

Cholecystokinin (CCK)

Cholecystokinin (CCK) is the major hormone responsible for pancreatic enzyme secretion and gallbladder contraction. It is primarily secreted by endocrine I-cells that line the duodenum and jejunum, and is also found in the peripheral nerves lining the intestine, where it acts as a neurotransmitter to cause pancreatic secretion. Other functions include relaxation of the sphincter of Oddi and decreasing gastric emptying. CCK is stimulated by fatty acids and amino acids in the duodenum.



PLAY PICMONIC

Secreted by I Cells

[Duo-denim and judge judy with I-cell phones](#)

CCK-containing cells (known as I-cells) are most concentrated in the duodenum and jejunum. It has been hypothesized that these cells connect with enteric nerves, offering a direct connection between the nervous system and the gut.

Duodenum and Jejunum

[Duo-denim and judge-judy](#)

CCK is secreted by I cells, which are located in the duodenum and jejunum.

Physiology

Increase Pancreatic Secretions

[Pancreas secreting fluid with up-arrow](#)

One of the actions of CCK is to increase secretion of pancreatic juices into the GI tract. These juices contain various enzymes that aid in the breakdown of ingested food.

Increase Gallbladder Contraction

[Sea-gull bladder flexing](#)

CCK induces gallbladder contraction, which promotes emptying of bile into the GI tract and aids in digestion.

Induce Relaxation of Sphincter of Oddi

[Relaxing sphinx-O-D](#)

CCK acts to release the sphincter of Oddi, which is the sphincter that controls the opening of the common bile duct into the duodenum. Relaxation of the sphincter of Oddi allows emptying of pancreatic and gallbladder secretions into the intestine, allowing them to aid in digestion.

Decrease Gastric Emptying

[GI-guy vomiting](#)

CCK reduces gastric emptying by multiple mechanisms, one of which is stimulating vagal afferent nerve fibers, causing a feedback mechanism that slows gastric emptying and induces satiety.

Regulation

Increased by Fatty Acids and Amino Acids

[Amino-amigo acid and bacon fatty acid](#)

Ingestion of amino and fatty acids in meals stimulates secretion of CCK, which in turn stimulates secretion of various digestive enzymes by the pancreas and gallbladder to aid in the breakdown of the very same amino and fatty acids.