7th – Nutrition in Animals I

Animals, including humans, require food for obtaining energy, growth, repair of damaged parts and functioning of the body. The process of taking food by an animal and its utilization in the body is called '**animal nutrition**.'

Plants prepare their own food by the process of photosynthesis but animals get their food from plants, either directly by eating plants or indirectly by eating animals that eat plants. Some animals eat both plants and other animals.

Animal nutrition includes nutrient requirements mode of intake of food and its utilization in the body. The components of food such as carbohydrates are complex substances which cannot be utilized by the body. So, they are broken down into simpler substances. The process of breakdown of complex substances of food into simpler substances is called 'digestion.' There are two methods of digesting food, i.e. physical method (including chewing and grinding of food in mouth) and chemical method (addition of digestive juices by the body itself)

Different ways of taking food

Different animals show different modes of nutrition. The mode of nutrition in different animals depends upon the special structure or organ for taking food inside the body.

Starfish is a marine animal covered by hard shells of calcium carbonate. It opens the shell o tots prey and pops out its stomach through its mouth surrounding the soft body of its prey. The starfish after capturing its prey brings back its stomach inside its own body. This food is then digested slowly by starfish.

Name of animal	Kinds of food	Modes of feeding
Snail	Algae	Scrapping from rocks
Ant	Plant material	Biting and chewing
Eagle	Flesh of prey	Tearing
Humming bird	Nectar from flower	Sucking
Lice	Blood from skin of scalp	Sucking
Mosquito	Blood from animals	Sucking
Butterfly	Nectar from flower	Siphoning
Housefly	Filth and refuses	Sucking
Amoeba	Tiny aquatic animals	Capturing and swallowing
Snake	Animal as a whole	Swallowing

Digestion in Humans

The food components pass through a continous canal and get digested in each component. This is called as 'alimentary canal' , it is the tract or canal running from mouth to anus of human being where digestion and absorption of food takes place.

The alimentary canal can be divided into various components:

1. Buccal cavity
2. Food pipe or esophagus
3. Stomach
4. Small intestine
5. Large intestine ending in rectum
6. Anus

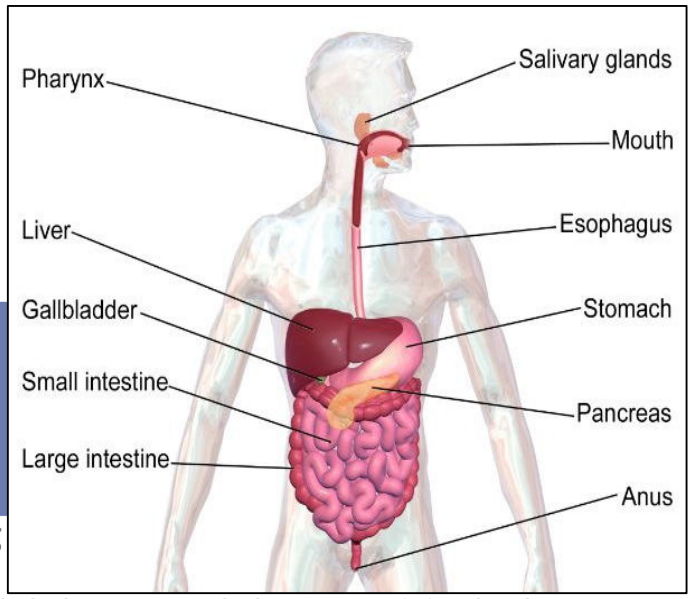
The main digestive glands which secrete digestive juices are:

1. Salivary Gland 2. Liver 3. Pancreas

The various processes involved in utilization of food in humans are:

1. The process of taking food into the body is called ingestion.
2. The process by which the food containing large insoluble substances is broken down into small water soluble substances is called digestion. There are two methods of digesting food, i.e. physical method (including chewing and grinding of food in mouth) and chemical method (addition of digestive juices by the body itself)
3. The process by which the digested food passes through the intestinal wall into blood stream is called absorption.
4. The process by which the absorbed food is taken in the body cells and used for energy, growth and repair is called assimilation.
5. The process by which the undigested food is removed from the body is called Egestion

The carbohydrates get broken down into simple sugar called glucose, while fats in fatty acids and glycerol and proteins get broken down into amino acids during digestion. These simpler compounds are easily absorbed by the walls of small intestine into the blood.



Human digestive System

The system that consists of digestive tract along with glands is called digestive system.

1. **Mouth and Buccal Cavity**: The process of ingestion starts from mouth or buccal cavity. As we ingest food, the salivary glands present in the mouth starts its digestion. The teeth present in the buccal cavity cut the food into small pieces by chewing and grinding it. Salivary glands secrete watery liquid, saliva. This saliva contains digestive enzymes which help in partial digestion of food. The tongue helps in mixing saliva with food. This partially digested food is swallowed by the tongue and passed down to esophagus or food pipe.

Teeth: the food is cut by the teeth inside the mouth. Teeth mechanically break the food into small pieces. These teeth vary in appearance. Each tooth is rooted in a separate socket in the gums. There are four types of teeth:

1. Incisors: these are four chisel shaped incisors at centre of each jaw for biting and cutting the food.
2. Canines: these are two large pointed teeth just behind incisors in each jaw, for piercing and tearing the food.
3. Premolars: these are four (two on each side) large premolars with flat surface behind the canines in each jaw, for grinding and chewing.
4. Molars: in an adult, these are six (three on each side) large molars with flat surface behind the premolars in each jaw, for grinding.

Milk Teeth and Permanent Teeth: In human beings, teeth grow twice. The sets of teeth that grow during infancy are called milk teeth. These are also called temporary teeth. These teeth get loosed and fall off at the age of 6 – 8 years. When milk teeth fall off, a new set of teeth grows in their place. This second set of teeth is called permanent teeth because these remain till the old age.

Types of Teeth	Number of teeth		Total teeth
	Lower Jaw	Upper Jaw	
Cutting and biting teeth	4	4	8
Piercing and tearing teeth	2	2	4
Chewing and grinding teeth	4 + 6 (Pre molar + Molar)	4 + 6 (Pre molar + Molar)	20
		Total	32

Sweets and Tooth Decay: the tooth is covered by white, hard outer covering of tooth called 'enamel' below which dentine is present. It is similar to boe which protects the pulp cavity having nerves and blood vessels. Bacteria are present in our mouth but they are not harmful to us. However, if we do not clean our teeth and mouth after eating, many harmful bacteria also begin to live and grow in it. These bacteria breakdown the sugars present from the leftover food and release acids. The acids gradually damage the teeth. This is called tooth decay.

Tooth decay is the process of rotting of tooth and formation of cavity or holes in it which leads to toothache. This may result in tooth loss. Tooth decay can be prevented by:

1. One should rinse and clean its teeth after every meal.
2. We should clean our teeth with help of brush and toothpaste, twice a day.
3. We should use dental floss which is a special strong thread. It is moved between two teeth to take out trapped food particles.
4. We should avoid the use of sweets, chocolates, ice creams. Use of cold drinks must be avoided.

Tongue: a muscular organ attached at the back to the floor of buccal cavity. It is free from front and can help in mixing saliva with food, swallowing the food, taking or speaking and tasting with the help of taste buds for sweet, salt, sour and bitter food. Salivary glands secrete saliva which breaks down starch into sugars.

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