Medical Pharmacology

Robiul Islam, PhD

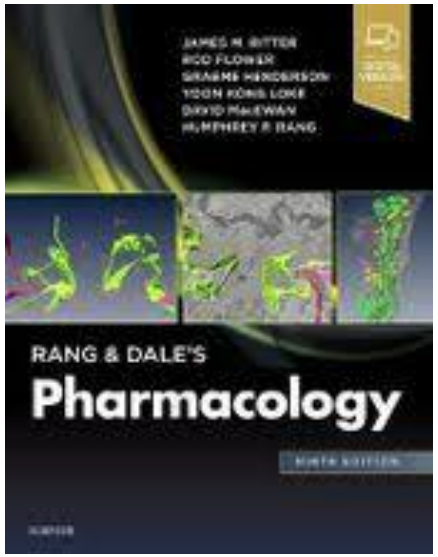
College of Medicine and Dentistry

JAMES COOK UNIVERSITY AUSTRALIA

Celebrating 50 YEARS 1970 - 2020

Gastrointestinal Pharmacology

Lecture 1 – GI Pharmacology Introduction



Rang & Dale's Pharmacology

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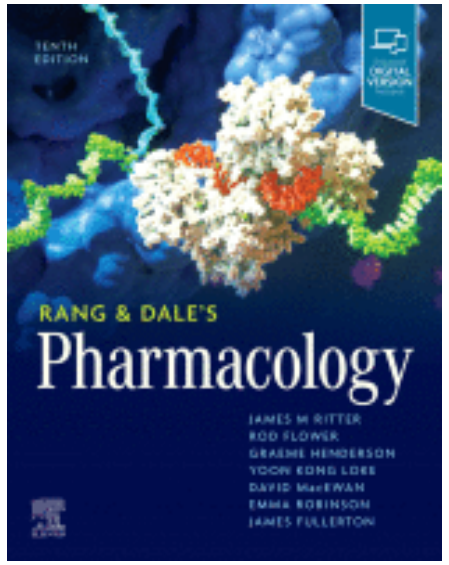
Chaps 31, 33



Rang & Dale's Pharmacology

10th edn 2023

Chaps 30, 32

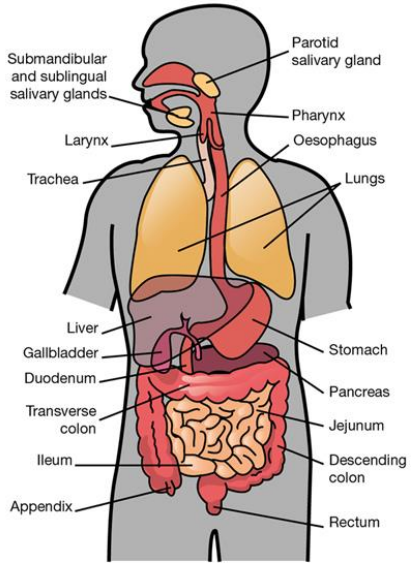
Learning Objectives

By the end of this module, students should be able to demonstrate and apply knowledge of:

- The functions of the digestive system
- Neuronal and hormonal control of the GIT
- Common conditions of the GIT

The Digestive System

The Digestive system includes the gastrointestinal tract (GIT) and accessory organs of digestion. The GIT is also known as the alimentary canal and is divided into two main sections: the upper GI tract and the lower GI tract.



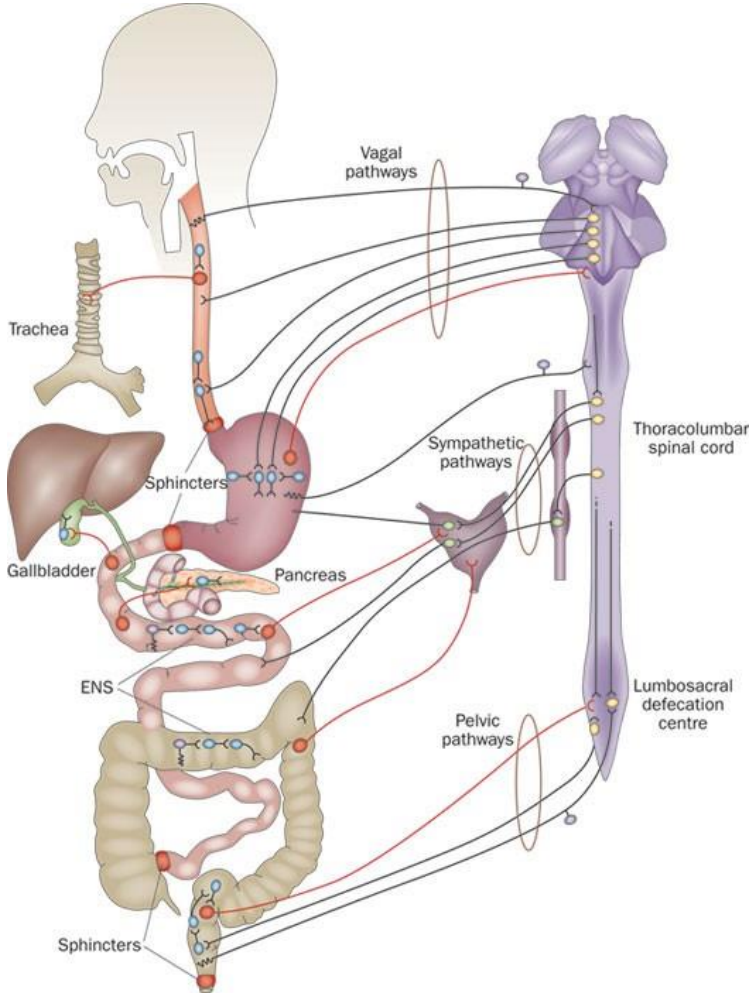
The digestive system has 4 main functions:

- Motility
- Secretion
- Digestion
- Absorption

The digestive system is controlled by both intrinsic and extrinsic neural mechanisms. Gastrointestinal functions are under dual neuronal and endocrine control. Neurotransmitters and hormones in the ENS : Acetylcholine (ACh), norepinephrine (NE), serotonin (5-HT), gastrin, histamine, endorphins, nitric oxide and substance P.

Enteric nervous system

- Intrinsic neural control via the enteric nervous system (ENS).
- Web of neurons embedded in the wall of the gastrointestinal system, stretching from the lower third of the oesophagus right through to the rectum.
- Referred to as the ‘second brain’- can operate independent of the CNS.
- Can control and modulate motor functions (eg peristalsis), blood flow, mucosal transport and secretion, immune and endocrine functions.
- Works in cohesion with the CNS for other “whole-body” functions. Eg the ENS and CNS are involved in the vomiting reflex



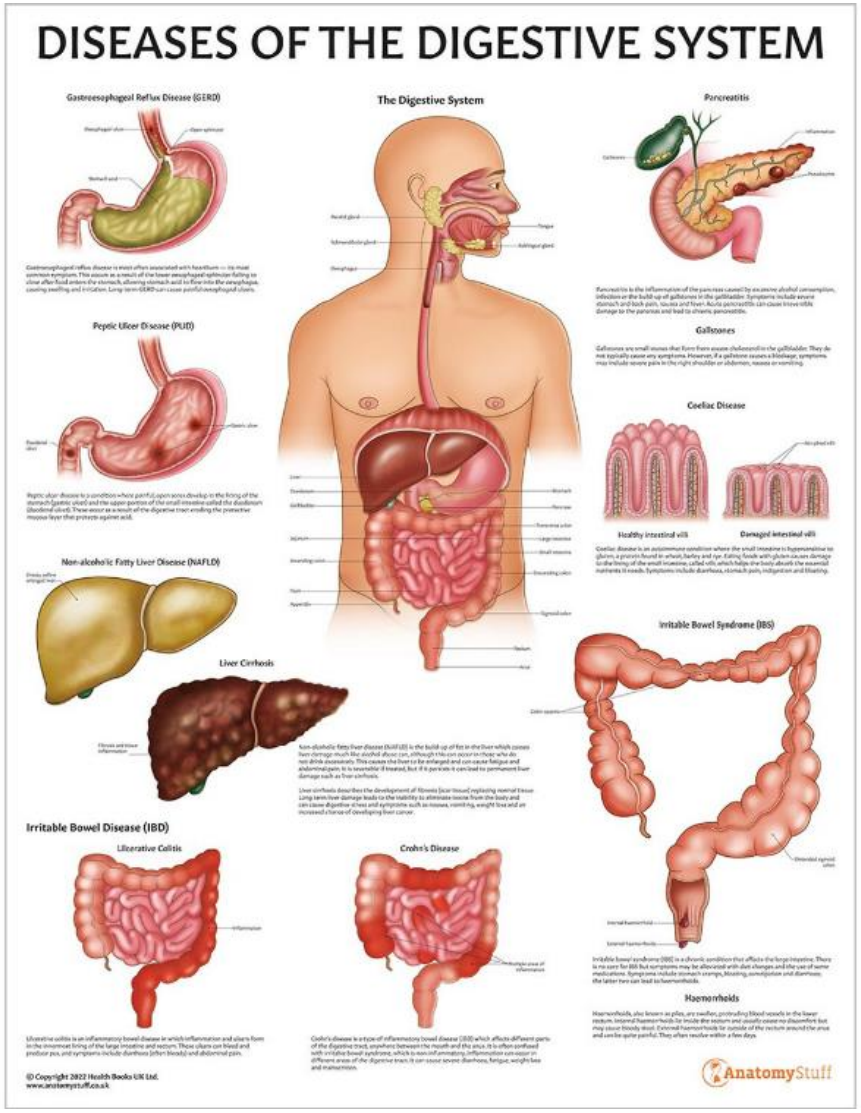
Conditions of the GIT

Upper GIT

- Dyspepsia
- GORD
- Gastritis
- Ulcers
- Barrett's oesophagus
- Hernias
- Some cancers.

Lower GIT

- Chronic diarrhoea
- Constipation
- Crohn’s disease
- Ulcerative colitis
- Haemorrhoids & fissures
- Cancers



Conditions of focus in this lecture series

Lecture 2:
- Dyspepsia
- Gastro-oesophageal reflux disease (GORD)
- Peptic Ulcer Disease (PUD)

Lecture 3:
- Nausea and vomiting

Lecture 4:
- Constipation and diarrhoea.