

The Digestive System

The gastrointestinal (GI) system, also called the digestive system, has two functions:

1. **Digestion** is the process of breaking down food so that it can be absorbed into the cells.
2. **Elimination** is the process of expelling solid wastes that are not absorbed into the cells.

The GI system is made up of the alimentary canal and the other digestive organs.

The alimentary canal is a long passageway extending from the mouth to the anus, the opening of the rectum. Food passes from the mouth through the pharynx, esophagus, stomach, small intestine, large intestine, and out of the body as solid waste. The teeth, tongue, salivary glands, liver, gall bladder, and pancreas are the accessory organs to digestion. They help prepare the food so it can be absorbed.

Food is first placed in the mouth. The teeth chew it by cutting it, then chopping and grinding it into smaller pieces that can be swallowed. Saliva moistens the food and begins chemical digestion. The tongue helps with chewing and swallowing by pushing the food around between the teeth and then into the pharynx.

The pharynx is a muscular structure located at the back of the mouth. It extends into the throat. It contracts with swallowing and pushes food into the esophagus. The muscles of the esophagus then move food into the stomach through involuntary contractions called peristalsis.

The stomach is a muscular pouch located in the upper left part of the abdominal cavity. It provides physical digestion by stirring and churning the food to break it down into smaller particles. The glands in the stomach lining aid in digestion. They secrete gastric juices that chemically break down food. This process turns food into a semi-liquid substance called chyme. Peristalsis continues in the stomach, pushing the chyme into the small intestine.

The small intestine is about twenty feet long. Here enzymes secreted by the liver and the pancreas finish digesting the chyme. Bile, a green liquid produced by the liver, is stored in the gallbladder and released into the small intestine. Bile helps break down dietary fat. The liver converts fats and sugars into glucose, a sugar that can be carried to cells by the blood. The liver also stores glucose. The pancreas produces insulin, an enzyme that regulates the body's conversion of sugar into glucose.

The chyme is moved by peristalsis through the small intestine. There villi, tiny projections lining the small intestine, absorb the digested food into the capillaries.

Peristalsis moves the chyme that has not been digested through the large intestine. In the large intestine most of the water in the chyme is absorbed. What remains is feces, a semisolid material of water, solid waste material, bacteria, and mucus. Feces passes by peristalsis through the rectum, the lower end of the colon. It moves out of the body through the anus, the rectal opening.