

# THE DIGESTIVE SYSTEM

BY

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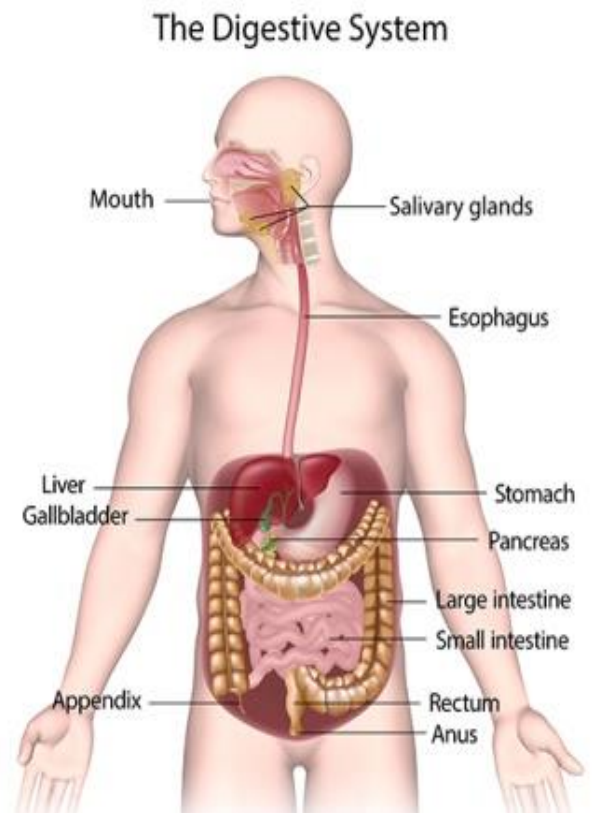
**First stage**

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## Introduction

### The Digestive Tract

- Also called the gastrointestinal (GI) tract or alimentary canal.
- Is a muscular tube.
- Extends from the mouth to the anus..
- Passes through the pharynx, esophagus, stomach, and small and large intestines.
- The digestive system is one of the most clearly defined in the body.
- It consists of a long passageway, the digestive tract, and associated glands.
- These include the liver and pancreas, which are connected to the main track by ducts, or tubes, and empty their products.



## Six Functions of the Digestive System

1. Ingestion.
  2. Mechanical processing.
  3. Digestive.
  4. Secretion.
  5. Absorption.
  6. Excretion.
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### 1-Ingestion

- ✓ Occurs when materials enter the digestive tract via the mouth.

### 2-Mechanical Processing

- ✓ Crushing and shearing.
- ✓ Makes materials easier to propel along the digestive tract.

### 3-Digestion

- ✓ The chemical breakdown of food into small organic fragments for absorption by digestive epithelium.

### 4-Secretion

- ✓ Is the release of water, acids, enzymes, buffers, and salts
- ✓ By epithelium of digestive tract
- ✓ By glandular organs

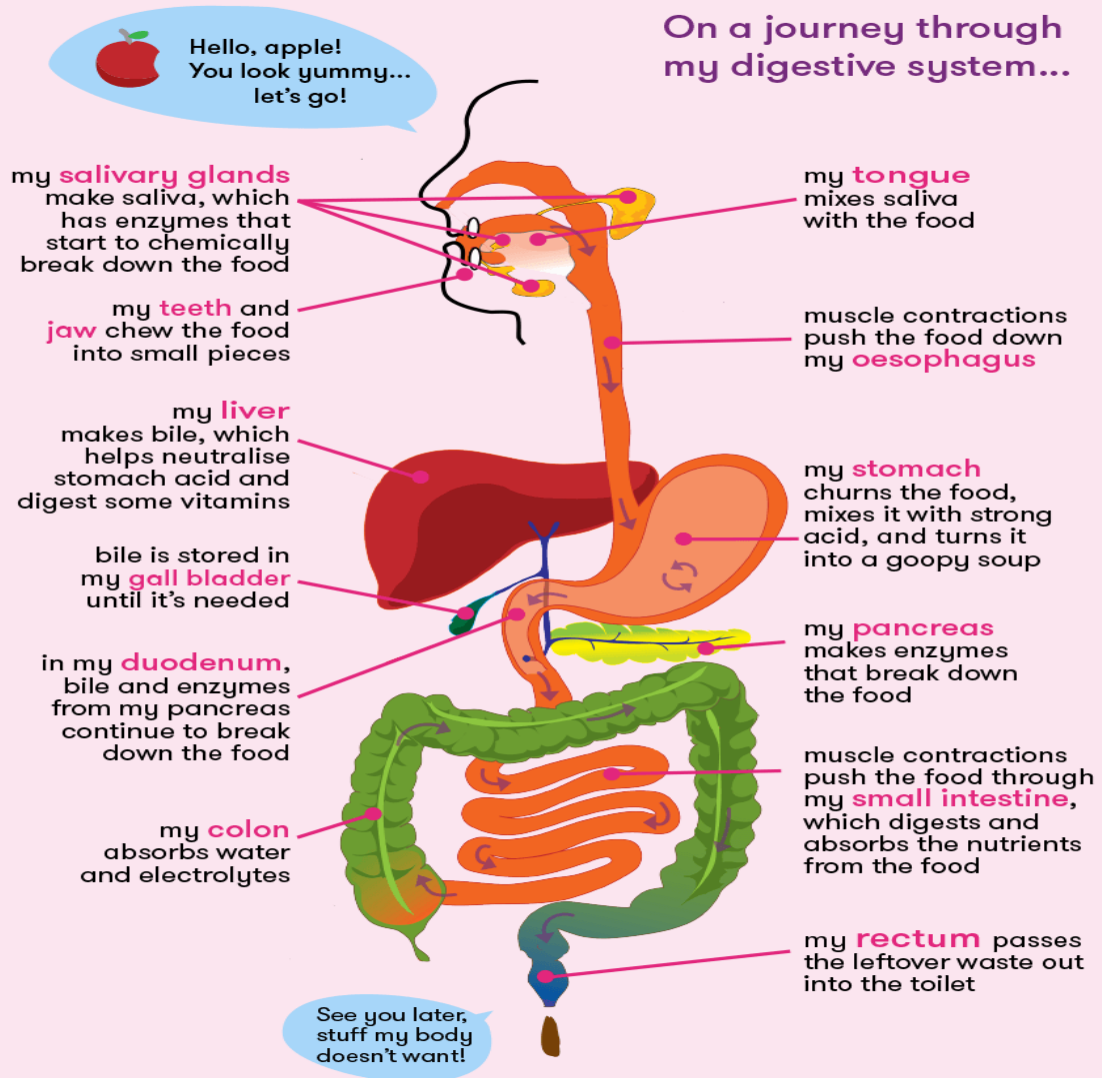
### 5-Absorption

- ✓ Movement of organic substrates, electrolytes, vitamins, and water
- ✓ Across digestive epithelium tissue
- ✓ Into the interstitial fluid of the digestive tract

## 6-Excretion

- ✓ Removal of waste products from body fluids

### WHERE DOES MY FOOD GO AFTER I EAT IT?

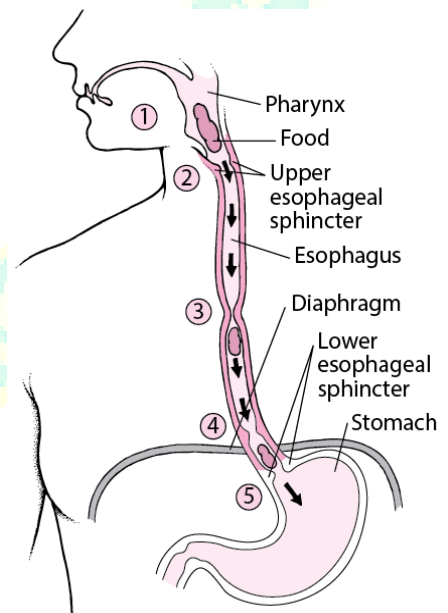


## Food enters the GI tract by ingestion

- Food is broken down by mechanical digestion, using mastication.
- One chemical digestive process occurs where the amylase enzyme in saliva breaks down polysaccharides into disaccharides.
- The tongue, made of skeletal muscle, manipulates the food during mastication. it also contains taste buds to detect taste sensations(intrinsic).
- Food particles are mixed with saliva during mastication, resulting in a moist lump called bolus for easier passage into or pharynx.

### The esophagus

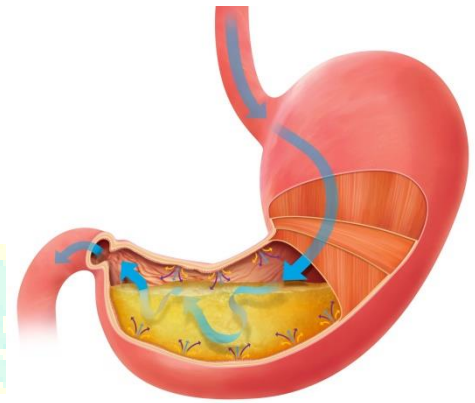
The esophagus is a hollow, muscular tube that carries food and liquid from the throat to the stomach. Muscles in the esophagus propel food down to your stomach to prevent the retrograde flow of gastric contents. One of the most common symptoms of esophagus problems is heartburn, a burning sensation in the middle of the chest. Problems with the



esophagus include acid reflux and GERD.

## The stomach

The stomach is a hollow organ, or "container," that holds food while it is being mixed with stomach enzymes. These enzymes continue the process of breaking down food into a usable form. Cells in the lining of the stomach secrete strong acid and powerful enzymes that are responsible for the breakdown process. When the contents of the stomach are processed enough, they're released into the small intestine.



### There are three main types of digestive enzymes

1. **Amylase** breaks down starches and carbohydrates into sugars.
2. **Protease** breaks down proteins into amino acids.
3. **Lipase** breaks down lipids, which are fats and oils, into glycerol and fatty acids.

Enzymes are essential for healthy digestion and a healthy body. They work with other chemicals in the body, such as stomach acid and bile, to help break down food into molecules for a wide range of bodily functions.

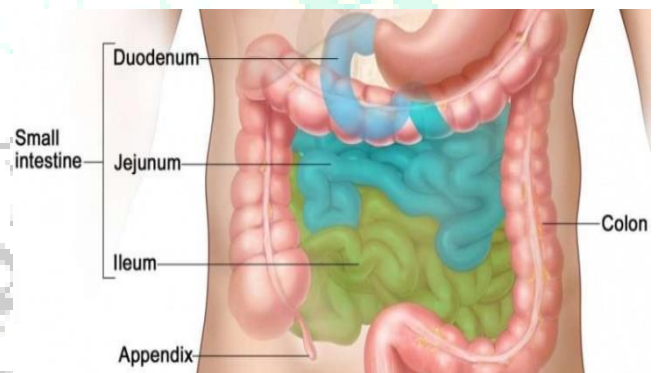
**Ex:-Carbohydrates, are needed for energy, while protein is necessary to build and repair muscle, among other functions. But they must be converted into forms that can be absorbed and utilized by your body**

## The intestine

The intestine is a muscular tube that extends from the lower end of the stomach to the anus, the lower opening of the digestive tract. It is also called the bowel or bowels. Food and the products of digestion pass through the intestine, which is divided into two sections called the small intestine and the large intestine

**The small intestine** is the site of terminal food digestion, nutrient absorption and endocrine secretion, is made up of three segments, which form a passage from your stomach to your large intestine:

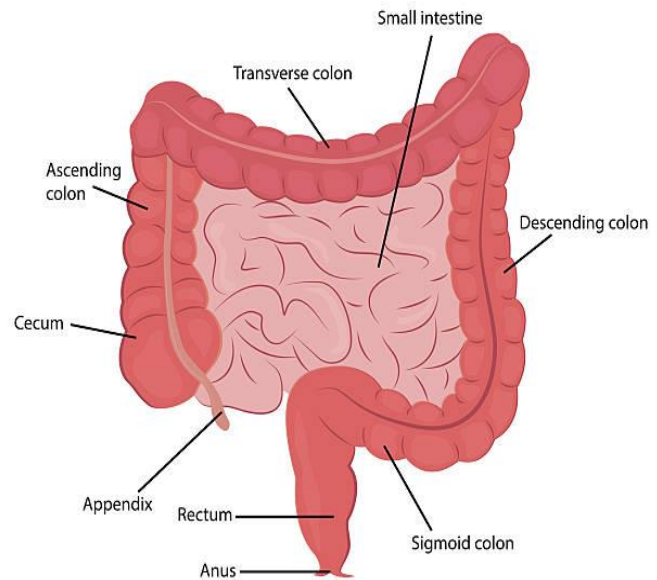
1. **Duodenum:** This short section of the small intestine takes in semi-digested food from the stomach through the pylorus, and continues the digestion process.
2. **Jejunum:** The middle section of the small intestine carries food through rapidly, with wave-like muscle contractions, towards the ileum.
3. **Ileum:** This last section is the longest part of your small intestine. The ileum is where most of the nutrients from food are absorbed before emptying into the large intestine.





## Human Anatomy: Intestines

**The large intestine** is about five feet (or 1.5 meters) long. The large intestine is much broader than the small intestine and takes a much straighter path through the belly. The purpose of the large intestine is to absorb water and salts from the material that has not been digested as food and get rid of any waste products left over. The large intestine is made up of the following parts:

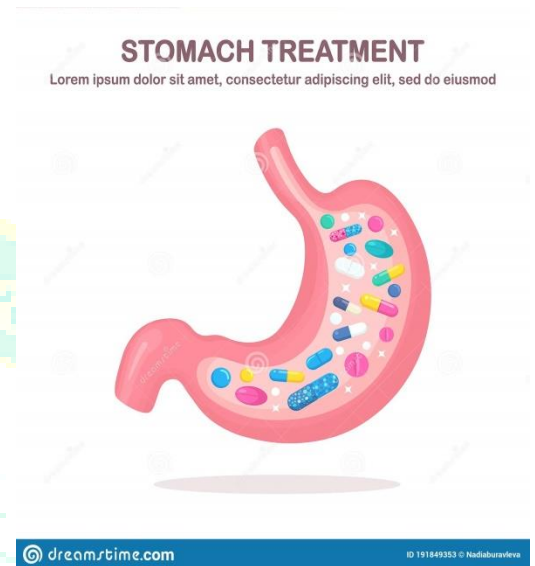


1. **Cecum:** This first section of your large intestine looks like a pouch, about two inches long. It takes in digested liquid from the ileum and passes it on to the colon.
2. **Colon:** This is the major section of the large intestine. The colon is also the principal place for water reabsorption and absorbs salts when needed.
3. **Rectum:** The final section of the digestive tract measures from 1 to 1.6 inches (or 2.5 to 4 cm). Leftover waste collects there, expanding the rectum. At that time, it is ready to be emptied through your anus.



## How Drugs Affect the Digestive System

Some drugs can cause a user to develop nausea or vomiting, and different drugs have different effects on the digestive system.



1. **Alcohol:** This drug makes it difficult to ingest necessary nutrients and may even cause anemia. Excessive use of alcohol is associated with colon and rectal cancers.
2. **Cocaine:** According to the National Institute on Drug Abuse (NIDA), cocaine can impair tissue in the bowels and cause pain in the abdomen.
3. **Opioids:** These drugs can cause constipation, acid reflux issues, and pain in the abdomen.
4. **Hallucinogens:** Some psychedelics, such as Ayahuasca, are associated with nausea or vomiting.
5. **Tobacco:** This drug, though legal, is associated with cancers of the colon, esophagus, and stomach. It is also associated with the development of diabetes and inflammation.

Prescription medications: A 2013 study published by Frontline Gastroenterology shows that some commonly prescribed drugs may cause damage to the GI tract.

According to a 2008 paper published in Acta Chirurgica Iugoslavica, drug abuse, in general, is known to cause rectal bleeding and abdominal pain that may indicate ischemic colitis. This is a condition in which blood flow to the colon (large intestine) decreases because of blocked arteries. It can cause long-term damage to the colon.

