

## Secretin

The small intestine is periodically assaulted by a flood of acid from the stomach, and it is important to put out that fire in a hurry to avoid acid burns. *Secretin functions as a type of fireman: it is released in response to acid in the small intestine, and stimulates the pancreas and bile ducts to release a flood of bicarbonate base, which neutralizes the acid.* Secretin is also of some historical interest, as it was the first hormone to be discovered.



### Structure of Secretin and Its Receptors

Secretin is synthesized as a preprohormone, then proteolytically processed to yield a single 27-amino acid peptide by removal of the signal peptide plus amino and carboxy-terminal extensions. The sequence of the mature peptide is related to that of glucagon, vaso-active intestinal peptide and gastric inhibitory peptide.

The secretin receptor has seven membrane-spanning domains and characteristics typical of a G protein-coupled receptor.

### Control and Physiologic Effects of Secretin

Secretin is secreted in response to one known stimulus: acidification of the duodenum, which occurs most commonly when liquified ingesta from the stomach are released into the small intestine.

The principal target for secretin is the pancreas, which responds by secreting a bicarbonate-rich fluid, which flows into the first part of the intestine through the pancreatic duct. Bicarbonate ion is a base and serves to neutralize the acid, thus preventing acid burns and establishing a pH conducive to the action of other digestive enzymes. A similar, but quantitatively less important response to secretin is elicited by bile duct cells, resulting in additional bicarbonate being dumped into the small gut.

As acid is neutralized by bicarbonate, the intestinal pH rises toward neutrality, and secretion of secretin is turned off.

### **Disease States**

Diseases associated with excessive or deficient secretion of secretin are not recognized.