Secretin Encyclopedia Article

Secretin

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Secretin

Secretin is an intestinal hormone discovered by the British physiologists William Bayliss and Ernest Starling in 1905. Thinking they had discovered an entirely new class of chemicals, Bayliss and Starling applied the term hormone (from the Greek, meaning shock or impulse) to refer to secretin and then to all chemicals that are secreted by one body organ to affect the behavior of other organs, tissues, or cells. Secretin was actually the second hormone to be discovered, after the Japanese and American biochemist Jokichi Takamine's isolation of epinephrine (adrenaline) in 1901.

Starling and Bayliss, working at University College, London, were trying to learn why the pancreas produces digestive fluids when food moved from the stomach into the intestine. They hoped to find a nervous system signal, as theorized by the Russian physiologist Ivan Petrovitch Pavlov. Instead, they found that the signal was chemical--a substance secreted by the intestinal wall into the bloodstream and carried to the pancreas. They named the substance secretin.

Scientists now know that secretin plays several roles in digestion. When food is swallowed, it mixes in the stomach with hydrochloric acid. This mixture, called chyme, then moves into the duodenum (upper intestine). In response, the duodenum's epithelial cells produce secretin, which signals the pancreas to secrete a bicarbonate fluid that reduces the chyme's acidity. Secretin also affects the stomach's digestive process. It slows down secretion of the hormone gastrin, which stimulates stomach acid production. Secretin also speeds up the stomach's production of pepsin, a stomach enzyme that breaks down protein. In addition, secretin signals the liver to secrete bile into the duodenum, where it helps emulsify fat so it can be more easily absorbed. Secretin in turn is broken down in the blood by the enzyme secretinase, though some is excreted in urine.

Bayliss and Starling's original substance was impure. Scientists in the 1940s-1960s found it contained a second hormone, cholecystokinin (CCK), sometimes called pancreozymin. Secretin and CCK work together, with CCK stimulating pancreatic fluid production when chyme is not extremely acidic.