What Happens to Your Food After You Eat It?

So how does the food we eat become the energy we need to grow and move? The process is complex, but it usually works smoothly because each part of our gastrointestinal tract that includes the esophagus (swallowing tube), stomach, small and large intestine, pancreas, liver and gallbladder has a specific job it does very well. In this article, we will follow food as it moves through the body and learn what happens along the way.

Our mouth starts things off by breaking up the food with our teeth and starting the digestion of sugars with chemicals called enzymes. Our tongue pushes the food to the back of the mouth where it is then swallowed and travels down the esophagus to the stomach. The esophagus does not digest the food, but it does the important job of pushing the food down into the stomach as well as keeping it from coming back up into the mouth.

Once in the stomach, further digestion takes place. The stomach produces acid that helps to kill bacteria and other germs that may get into food. The stomach makes an enzyme that starts digestion of protein and releases a molecule that helps with the absorption of vitamin B12. Once filled with food, the stomach grinds and churns the food to break it down into small particles. It then pushes the small particles of food into the first part of the small intestine, called the duodenum.

The small intestine is where most of the digestion and absorption of our food takes place. Newborn babies have about 8 feet of small intestine at birth (250cm) and this length grows throughout childhood to between 12 and 22 feet in adulthood (360 to 660cm), depending upon the size of the adult. The long length of small intestine is needed so that enough space is available for our food to be broken down into the most elemental molecules so that it can then be absorbed.

In the small intestine, food is processed by different chemicals that are designed for specific components of the meal. Proteins, fats and sugars (carbohydrates) are digested by enzymes released by the pancreas. A tube from the pancreas joins to the duodenum, and all the enzymes travel together into the duodenum when food is present. A separate tube connects the liver and gallbladder to the duodenum. This tube allows bile, which is made by the liver and stored in the gallbladder, to mix with food in the intestine.

Bile is essential for complete fat digestion and for the digestion of fat-soluble vitamins A, D, E, and K. Once the sugars that we eat have been partially broken down by the enzymes of the pancreas, cells lining the small intestine use their own enzymes to fully digest the sugars.

Once proteins, fats and carbohydrates are digested, absorption takes place in the small intestine. Most of the digestion occurs in the first part of the small intestine while the absorption of broken down nutrients, water, vitamins, and minerals occurs in the rest of it. 80% of the water we ingest is absorbed in the small intestine.

Once nutrients are absorbed by the intestine, they pass into the blood stream and are carried to the liver. The liver has the job of processing all the nutrients, vitamins, drugs, and other things we ingest and absorb each day. It will turn protein, sugar, and fat into energy which, with the help of pancreatic hormones like insulin, will feed the cells of our body.

The liver also gets rid of the byproducts of drugs and the nutrients we don't need in bile. In fact, bile is the primary way the body gets rid of excess cholesterol and heavy metals such as copper.

The large intestine, also called the colon, is not responsible for digestion. Instead, its purpose is to complete water and electrolyte (minerals found naturally in the body, such as potassium, calcium, sodium, and magnesium) absorption begun by the small intestine. Those components of food that are not needed or cannot be absorbed are excreted from the colon in stool. The color of the stool comes from the tiny amount of bile released from the liver each day that is not reabsorbed.

The process of turning the food we eat into the energy our cells need is a complex and beautiful process. It requires precise coordination between all the different organs of the GI tract and uses hormones and nerves to allow the organs to communicate. In fact, the GI tract has its own nervous system with as many nerve cells as the spinal cord, allowing us to relax and think about what we are eating without worrying about what happens to it after we swallow!

For more information or to locate a pediatric gastroenterologist in your area please visit our website at: www.naspghan.org

IMPORTANT REMINDER: *This information from the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) is intended only to provide general information and not as a definitive basis for diagnosis or treatment in any particular case. It is very important that you consult your doctor about your specific condition.*

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