PHYSIOLOGY OF DIGESTION

Digestion is the process by which food substances are changed physically and chemically into simple assimilable form. The process of digestion is divided into main two parts-

1. Mechanical digestion
2. Chemical digestion

<u>Mechanical digestion</u>

This phase of digestion comprises

1. Liquifying of food by the digestive juices
2. Mastication
3. Swallowing

After swallowing food bolus is carried onwards in the alimentary canal by the peristaltic movements.

*Peristalsis- It is a special method of muscular contraction by which the food bolus is carried down the alimentary canal.

<u>Chemical digestion</u>

Chemical digestion takes place with the help of chemical substances, various enzymes, secreted through the various part of the digestive tract. These enzymes act as a catalyst and convert

Protein- amino acids

Complex Carbohydrates to- monosaccharides

Fats- monoacylglycerol, glycerol and fatty acids

In the course of action minerals and vitamins present in the food substances are also made more assimilable.

In the alimentary canal various types of digestive juices are secreted.

a. Saliva in the mouth.
b. Gastric juice in the stomach.

c. Bile in the duodenum.
d. Pancreatic juice in the duodenum.
e. Intestinal juice or Succus entericus in the small intestine.

Complete process of digestion can be studied at different stages

1. Digestion in the mouth
2. Digestion in the stomach
3. Digestion in the Intestine (Small Intestine)

Digestion in the Mouth

After food is taken into the mouth, it is moved round by the tongue and masticating muscles. It gets mixed with the saliva secreted in the mouth and forms a soft bolus. The bolus now get ready for swallowing.

Saliva and its Composition

The flow of saliva is controlled by sympathetic and parasympathetic nerve supply. The autonomic control of salivation takes place with the help of unconditioned and conditioned reflex response.

In human being saliva is secreted by three pairs of salivary glands-Parotid, Submandibular and sublingual.

pH of saliva is 6.7 (slightly acidic)

Water-99%

In organic salts like NaCl, KCl, Na_2HPO_4, $CaCo_3$, Ca $(PO_4)_2$

Mucous

Enzymes: Salivary amylase or ptyalin, Lysozyme and lingual lipase.

Function of saliva:

Digestion-Ptyalin a starch splitting enzyme acts on cooked food and change them into oligosaccharides. Although saliva is capable of breaking starch into monosaccharides but it is of little significance as food remains in the mouth for a very short span of time.

Starch + Ptyalin-→ Maltose + Maltotriose + dextrin

Lubrication of Food

Protection of mouth cavity

Speech and cleaning

Taste and antibacterial action

In human about 1.5 lit of saliva is secreted per day.

Food bolus is swallowed thereafter down the oesophagus to stomach for further digestion in the stomach.