

## CHAPTER 2: Nutrition in Animals

Animals have heterotrophic mode of nutrition. They can either consume plants as food or may feed on other animals as well.

- Digestion: The breakdown of complex molecules into simple substances which can be easily utilizable form is called as digestion.
- Methods of taking food:
  - 1.) Birds and bee's suck nectar from flowers and plants.
  - 2.) Many mammals feed their young ones on mother's milk.
  - 3.) Snakes swallow their target organism.
  - 4.) Aquatic animals filter floating food around them.
  - 5.) Starfish can consume animals with a hard shell made of calcium carbonate.
- HUMAN DIGESTION
  - Humans have a well-organized complex digestive system.
  - It is also called alimentary canal.
  - The food enters through the mouth and travels in all the parts where the food is digested.
  - The digestion is assisted by digestive juices which are secreted by salivary glands, small intestine etc.
- Parts of the alimentary canal:
  - a) **Buccal cavity:** food enters the buccal cavity through the mouth.
    - **Ingestion:** Ingestion of food is the process of taking in or consuming food.
    - The teeth bring about mechanical digestion of food.
    - There are two types of teeth
      - 1) Milk teeth: These are the first set of teeth, which start growing from birth of the child to the age of 6 to 8 years.
      - 2) Permanent teeth: These are the second set of teeth which replace the milk teeth with the permanent ones.
      - 3) There are different types of teeth each performing a different function.
        - a.) Molars
        - b.) Pre molars
        - c.) Canine
        - d.) Incisor
    - The tongue is made of muscular tissue and is joined to the floor of the buccal cavity.
    - The tongue can move freely and assists in talking, chewing, swallowing and tasting food.
    - Tooth decay: harmful effect caused to the tooth on account of acid produced by bacteria leads to tooth ache or their complete loss.
  - **Salivary glands:**
    - b) **The food pipe:** It is called the esophagus. From the mouth the food enters into the food pipe. The food pipe transfers food from the mouth to the stomach. The walls of the food pipe push the food in the downward direction so that it can enter into the stomach.

- c) **The stomach:** it is a very large, J shaped, muscular bag. It receives food from the wind pipe. After entering the stomach, the food is acted upon by the acids, mucous and gastric juices. The food is churned and converted to a semi solid mass. The HCl acid kills the unwanted microorganisms and makes stomach environment acidic. The gastric juices break complex compounds like proteins in simple form like amino acids.
- d) **The small intestine:** it is a highly coiled, very long, about 7.5 cm in length tube. It is the place where juices secreted by the liver and pancreas gets mixed with the food. The remaining complex food like carbohydrates, proteins, fats get converted into even simpler form.
- i) **Absorption:** the simple substances generated in the intestine can enter the blood vessels. This is called as absorption. From the blood vessels the simple nutrients are transported to all the body parts
  - ii) **Assimilation:** the use of simple products of digestion by the body is called assimilation.
  - iii) Absorption is assisted by finger like projections called the villi.
  - iv) These villi increase the surface area of the small intestine. This also aids the digestion of food
- e) **Liver:** It is the enzyme factory located in upper part of abdomen. It is reddish in color. Its main role is to secrete bile which is important for fat digestion.
- f) **Gall bladder:** A small bag like structure which stores the secreted bile.
- g) **Pancreas:** It is a cream-colored organ. It helps in digestion of carbohydrates, fats, proteins etc. by secreting hormones.
- h) **The large intestine:** The remaining undigested and unabsorbed food enters the large intestine where salts and water is absorbed from undigested food. The large intestine is wider and a little smaller as compared to the small intestine.
- i) **Egestion:** The excretion or removal of fecal matter from the anus is called egestion.
- **Diarrhoea:** The watery stool which is a result of either infection, indigestion and food poisoning is called Diarrhoea. ORS is given to young children as a supplementary treatment to Diarrhoea
- **Digestion in ruminants:**
- Cows, buffaloes are ruminants.
  - These animals quickly eat all the grass and store the grass in the rumen (stomach) .
  - Cud is the partially digested food stored in the rumen.
  - Rumination: the process by which the cud goes back into the mouth where the animal chews it again properly is called rumination.
  - A number of gut-bacteria present in the gut help in digestion of complex carbohydrate cellulose which is present in grass.
  - A special organ called Caecum is present in animals like horses where these cellulose digesting bacteria is present.
- **Digestion and feeding in amoeba:**
- It is a unicellular microorganism

- Amoeba has false feet called pseudopodia which helps in locomotion and food capturing.
- On finding food the pseudopodia slowly surround the food and engulfs it. The food vacuoles secretes digestive juices which aids to digest food.