Hello student, today we're going

to learn about the Hormonal

Control of secretion of enzymes in

gastrointestinal tract from unit no. 1,

i.e. Physiology of Digestion.

The outline of this module are

gastrointestinal hormones which

includes Gastrin, secretin,

Pancreozymin, Cholecystokinin,

Enterocrinin, Duocrinin and

Enterogastrone. At the end of

this module you will be able to define

gastrointestinal hormones and explain

the hormonal control of secretion of

enzymes in gastrointestinal tract.

Before we learn what our gastrointestinal hormones, let us define.

What are hormones?

Hormones are Blood borne chemical

messengers that are secreted

directly into the blood which

carries them to various organs

and tissues of the body to exert their functions. So hormones they are carried to various organs of our body to exert specific functions. So today we're going to learn about the hormones which act on the gastrointestinal tract, the hormones that act on the gastrointestinal tract are called as the gastrointestinal hormones, or they are also called as the gut hormones in short. We can call them as the GI hormones, so these hormones they constitute a group of hormones secreted by entero-endocrine cells of the alimentary canal, which includes the stomach, the pancreas, and the small intestine. That regulate various processes of digestion. The enteroendocrine cells are

specialized cells that are present

in the gastrointestinal tract,

the stomach, the pancreas, and the small intestine that produce and release

various hormones in response

to a number of stimuli.

These hormones stimulate and regulate

secretion of digestive enzymes or

digestive juices from the glands

present in the mucosal membrane

of the gastrointestinal tract and

also from the liver and pancreas.

So it is not only the gastrointestinal

tract that is responsible for stimulating

and regulating these hormones,

but liver and pancreas are also involved.

Now that there are three different

regions which secrete these hormones

of the gastrointestinal tract.

They are the hormones from the gastric mucosa hormones from the Duodenal mucosa, and hormones from the intestinal mucosa.

Now let us see which are the hormones released by each of these regions. So the gastrointestinal hormones are divided into three categories, hormones from gastric mucosa, hormones from the duodenal mucosa, and hormones from intestinal mucosa. So the hormones from the gastric mucosa include gastrin hormones from the duodenal mucosa includes three hormones. They are Secretin, Pancreozymin Cholecystokinin, whereas hormones from intestinal mucosa also include another three hormones. The Enterocrinin, Duocrinin and Enterogastrone so now let us learn about each hormone in detail. Firstly, let us learn about the hormones from Gastric mucosa.

It includes the hormone Gastrin. So when the food enters the stomach, the hormone Gastrin is released by the G-cells. The G cells are also called as The Gastric cells which are present in the stomach and the duodenum and they secrete this hormone gastrin The distention of the stomach and the alimentary canal provides stimulus for gastric secretion. Gastrin stimulates the gastric glands to secrete. Greater amounts of gastric juice containing HCL and Pepsin. Gastrin is another role to play as well Wherein it stimulates the stomach movement. The next one are the hormones from the duodenal mucosa. So when the food enters from the gastric part of the stomach to the pyloric part and from the pyloric part

When the food enters the duodenum

in the form of small jets

the hormones from the duodenal

mucosa are released.

It includes the three hormones

that is Secretin, Pancreozymin,

Cholecyctokinin.

As I've already mentioned before,

the secretion of these

hormone is stimulated by the entry of chyme from the stomach

into the duodenum

So let us learn about the first

hormone from the duodenal

mucosa that is Secretin so

Secretin is the first hormone to

be discovered in the year 1902 by Bayliss and Starling and the

discovery of this hormone led to the

foundation of modern endocrinology,

secreting a secreted by the S cells that

means the secretin secreting cells

In the duodenum in response to H +

and fatty acids in the lumen.

A pH less than 4.5 signals arrival of gastric contents which

initiates the release of secretin.

so the role of secretin is to

stimulate the cells of pancreatic

lobules for secreting fluid portion

of the pancreatic juice.

The fluid portion consists of water and

electrolytes such as sodium bicarbonate.

In other words,

if we can say

Secretin is responsible for

secreting the non-enzymatic

part of the pancreatic juice.

The next hormone is Pancrozymin

so along with secretin another gastrointestinal hormone

is released and that is Pancreozymin.

so it stimulates the

pancreatic acini to secret enzymatic

part of the pancreatic juice. So both those hormones i.e. secretin and Pancreozymin are responsible for secreting the pancreatic juice. But in case of secretin, it is responsible for secreting the non enzymatic part of the pancreatic juice, whereas Pancreozymin is responsible for secreting the enzymatic part of the pancreatic juice. The next hormone of the duodenal mucosa is Cholecystokinin Now, as we all know that bile is a very important secretion in the process of digestion, it helps in converting the acidic chyme into the alkaline chyme which is necessary for the process of digestion to take place. This massive secretion of bile from

the Gallbladder is stimulated by

another gastrointestinal hormone

that is Cholecystokinin,

so Cholecystokinin stimulates

the rhythmic contractions in the

wall of the Gallbladder and thus

causes the release of bile juice from Gallbladder into the Duodenum,

another very important or effective

stimulus for the release,

of Cholecystokinin is the presence of

fats and meat extracts,

so all these three hormones are from the

duodenal mucosa they are secretin, Pancreozymin and Cholecystokinin

so here as you can see

in this particular picture,

we can see that gastrin is stimulating

the stomach to release the gastric juice,

whereas Cholecystokinin is stimulating

the Gallbladder to release bile.

And secretin is stimulating the pancreas

to release the pancreatic juice.

Now let us move on to the

hormones from intestinal mucosa.

This includes three hormones.

Their Enterocrinin, Duocrinin, and Enterogastrone.

Enterocrinin and Duocrinin

in both these hormones they

help in secreting intestinal,

juice Enterocrinin stimulates the release

of intestinal juice

also called as Succus entericus

from the crypts of Lieberkühn

in the intestinal mucosa.

Crypts of Lieberkühn are tubular glands

that are present in between the finger

like projection on the inner wall

of the intestine. whereas Doucrinin

It stimulates and controls the secretion

of viscous mucus from the Brunner's

glands into the intestinal mucosa.

Brunner's glands are the glands

that are present in the sub mucosal membrane of the Deodenum And that's how this hormone has got its name as Duocrinin, and the last hormone is Enterogastrone. This hormone plays an inhibitory role in the process of digestion. This hormone inhibits gastric secretion and gastric motility. It thus stops gastric secretion after the digestion in the stomach is completed by reducing gastric motility. This hormone delays emptying of the stomach to ensure complete digestion in stomach. Secretion of Enterogastrone is stimulated by presence of fat in food that enters the Intestine. So today we have learned about the gastrointestinal hormones that help in releasing the digestive enzymes and digestive juices which

help the process of digestion to complete.

these are my references.