

Life process Nutrition in Humans

Nutrition in Humans

❖ The Human Digestive System

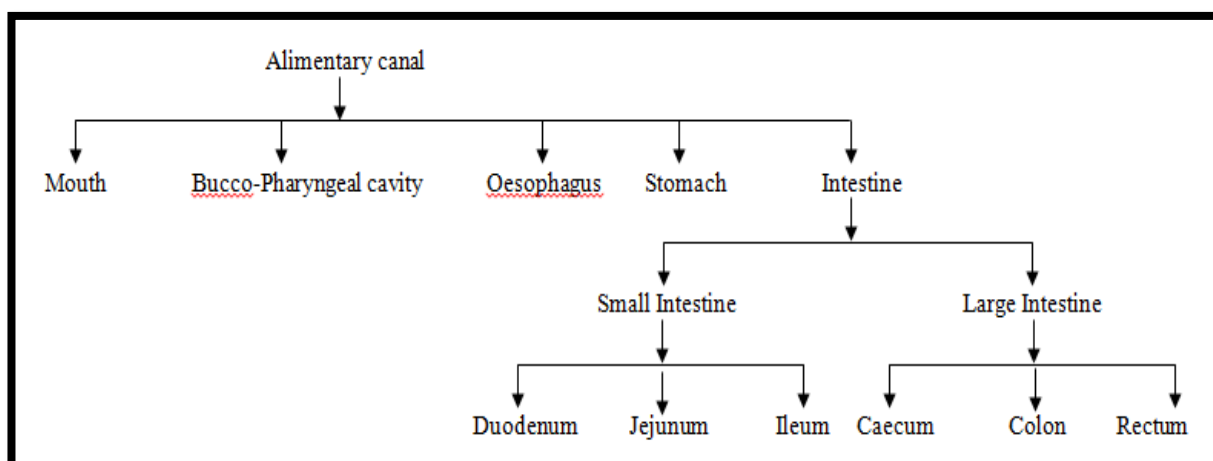
The digestive system of the human body comprises a group of organs working together to convert food into energy for the body. Anatomically, the digestive system is made up of the gastrointestinal tract, along with accessory organs such as the liver, pancreas and gallbladder. The hollow organs that make up the gastrointestinal tract (GI tract) include the mouth, stomach, oesophagus, small intestine and large intestine that contains the rectum and anus.

Human Digestive System and Nutrition involve the intake of food by an organism and its utilization for energy. This is a vital process which helps living beings to obtain their energy from various sources. The food which we eat undergoes much processing before the nutrients present in them are utilized to generate energy. This processing is known as digestion. Humans and other animals have specialized organs and systems for this process.

The digestion process involves the alimentary canal along with various accessory organs and organ systems. In humans, the process is quite simple due to our monogastric nature. This means that we have a one-chambered stomach, unlike other animals such as cows, which have four chambers.

Some parts of nervous and circulatory systems also play a significant role in the digestion process. A combination of nerves, bacteria, hormones, blood and other organs of the digestive system completes the task of digestion.

[A] **Alimentary canal** :- The alimentary canal is basically a long tube extending from the mouth to the anus. It is differentiated into following parts.



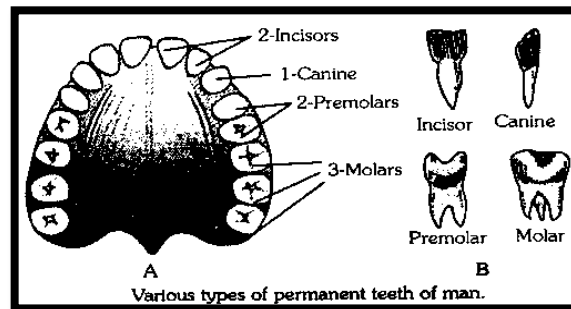
(1)**Mouth** : It is a small slit through which food is ingested.

(2)**Buccal Cavity** : Mouth is a slit or a pore which opens into a chamber called as buccal cavity.

(i)**Palate** : Roof of buccal cavity is called palate.

(ii)**Tongue** : At the floor of this cavity thick muscular structure is present called tongue. It helps in chewing, swallowing, tasting and speaking. Tongue has various types of papilla having taste buds.

(3) **Teeth:** The teeth cut the food into small pieces, chew and grind it. So, the teeth help in physical digestion.



♦ Jaws present in buccal cavity are provided with four different types of teeth :

- Incisors : For cutting
- Canines : For tearing
- Premolars : For grinding
- Molars : For grinding

♦ Dental formula of humans :

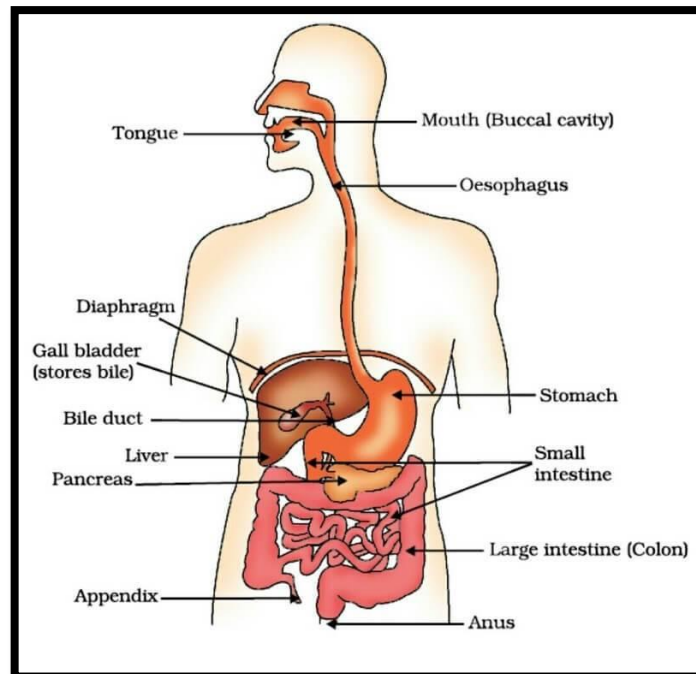
- Milk teeth → These are temporary, arise at 6 – 11 month age, 20 in number

$$\frac{\text{Half upper jaw}}{\text{Half lower jaw}} = \frac{2102}{2102} = \frac{2}{2}, \frac{1}{1}, \frac{0}{0}, \frac{2}{2}$$

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- Permanent teeth → In adult 32 in number.

$$\frac{\text{Half upper jaw}}{\text{Half lower jaw}} = \frac{2123}{2123} = \frac{2}{2}, \frac{1}{1}, \frac{2}{2}, \frac{3}{3}$$



(4) Pharynx

In this part of alimentary canal, food and air cross each other. The pharynx continuous into esophagus.

(5) Oesophagus

It helps in the passage of food from buccal cavity to the stomach.

(6) Stomach

Internal lining of stomach contains numerous **gastric glands**. They secrete gastric juice that helps in the digestion of food. The muscular wall of stomach helps in **churning** of food. The stomach also helps in storage of food for sufficient time.

(7) Small intestine

It is the largest part of alimentary canal measuring about 5-6 meters in length. It is a very narrow, highly coiled tube. It is differentiated into three parts

(8) Large intestine

The ileum enters into a wider tube called large intestine. It measures about 1.5 meters in length.

It is differential into three parts:

- (a) Caecum
- (b) Colon
- (c) Rectum

(9) Anus

The opening of alimentary canal at the lower end is called anus. It is meant for passing out faeces (egestion).

(10) Digestive Glands:

Associated with the alimentary canal are certain glands which secrete some enzyme that help in the process of digestion. These glands are called digestive glands. In man the digestive glands are:

- (1) Salivary glands
- (2) Gastric glands
- (3) Pancreas
- (4) Liver
- (5) Intestinal glands