
Digestive system explained

Summary

- Food is broken down by the digestive system to give energy to every cell in the body.
 - The digestive tract starts at the mouth and ends at the anus.
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We need food to fuel our bodies for energy, growth and repair. The digestive system converts the foods we eat into their simplest forms, like glucose (sugars), amino acids (that make up protein) or fatty acids (that make up fats). The broken-down food is then absorbed into the bloodstream from the small intestine and the nutrients are carried to each cell in the body.

The digestive tract begins at the mouth and ends at the anus. It is like a long muscular tube, up to 10 metres long, with digestive organs attached along the way.

A large reservoir of microbes, such as bacteria, live within the large intestine and, to a lesser degree, in the rest of the digestive system. These bacteria play an important role in healthy digestion. The exact types of bacteria are particular to each person. Other factors that influence the type of bacteria in your digestive system include where you live in the world, what health conditions you have and what medications you have received.

The mouth and oesophagus

Digestion begins in the mouth. The food is ground up by the teeth and moistened with saliva to make it easy to swallow. Saliva also has a special chemical, called an enzyme, which starts breaking down carbohydrates into sugars. Once swallowed, muscular contractions of the oesophagus massage the ball of food down into the stomach.

The stomach

The food passes through a sphincter, or small muscle ring, into the stomach. Here it is mixed with gastric juices. The stomach is a muscular bag and it churns the food to help break it down mechanically as well as chemically. The food is then squeezed through a second sphincter into the first part of the small intestine, called the duodenum.

The small intestine

Once in the duodenum, the food is mixed with more digestive enzymes from the pancreas and bile from the liver. Food is then squeezed into the lower parts of the small intestine, called the jejunum and the ileum. Nutrients are absorbed from the ileum, which is lined with millions of finger-like projections called villi. Each villus is connected to a mesh of capillaries. This is how nutrients pass into the bloodstream.

Pancreas

The pancreas is one of the largest glands in the human body. As well as digestive juices, it secretes a hormone called insulin. Insulin helps to regulate the amount of sugar in the blood. Diabetes is a condition caused by problems with insulin production.

Liver

The liver has a number of different roles in the body, including:

- breaking down fats, using bile stored in the gall bladder
 - processing proteins and carbohydrates
 - filtering and processing impurities, drugs and toxins
 - generation of glucose for short-term energy needs from other compounds like lactate and amino acids.
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The large intestine

Once all the nutrients have been absorbed, the waste is moved into the large intestine, or bowel. Water is removed and the waste (faeces) is stored in the rectum. It can then be passed out of the body through the anus.

Common problems in the digestive system

Some common problems include:

- colitis – inflammation of the bowel
- diverticulitis – inflammation of pouches lining the small intestine
- gastroenteritis – an infection that causes vomiting and diarrhoea
- heartburn – when the contents of the stomach back up into the oesophagus
- ulcer – a hole in the mucous membrane lining the stomach or duodenum.

Where to get help

- Your doctor

Things to remember

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This page has been produced in consultation with and approved by:

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