

The Complexities of the Digestive System

There is arguably no most important part of the body because all of its components are important in maintaining function. That being said, an argument can be made for the most important part being the digestive system. The reason I say that is because the digestive system is responsible for the intake of nearly every nutrient the body needs and all of the energy that it uses to function. Without the digestive system, the body would absolutely not be able to function as it would be lacking both the energy and the variety of nutrients that all serve different functions. The digestive system is simultaneously fairly complex and very simple at the same time.

The digestive system starts with the mouth. Food that is placed in the mouth is chewed by the teeth, turning it into a paste that is easier to break down. The process of breaking down the food begins before it leaves the mouth as the saliva begins to break down the starches. The food is then swallowed and passed down the esophagus on its way to the stomach. The esophagus is made up of muscle and rings of cartilage for support. The muscle contracts in wave motion called peristalsis that forces the food down the esophagus. At the bottom of the esophagus, the food passes through the lower esophageal sphincter, which is a valve of sorts that helps keep food from traveling backwards up the esophagus.

On the other side of the lower esophageal sphincter is the stomach. The stomach is a balloon-shaped organ with very strong muscular walls. The stomach lining secretes a strong acid (hydrochloric acid) as well as many enzymes that begin to break down the food into a paste. The muscular walls of the stomach also play a role in the breakdown of food as they churn the contents to mix the food particles, acid and enzymes. The food will be in the stomach for roughly two to four hours before it has been fully broken down into a paste or liquid and passed through another valve to the small intestine.

The small intestine is split into three different parts, the duodenum, jejunum, and the ileum. The duodenum is mostly responsible for further breaking down the food paste with a

mixture of enzymes, and bile. Bile is secreted by the liver and assists in breaking down fats. Throughout this process, peristalsis is at work again, pushing the paste further through the nearly twenty feet of small intestine. The jejunum and ileum, the last two parts of the small intestine are responsible for the absorption of all nutrients from the food. In order to accomplish that, the lining of the intestine is filled with villi, small protrusions that increase the surface area of the lining of the intestine and allow it to absorb nutrients at a faster rate. Once all the useful nutrients are absorbed from the food paste, the paste is pushed into the large intestine, which is also called the colon.

The large intestine, is as expected by the name, wider than the small intestine by a decent amount, but is only about five feet long, compared to the twenty of the small intestine. That being said, the now nutrientless paste, which is at this point fecal matter, spends around thirty six hours in the colon. Throughout this time, the fecal matter is pushed along via peristalsis (yet again) as the large intestine absorbs the water from the paste turning it from a liquid to a solid. By the time the fecal matter reaches the end of the large intestine, the rectum, it has reached a nearly solid state ideally, although everybody knows that's not always true. Another process that occurs during this period is the bacteria in the colon process any nutrients left as well as protect our body against harmful bacteria. Once the stool builds up at the end of the colon, it is pushed into the rectum which holds it until it can be evacuated via the anus.

That is the entire process that food goes through from the start of the digestive system at the mouth all the way to the removal of waste at the anus. Although the process is somewhat involved, and was simplified to an extent, there are many moving components to the digestive system and it does not take much to put it out of sorts. With it being such a crucial part of our body that we literally cannot live without, I think it is very important for everybody to have a basic understanding of how it works.