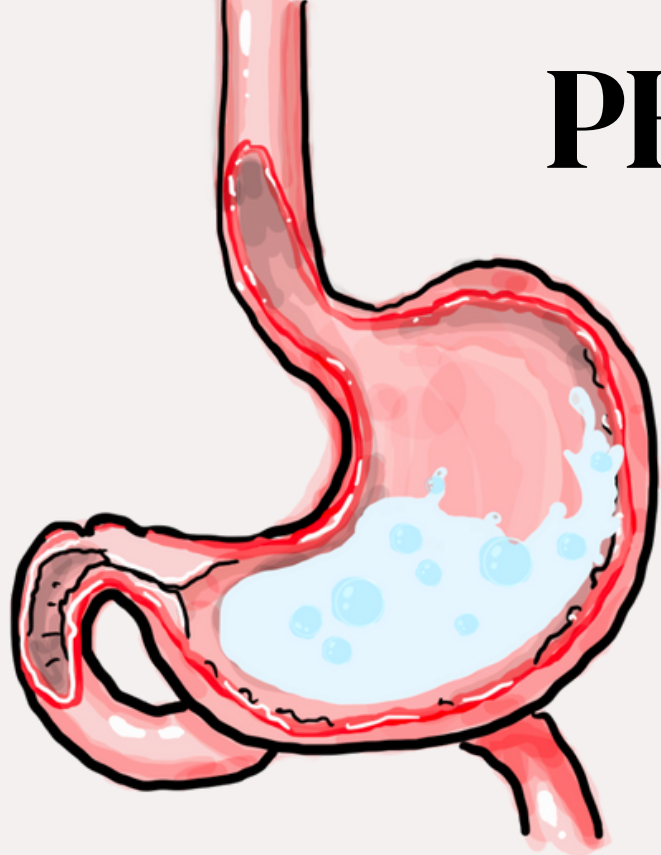


PHYSIOLOGICAL REASONING OF GASTRIC SECRETION NORMALIZATION

Isaieva Inna M., Karmazina Iryna S., Hromko Yevheniia A.
 Kharkiv National Medical University
 Kharkiv, Ukraine
 im.isaieva@knmu.edu.ua



The stomach plays a crucial role in the first stage of proteins digestion. Exocrine cells of stomach secrete a gastric juice that comprises water, mucus, HCL, pepsin, and intrinsic factor.

Histamine: binds to H₂ receptors -> activation of adenylyl cyclase -> increased production of cAMP -> protein kinase A activation -> secretion of H⁺

Ach: binds directly to M₃ receptors -> activation of phospholipase C -> liberation of diacylglycerol and IP₃ -> releasing Ca²⁺ ions, protein kinases activation -> H⁺ secretion stimulation

Gastrin stimulates H⁺ secretion:

- via the IP₃/Ca²⁺ second messenger system
- indirectly by causing release of histamine from ECL cells (Abdelwahab Ahmed, John O. Clarke, 2022)..

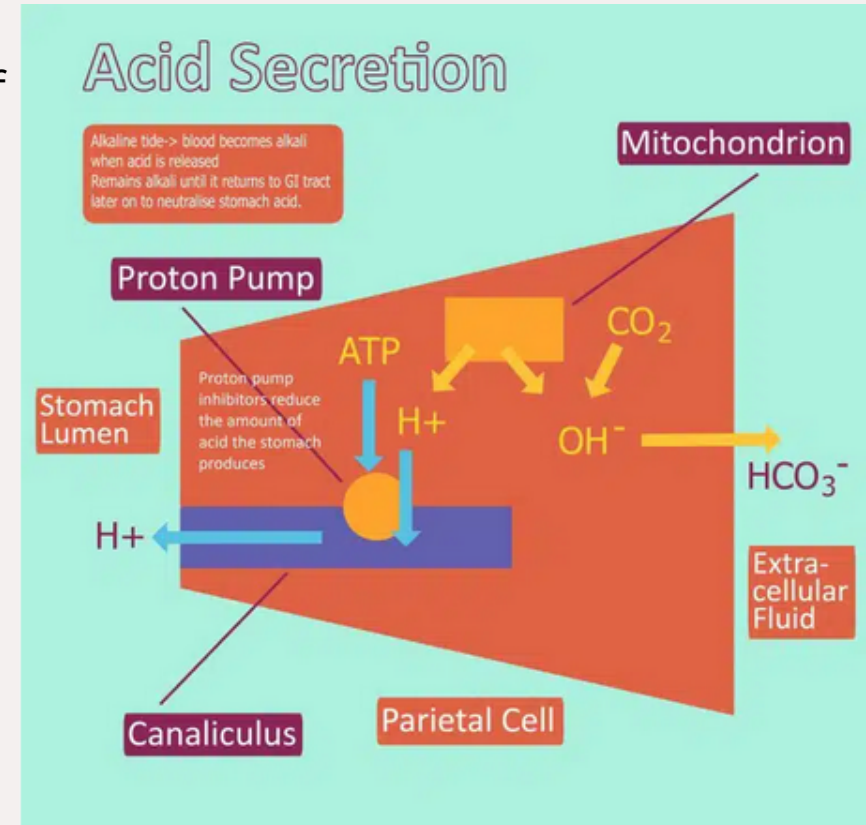


Diagram showing the production of Hydrochloric acid within the stomach. Figure is taken from TeachMe Physiology by Daniel Baker

The proton pump inhibitors are widely used drugs in the therapy of diseases accompanied by hyperacidity of the stomach.

The usage of H₂ receptor blockers results in inhibition of histamine action but also, they block the effects of ACh and gastrin.

ACh potentiates the actions of histamine and gastrin, that's why muscarinic-blocking agents block the effects of ACh and the effects of histamine and gastrin.

(Abdelwahab Ahmed, John O. Clarke, 2022).

Substances, which stimulate HCL secretion

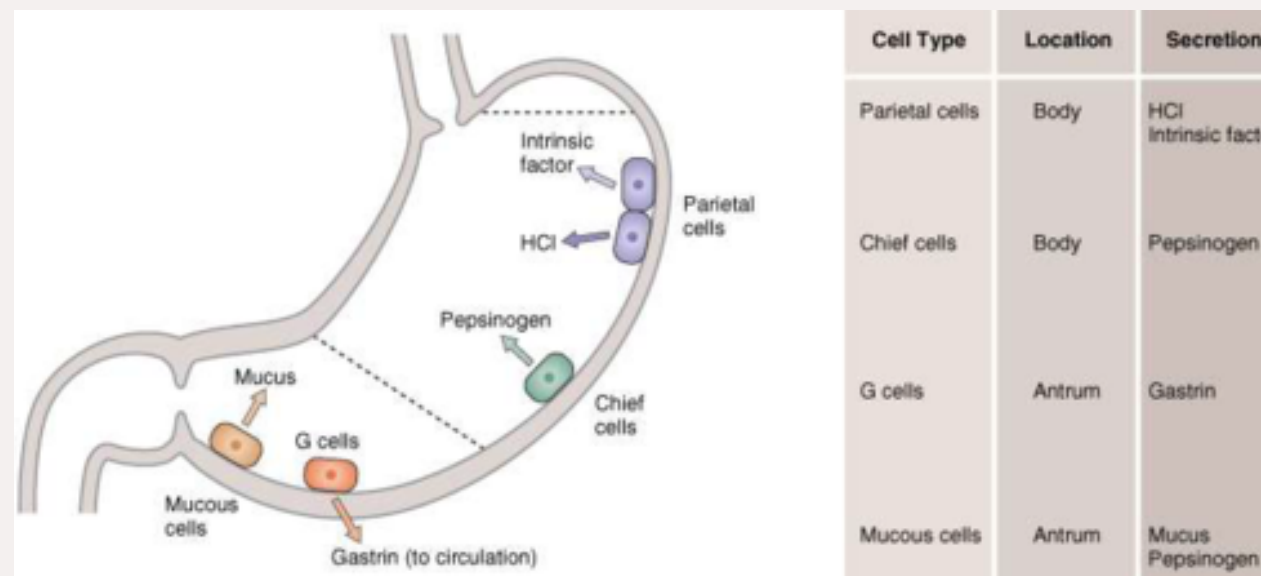
- histamine
- ACh
- gastrin

Reasons of gastric hypersecretory states:

- the stress factors,
- lack of sleep,
- unbalanced diet,
- smoking,
- excess of alcohol,
- drugs irritating the mucous membrane of the stomach,
- chronic stomach diseases
- hyperproduction of gastrin,
- hormonal changes in the body
- metabolic disorder

(Jennifer Phan, Jihane N. Benhammou et al., 2015)

Only by identifying and eliminating the cause that provoked the increase in acidity in the stomach, it is possible to achieve a positive, and most importantly, a sustainable effect from the treatment.



Gastric secretion

Figure is taken from Medical Physiology by (by Dr. Guyton)