Pancreas Encyclopedia Article

Pancreas

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Pancreas

The pancreas is a digestive organ which develops as an offshoot of the intestinal tract. It is unique in that it has both endocrine and exocrine functions. As an exocrine organ, it sends some of its chemical products through ducts (tubes) to their destination. As an endocrine organ, it sends some of its chemical products through the bloodstream to act on tissues and organs at some distance from the pancreas itself.

The exocrine products of the pancreas enter the duodenum (the first part of the small intestine) through the pancreatic duct. The pancreatic juices are a combination of various enzymes which help digest foods which have arrived at the duodenum from the stomach. Pancreatic enzymes break down carbohydrates, proteins, and fats. The pancreas also produces bicarbonate, an alkaline substance which helps to neutralize the food which has become quite acidic in the environment created by the stomach.

As an endocrine gland, the pancreas plays a vital role in the processing of sugars (glucose). The pancreas contains specialized cells, called the islets of Langerhans, which produce two important hormones: insulin and glucagon. Both of these hormones serve to maintain the appropriate levels of glucose circulating within the bloodstream.

Diabetes is a common and serious condition. Some forms of diabetes occur when the islets of Langerhans are decreased in number or destroyed, and the pancreas can no longer produce enough insulin to adequately regulate glucose levels. Another form of diabetes occurs when the cells of the body become unresponsive to the presence of circulating insulin. Either way, the end result is that glucose levels in the bloodstream can reach extremely high levels, resulting in damage to a variety of organ systems throughout the body.