

## **Gastrointestinal Tract Part**

### **Mouth:**

Mouth is otherwise known as oral cavity or **buccal cavity**.

#### **Functions of mouth include:**

1. Ingestion of food materials
2. Chewing the food and mixing it with saliva
3. Appreciation of taste of the food
4. Transfer of food (bolus) to the esophagus by swallowing
5. Role in speech
6. Social functions such as smiling and other expressions.

### **Teeth**

The teeth are 32 small hard organs found along the anterior and lateral edges of the mouth. Its function: for cutting and grinding food into smaller pieces.

### **Tongue**

It is a small organ made up of several pairs of **muscles** covered in a thin, bumpy, skin-like layer. Its function: detect taste molecules in food and helps to push food toward the posterior part of the mouth for swallowing.

### **Salivary Glands**

The salivary glands are accessory organs that produce a watery secretion known as saliva.

#### **Saliva performs a number of important functions:**

- 1- It facilitates swallowing, keeps the mouth moist.
- 2- Serves as a solvent for the molecules that stimulate the taste buds.
- 3- Aids speech by facilitating movements of the lips and tongue.
- 4- keeps the mouth and teeth clean.
- 5- The saliva also has some antibacterial action.

## Pharynx

The pharynx, or throat, is a funnel-shaped tube connected to the posterior end of the mouth.

### The pharynx is responsible for:

- 1- Passing of masses of chewed food from the mouth to the esophagus.
- 2- In the respiratory system, as air from the nasal cavity passes.

## Stomach:

Stomach is a hollow organ situated just below the diaphragm on the left side in the abdominal cavity. Its filled with gastric juice. Gastric juice acts mainly on proteins. Proteolytic enzymes of the gastric juice are pepsin and rennin.

### Function:

- Acts as a storage tank for food.
- Contains hydrochloric acid and digestive enzymes that continue the digestion of food that began in the mouth.

Enzyme	Function
Pepsin	Digestion of milk (casein)
Urase	Acts on urea and produces ammonia
Gastric amylase	Degrades starch

## Pancreas:

Pancreas is a dual organ having two functions, namely **endocrine function** and **exocrine function**. Endocrine function is concerned with the production of hormones. The exocrine function is concerned with the secretion of digestive juice called pancreatic juice.

Major proteolytic enzymes of pancreatic juice are trypsin and chymotrypsin.

- 1- Trypsin:

\*Digestion of proteins.

\*Curdling of milk: It converts **caseinogen** in the milk into **casein**.

\*Blood clotting: It accelerates blood clotting.

\*It activates the other enzymes of pancreatic juice.

## 2- Chymotrypsin:

\*Digestion of proteins.

\*Digestion of milk: Chymotrypsin digests caseinogen faster than trypsin.

## 3- Collagenase:

It digests collagen.

## 4- Nucleases

These enzymes convert the ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) into mononucleotides.

## Liver

The liver has main function to produce bile and its secretion into the small intestine.

**Bile** is a dark-green-to-yellowish-brown fluid produced by the liver that aids the digestion of lipids in the small intestine.

## Gallbladder

Bile secreted from liver is stored in gallbladder. The capacity of gallbladder is approximately 50 mL.

## **Small Intestine**

Its main function is to absorb the products of digestion (including carbohydrates, proteins, lipids, and vitamins) into the bloodstream. There are three major divisions: Duodenum, Jejunum and Ileum.

Small intestine secretes many GI hormones such as secretin, cholecystokinin, etc. These hormones regulate the movement of GI tract and secretory activities of small intestine and pancreas.

## **Large Intestine**

The large intestine also called the **colon**, consists of the cecum, rectum, and anal canal. Large intestine secretes mucin.

## **Movement of GIT**

### **1- Mastication**

Mastication or **chewing** is the first mechanical process in the gastrointestinal (GI) tract, by which the food substances are torn or cut into small particles and crushed or ground into a soft **bolus**.

### **2- Deglutition**

Deglutition or swallowing is the process by which food moves from mouth into stomach.

#### **Stages of Deglutition**

Deglutition occurs in three stages:

**I. Oral stage:** when food moves from mouth to pharynx

**II. Pharyngeal stage:** when food moves from pharynx to esophagus

**III. Esophageal stage:** when food moves from esophagus to stomach.

### **3- Movements of Stomach**

Activities of smooth muscles of stomach increase during gastric digestion (when stomach is filled with food) and when the stomach is empty.

## **Types of movements in stomach**

**1. Hunger contractions:** Hunger contractions are the movements of empty stomach. These contractions are related to the sensations of hunger.

**2. Receptive relaxation:** Receptive relaxation is the relaxation of the upper portion of the stomach when bolus enters the stomach from esophagus. It involves the fundus and upper part of the body of stomach. Its significance is to accommodate the food easily, without much increase in pressure inside the stomach.

**3. Peristalsis:** When food enters the stomach, the peristaltic contraction or peristaltic wave appears with a frequency of 3 per minute.

## **4. Movements of Small Intestine**

Movements of small intestine are essential for mixing the chyme with digestive juices, propulsion of food and absorption.

\* **Chyme:** is the semisolid mass of partially digested food that is formed in the stomach.

## **5. Movements of Large Intestine**

Usually, the large intestine shows sluggish movements.

## **6. Defecation**

Voiding of feces is known as defecation. Feces is formed in the large intestine and stored in sigmoid colon. By the influence of an appropriate stimulus, it is expelled out.