

DIGESTION OF FOOD

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DIGESTION OF PROTEIN

Protein is digested into simplest form, i.e. amino acid which is soluble and can be absorbed and assimilated by the cells in our body

- In stomach, gastric glands contain 3 types of cells
- 1) Chief cells/peptic cells-- secrete pepsin,renin.
- 2) Parietal cells/oxyntic cells --secrete HCl
- 3) Mucous cells -- secrete mucous
- Enzymes are inactive at the time of secretion. Activated by HCl , also autocatalytic.P
- Pepsinogen + HCl $\xrightarrow{\text{autocatalytic}}$ Pepsin

Pro renin + HCl -----> Renin

Mucous provides the mucous layer to protect the wall of stomach from HCl

- Protein + H₂O $\xrightarrow{\text{pepsin}}$ Polypeptide
- Caseinogen + H₂O -----> Casein + Ca ion of milk ----> Calcium caseinate (curdled) + H₂O $\xrightarrow{\text{pepsin}}$ polypeptide.
- Pancreas secretes protein-splitting enzymes
- Trypsin
- Chymotrypsin
- Carboxypeptidase

- Aminopeptidase
- Nuclease
- Enzymes are inactive at the time of secretion.
- Trypsinogen $\xrightarrow{\text{entero kinase of intestinal juice}}$ Trypsin
- Chymotrypsinogen $\xrightarrow{\text{trypsin}}$ Chymotrypsin
- Procarboxypeptidase $\xrightarrow{\text{trypsin}}$ Carboxypeptidase
- Proamino peptidase $\xrightarrow{\text{trypsin}}$ Aminopeptidase
- Pronuclease $\xrightarrow{\text{trypsin}}$ Nuclease
- Polypeptide + H₂O \rightarrow Peptide
- Dipeptide + H₂O \rightarrow Amino acid + Amino acid

DIGESTION OF CARBOHYDRATES

- Complex carbohydrates, i.e. polysaccharides are converted into monosaccharide i.e., glucose, fructose, galactose that can be absorbed and assimilated by the cells.
- In mouth 3 pairs of salivary glands are found
 - Parotid
 - Submaxillary
 - Sublingual

They secrete salivary amylase/ptyalin

- Starch + H₂O $\xrightarrow{\text{ptyalin}}$ Maltose + Dextrin

- Carbohydrate –splitting enzyme secreted by pancreas is poured into small intestine is Pancreatic amylase.
- It acts as catalyst in conversion of oligosaccharides into disaccharides
- Small intestine secretes intestinal juice which contains carbohydrate-splitting enzymes
- Maltose
- Lactose
- Sucrose
- Maltose + H₂O $\xrightarrow{\text{maltase}}$ 1 mol. Glucose + 1 mol. Glucose
- Sucrose + H₂O $\xrightarrow{\text{sucrase}}$ 1 mol. Of Glucose + 1 mol. Fructose
- Lactose + H₂O $\xrightarrow{\text{lactase}}$ 1 mol. Glucose + 1 mol. Galactose

DIGESTION OF LIPID

- Liver secretes bile which emulsifies lipid.
- Lipid + Bile ----> Emulsified lipid + H₂O
- $$\xrightarrow{\text{P. lipase}} \text{Fatty Acid} + \text{Glycerol}$$
- Pancreas secretes lipid-splitting enzyme pancreatic lipase which acts as catalyst in lipid digestion.
