

The Digestive System

The tube of organs is called the **gastro-intestinal tract**, or the alimentary canal and is made up of the mouth, oropharynx, oesophagus, stomach, small intestine and large intestine.

The Mouth

The mouth or oral cavity, the first part of the tract, is lined with a mucous membrane, which secretes mucus to mix with the food, facilitating its movement through the pharynx and oesophagus. Within the mouth there are the tongue, teeth and three pairs of salivary glands, which produce enzymes that aid in the chemical processes. The upper part is called the hard palate, composed of bone, and the soft palate, composed of muscle tissue. An extension of the soft palate - the uvula hangs down into the oropharynx, where are the tonsils at the back of each side of an arch called the palatine arch.

The tongue is covered with tiny taste buds that differentiate four tastes: sweet, sour, salty and bitter. It helps in mixing food with saliva and pushes food into the oropharynx to begin the swallowing mechanism.

The Oropharynx

The oropharynx serves as a common pathway for food and air. When its muscular tissue contracts, food and fluid are directed into the oesophagus and the entrances to the larynx and the oral and nasal cavities are closed simultaneously.

The Oesophagus

The oesophagus is approximately 25 cm long and passes down behind the trachea and heart, through the mediastinum and diaphragm to the stomach. Its walls alternately contract and relax (it is called peristalsis), moving food into the stomach.

The structures of the stomach, small intestine and large intestine are similar in that they have four layers. From the outside are: the peritoneum, the muscle coat, the submucous coat and the mucous membrane. The variations that occur are due to the functions of each portion.

The Stomach

The stomach lies beneath the diaphragm and at the top of the abdominal cavity. It is a hollow organ composed of three parts: the top part is called the fundus, the central and the largest portion is called the body, and the

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lower part is the pylorus. Stomach muscles are very strong; their contraction leads to the mixing of food with gastric secretions to form a semisolid mixture called chyme, which is partially digested food. The stomach also produces some hormones (gastrin, enterogastrone) and gastric juices that help in digestion. The chyme then passes through the small intestine (which takes about 4 to 6 hours) into the large intestine. The food that has not been absorbed into the blood by the presence of villi on the surface of the intestine is known as the residue.

The Small Intestine

It is the longest portion of the alimentary canal and is divided into the duodenum, jejunum and ileum. It contains many glands, which secrete digestive enzymes and hormones.

The Large Intestine

The large intestine has a greater diameter and is also called the large bowel. It consists of the caecum, colon, rectum and anal canal. The appendix, a slender blind tube, is attached to the caecum and is a frequent site of inflammation or infection (appendicitis).

The liver, gallbladder and pancreas are called accessory organs of the digestion because food does not pass through these organs; instead they produce and store secretions that flow into the small intestine and bring about chemicals in food.

The Liver

The liver is a large reddish brown wedge-shaped organ situated on the right hand side in the upper abdomen, beneath the diaphragm. It is covered by the peritoneum, except for a bare area on the posterior surface, which is closely related to the diaphragm. Blood flows through specialized cells in the liver called sinusoids.

The liver has many functions and is essential for life: it destroys many toxic substances, stores glycogen, vitamins A, D, E, K, and B₁₂, iron, cholesterol, etc., and produces bile. The bile is an alkaline yellowish green fluid formed in the liver by breaking-down old red blood cells. It contains water, calcium and sodium salts and bile pigments: bilirubin and biliverdin. The bile salts activate pancreatic lipase and are necessary for the digestion and absorption of fats.