



AL-Mustaqbal University College

**Medical laboratory Techniques
Department**

Clinical Biochemistry

Lecture (10)

(Gastrointestinal, Digestion & Absorption the Food)



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What is the gastrointestinal tract?

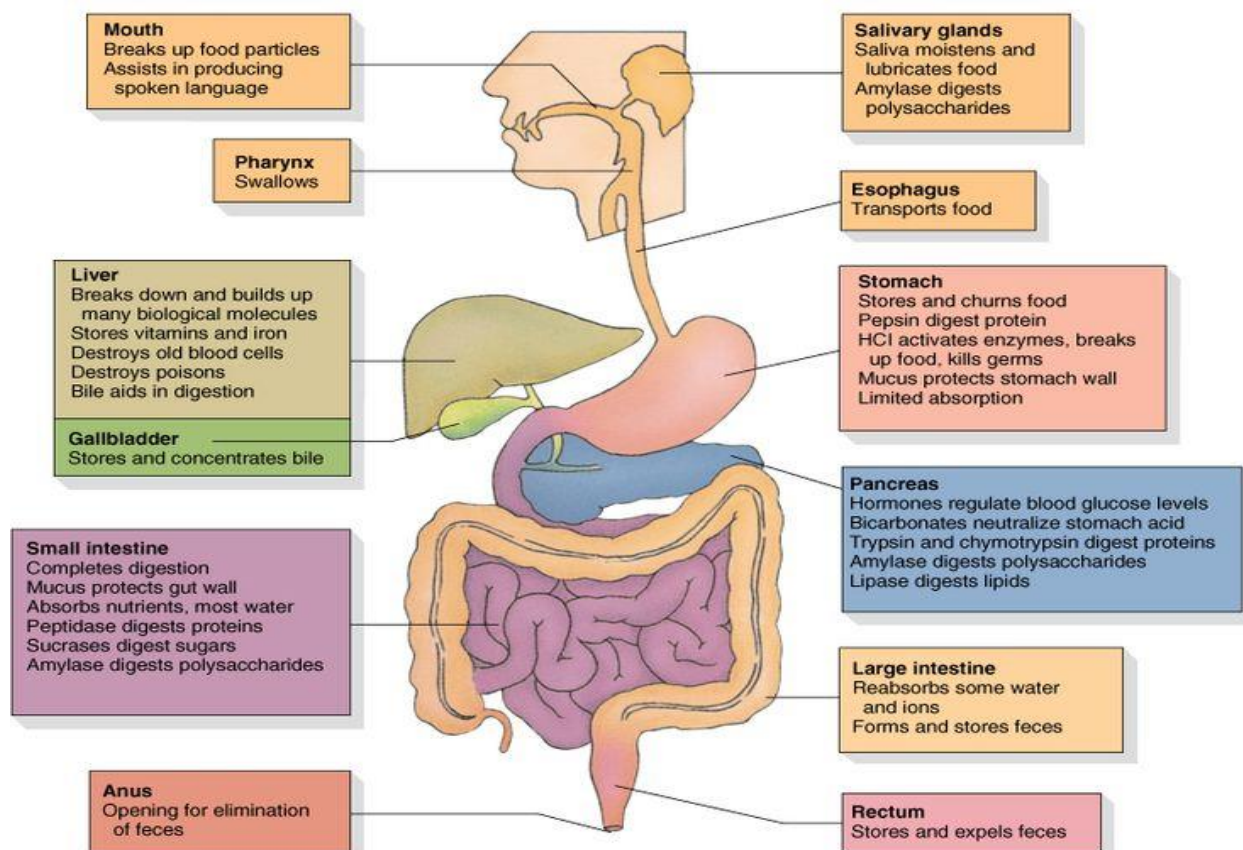
The gastrointestinal tract is essentially a tube that extends from the mouth to the anus. It has generally the same structure throughout. There is a hollow portion of the tube known as the lumen, a muscular layer in the middle, and a layer of epithelial cells.

What are the functions of the gastrointestinal tract?

There are three main functions of the gastrointestinal tract, including transportation, digestion, and absorption of food. The mucosal integrity of the gastrointestinal tract and the functioning of its accessory organs are vital in maintaining the health of your patient.

Components of the gastrointestinal system include:-

Mouth, esophagus, stomach, small intestine, and large intestine. The gastrointestinal tract's accessory organs include the liver, pancreas, and gallbladder .



Digestion & Absorption the Food

The first of the digestive process takes place in the mouth: -

1- Digestion occurs by a machine

Different teeth and tongue stir the food and mix it with saliva.

2- The chemical digestion process occurs by means of saliva produced by the salivary glands.

The salivary glands are three pairs that secrete saliva.

And saliva, which is a solution, consists of: -

- 99% water
- Mucous substance
- Soluble salts such as k, Na salts
- The salivary amylase enzyme that breaks down starch to sugar maltose
- Lysozyme enzyme, which kills germs in food.

Second: - The nutritional swallow is pushed by the tongue.

The epiglottis closes the entrance to the larynx, ensuring that food enters the esophagus

Food moves in the esophagus towards the stomach by the peristalsis movement.

In the stomach, chemical and mechanical digestion processes occur

Chemical digestion: - The existing glands secrete both

1. Hydrochloric acid makes the medium acidic and converts pepsinogen into pepsin.
2. The enzyme pepsinogenin activates the enzyme pepsin and breaks down proteins into peptides
3. Mucus makes the digestive tract slippery to facilitate the passage of food in it and covers the stomach to protect it from the effects of digestive juices.

Mechanical digestion: - occurs by force of contraction of the walls of the stomach, which mixes the food that has been swallowed
The food in the stomach turns into a soft dough called Chyme or chymus (it enters the small intestine)

In small intestine :

It is 7 meters in length and 2.5 cm in diameter

- + Its function is to supplement digestion .
- + The absorption of food.

It consists of three parts: -

1. The duodenum is about 25 cm long, and in it the process of completing the digestion takes place.
2. The jejunum, the ileum, in which the absorption of nutrients occurs.

In liver

The digestion of nutrients by bile.

Nutrients such as glycogen and vitamins are stored.

Toxic removal from drugs and toxic substances.

Biliary vesicles

attached to the liver store the bile secreted by the liver and increase its concentration.

Bile

The bile breaks down large fats into simple droplets and makes the middle alkaline for the intestine.

Pancreas

- It secretes hormones to control blood flow levels, such as insulin
- It produces the pancreatic juice that contains the digestion enzymes (amylase, the digestion of carbohydrates, trypsin, the digestion of protein, the lipase, the digestion of fats).

The absorption of digested food lines the wall of the intestine millions of (brush border).They absorb the digested food and move it through the blood into the cells of the body. This process is called **distribution**.

The undigested material moves into the **large intestine** and is 1.5 meters in length and 6 cm in diameter

- ✓ The complete digestion stage takes 8-24 hours.
- ✓ Food moves in one direction from the mouth to the anus due to the peristalsis movement.