LIFE PROCESSES

Nutrition

Autotrophic
Nutrition in Plants
Photosynthesis
Exchange of gases through stomata
Transportation of plants
Xylem
Xylem Vessels Tracheids Xylem fibres
Phloem
Sieve plates Sieve tubes Companion cells Phloem Parenchyma
Excretion
Photosynthesis, transpiration, dead leaves, resins and gums

Heterotrophic
Nutrition in Humans
Digestive system
Respiration
Aerobic
Transportation
Circulation
Excretion
Kidney, ureters, urinary bladder, urethra
Anaerobic
Double circulations
1. FOOD, ITS COMPONENTS AND FUNCTIONS

भोजन, इसके घटक और कार्य

• The major components/nutrients of our food are: (i) Carbohydrates, (ii) Fats, (iii) Proteins, (iv) Vitamins, and (v) Minerals

• Functions of Food:
  - Food provides energy.
  - It provides organic materials for growth, repair and replacement of tissues.
  - Vitamins and minerals regulate the metabolism and protect us from disorders.
  - Water plays an important role in metabolic processes.

3. ALIMENTARY CANAL

आहार नऱी

• The alimentary canal starts with the mouth opening at the anterior end and ends with the anus at the posterior end.

A. Parts of the Alimentary Canal

आहार नऱी के भाग
i. **Buccal Cavity**  
**मुख गुहा**  
– The mouth opening leads into the buccal cavity (also called oral cavity), where a muscular tongue is attached to the floor of the buccal cavity by frenulum; it bears small projections, called papillae on its upper surface and some of them have the taste buds.  
– Teeth of different kinds are embedded in the sockets of jaw bones.  
– Ducts of three pairs of salivary glands open into the buccal cavity.

ii. **Pharynx**  
**ग्रसनी**  
- The buccal cavity opens into a short funnel like pharynx, that serves as the common passage for food and air.  
- Both oesophagus (food pipe) and trachea (wind pipe) open into the pharynx; but a cartilaginous flap called epiglottis closes the opening (glottis) of the trachea, during swallowing

iii. **Oesophagus**  
**ग्रासनली**  
- The pharynx opens into the oesophagi  
- Desophagus is a thin, long and muscular tube, that extends through the neck, thorax and diaphragm to open into the stomach.
- A muscular gastro-oesophageal sphincter regulates the opening of the oesophagus into the stomach.

iv. Stomach

आमाशय

- Stomach is a sac-like muscular J-shaped organ, located in the upper left part of the abdominal cavity just below the diaphragm.
- The stomach has the following three regions: cardiac portion, a fundic portion, a pyloric
- The opening of the pyloric stomach into the duodenum is guarded by the pyloric sphincter.

v. Small Intestine

- Small intestine has three regions:
  - a proximal U shaped duodenum.
  - a long coiled middle part, the jejunum and
  - a highly coiled ileum.

- The opening of ileum into large intestine (caecum) is guarded by ileo-caecal valve, which prevents the backflow of faeces from caecum into ileum.

vi. Large Intestine

- The large intestine is much wider than the small intestine.

- It has the following three regions: in
  - Caecum
    - It is a small sac-like structure where the ileum joins the large intestine.
    - It harbours certain symbiotic micro organisms.
- A narrow finger-like projection, called appendix arises from here.
- The caecum opens into the colon. - Colon
- The colon is also distinguishable into three parts – an ascending part, a horizontal/transverse part and a descending part.

**Rectum**
- Rectum is the last part of the large intestine, where the faecal matter is stored.
- It opens to the outside through the anus.
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