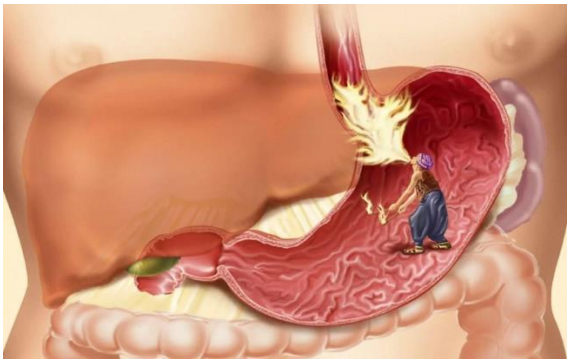
Stomach



Introduction to the Stomach:

The stomach is a vital organ in the digestive system, playing a key role in breaking down food and preparing it for absorption in the intestines. Located in the upper abdomen, just below the ribcage, the stomach is a muscular sac that can expand to hold food and digestive juices.

Function of the Stomach:

The primary function of the stomach is to perform mechanical and chemical digestion. It accomplishes this through the following processes:

- **Mechanical Digestion:** The stomach's muscular walls contract and churn food, mixing it with digestive juices. This action helps break down large food particles into smaller, more manageable pieces.
- **Chemical Digestion:** The stomach secretes gastric juices, which contain digestive enzymes and stomach acid (hydrochloric acid, or HCl). These substances work together to break down proteins in the food.

Production of Stomach Acid:

- Stomach acid, or gastric acid, is a crucial component of the digestive process. Here's how it is produced:
- Parietal Cells: Specialized cells in the lining of the stomach called parietal cells are responsible for producing stomach acid.
- Hydrochloric Acid (HCl) Production: Parietal cells secrete HCl into the stomach. HCl helps maintain an acidic environment with a pH of around 2. This acidity is essential for activating digestive enzymes and killing harmful bacteria in the food.

Path of Food through the Stomach:

When you eat, food travels through a specific path in the body to reach the stomach and undergo digestion:

- **Mouth:** Digestion begins in the mouth, where teeth break down food into smaller pieces, and saliva moistens it.
- **Esophagus:** Once chewed and moistened, the food is swallowed and enters the oesophagus, a muscular tube connecting the mouth to the stomach.
- **Lower Oesophageal Sphincter (LES):** The lower oesophageal sphincter, a ring of muscles at the bottom of the oesophagus, opens to allow food to enter the stomach.

- **Stomach:** Food enters the stomach through the LES. Here, it is mixed with stomach acid and digestive enzymes, forming a semi-liquid substance called chyme.
- **Pyloric Sphincter:** Chyme is gradually released from the stomach into the small intestine through the pyloric sphincter. This controlled release allows for efficient digestion and absorption of nutrients.

Summary of Stomach's Role:

In summary, the stomach serves as a critical organ in the digestive system. It mechanically breaks down food through muscular contractions and chemically digests proteins with the help of stomach acid. The path of food from the mouth to the stomach involves various sphincters and a carefully orchestrated process to ensure efficient digestion and nutrient absorption in the intestines.

Understanding how the stomach functions and the path food takes through the digestive system is essential for maintaining proper digestion and overall health. It highlights the importance of a balanced diet and the role of each organ in the intricate process of turning food into energy and essential nutrients for the body.

Common stomach disorders

Gastritis:

- Inflammation of the stomach lining.

Symptoms:

- Abdominal pain or discomfort, often in the upper abdomen.
- Nausea and vomiting.
- Indigestion.
- Loss of appetite.

Causes:

- Infections, such as Helicobacter pylori (H. pylori).
- Excessive alcohol consumption.
- Long-term use of non-steroidal anti-inflammatory drugs (NSAIDs).
- Autoimmune reactions.

Treatment:

- Treating the underlying cause (e.g., antibiotics for H. pylori infection).
- Avoiding alcohol and NSAIDs.
- Medications to reduce stomach acid.
- Dietary changes, such as avoiding spicy or acidic foods.

Peptic Ulcers:

- Open sores that develop on the inner lining of the stomach or the upper part of the small intestine.

Symptoms:

- Burning or gnawing stomach pain, often between meals or at night.
- Bloating.

- Heartburn.
- Nausea and vomiting.

Causes:

- Infection with H. pylori bacteria.
- Long-term use of NSAIDs like ibuprofen or aspirin.
- Excessive stomach acid production.

Treatment:

- Antibiotics to treat H. pylori infection.
- Medications to reduce stomach acid.
- Lifestyle changes to avoid triggers like NSAIDs and smoking.
- Surgery in severe cases.

Gastroesophageal Reflux Disease (GERD):

- Chronic condition where stomach acid flows back into the oesophagus.

Symptoms:

- Heartburn (burning sensation in the chest).
- Regurgitation (acid or food moving up into the throat).
- Chest pain.
- Chronic cough.

Causes:

- Weak lower oesophageal sphincter (the valve between the stomach and esophagus).
- Obesity.
- Eating large meals or lying down after eating.
- Certain foods and beverages, such as citrus, tomatoes, and caffeine.

Treatment:

- Lifestyle modifications like elevating the head of the bed.
- Medications to reduce stomach acid (e.g., proton pump inhibitors).
- Surgery in severe cases.

Stomach Cancer:

- The growth of malignant cells in the stomach lining.

Symptoms:

- Unexplained weight loss.
- Persistent abdominal pain or discomfort.
- Difficulty swallowing.
- Vomiting blood or blood in stool.

Causes:

- Genetic factors (family history of stomach cancer).
- Infection with H. pylori bacteria.
- Diet high in smoked, pickled, or salty foods.

- Smoking and excessive alcohol consumption.

Treatment:

- Surgery to remove the cancerous tissue.
- Chemotherapy and radiation therapy.
- Targeted therapies for advanced cases.
- Regular screenings for those at high risk.