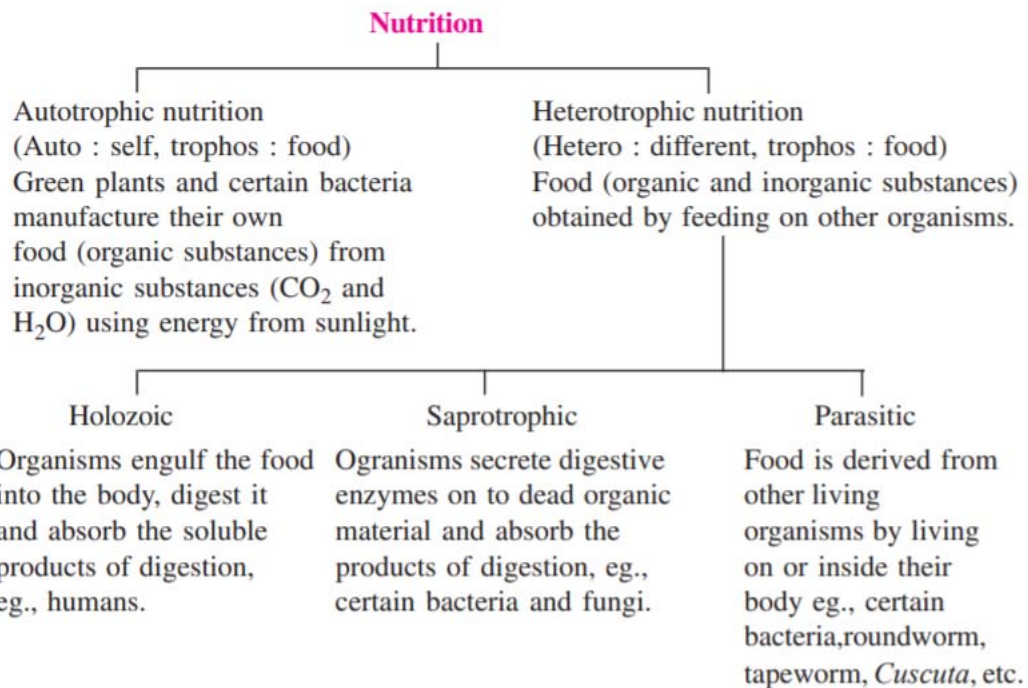


## LESSON -13 NUTRITION AND DIGESTION

Plants manufacture their own food by photosynthesis, but animals including humans have to take in readymade food. Most part of such food consists of complex organic molecules (carbohydrates, proteins and fats) which have to be broken down into simpler forms before they can be absorbed into the body. Such breaking down of the food and subsequent absorption of food constituents occurs inside the digestive tract (alimentary canal). The digestive tract together with the associated glands constitute the digestive system

- The process by which organisms obtain and utilize food for their growth, development and maintenance is called **Nutrition** and the chemical constituents present in the food are called **Nutrients**.
- **Digestion** is the breaking down of complex constituents of food by enzymes into simpler soluble forms that can be absorbed and utilised by the cells of the body.

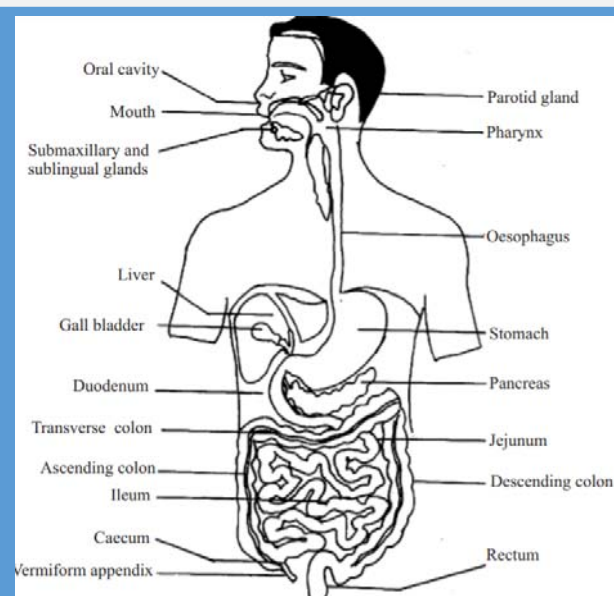


- The processes involved in nutrition are: (i) Ingestion: Taking in food, chewing or sucking it and swallowing. (ii) Digestion: Conversion of complex food into simpler absorbable form. (iii) Absorption: Absorbing digested food from the gut to reach the body tissues. (iv) Assimilation: Utilization of digested food nutrients by the body tissues. (v) Egestion : Removal of undigested and unabsorbed food from the body.
- Digestion can be either intracellular (five steps of nutrition occur inside the cell itself), as in *Amoeba*, *Paramecium* or extracellular (digestion occurs outside the cell as in cockroach).

### THE HUMAN DIGESTIVE SYSTEM

- The human alimentary canal consists of mouth, pharynx, oesophagus, stomach, small intestine, large intestine and anus.
- The digestive enzymes poured into the gut, are secreted from two kinds of sources; gut epithelium of stomach and intestine, and special glands (salivary glands, liver and pancreas).

- Starch is digested in the mouth by salivary amylase, and in the duodenum by pancreatic amylase. Other carbohydrates like maltose, sucrose and lactose are digested by the respective enzymes in the intestine.
- Fats are emulsified by bile, and are hydrolysed by lipases in stomach and intestine.
- Proteins are digested by pepsin in the stomach and by trypsin in the intestine and the peptidases break them into amino acids.
- Absorption of digested food mainly occurs in the small intestine – simple sugars and amino acids are absorbed into the blood capillaries of the intestinal villi and the fatty acids and glycerol into lacteals.
- Most water from the digested food is absorbed in colon and rectum.
- Defaecation is the expulsion of semi-solid faeces.
- Several hormones regulate the secretion of digestive juices from different parts, at the right time and in right quantity.
- Besides playing an important digestive role, the liver has numerous other functions in connection with regulation of blood, breaking down of excess amino acids and general metabolism.
- Common digestive disorders are vomiting, diarrhoea, constipation, indigestion and jaundice
- Intake of ORS or oral Rehydration solution is a must when suffering from digestive disorders like vomiting and diarrhoea in order to prevent dehydration.



### Test yourself

1. Define Nutrition .Mention the types of Nutrition in Animals.
2. Draw a well labelled diagram of alimentary canal in humans.
3. State some common digestive disorders. Add a note on ORS.





