

**ST. ANDREWS SCOTS SR. SEC. SCHOOL**  
**9<sup>TH</sup> AVENUE, I.P. EXTN, PATPARGANJ, DELHI**  
**SUBJECT- SCIENCE**  
**LIFE PROCESSES**  
**CHAPTER-6**  
**CLASS-X**  
**SUBJECT- BIOLOGY**

---

## **Nutrition in Human Beings**

- Nutrition in human beings takes place through parts like mouth, stomach, small intestine, large intestine, anus
- The process of nutrition takes place through an **alimentary canal** which is a long tube extending from the mouth to the anus.

### **DIGESTION IN BUCCAL CAVITY:**

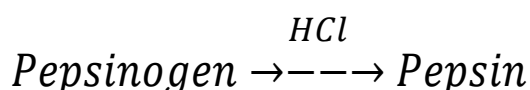
- Complex foods should be converted to smaller ones by crushing the food with teeth and by the enzyme **salivary amylase** of saliva secreted by **salivary glands**.
- Salivary amylase breaks down starch which is a complex molecule into sugar.
- 
- As the canal lining is soft so food is made wet to make the passage smooth.
- The alimentary canal has different parts and the food should be moved in a regulated manner along the digestive tube so the food is processed properly in each part.
- The canal has muscles that contract rhythmically to push the food forward and this movement of food is called **peristaltic movement** which occurs all along the gut.
- 
- The food is taken to the stomach through the food pipe or oesophagus from mouth. No digestion takes place in oesophagus.

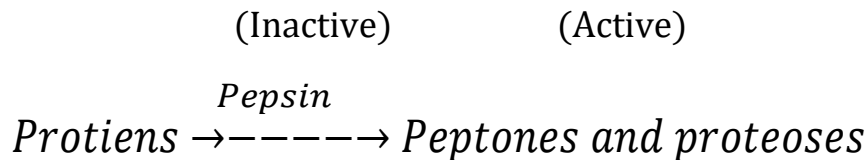
### **DIGESTION IN STOMACH:**

- The muscular wall of stomach mixes the food with more digestive juices secreted by the gastric glands present in the wall of the stomach.
- Gastric gland releases **hydrochloric acid**, a protein digesting enzyme called as **pepsin**, **mucus**.

### **PEPSIN:**

- Enzyme pepsin acts on the food. It is a proteolytic enzyme. It converts protein to the peptones and proteoses. It is secreted in the inactive form called as pepsinogen, in the presence of HCL it got converted to the active form called as pepsin.





### **MUCUS:**

- Mucus protects the inner lining of the stomach from the action of acid under normal conditions.

### **HYDROCHLORIC ACID:**

1. It kills to the bacteria those come along the food.
2. It provides acidic medium in stomach.
3. It converts inactive pepsinogen to active pepsin.

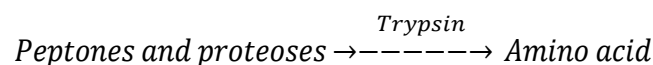
**GASTRIC LIPASE:** It partially digest to the fat. It converts fat to the fatty acid and glycerol.



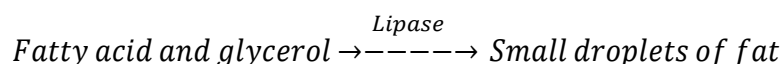
- From stomach acidic food enters small intestine, the longest part of alimentary canal and this is regulated by **sphincter muscle**.

## **DIGESTION IN INTESTINE:**

- Complete digestion of carbohydrates, protein and fats take place in the small intestine by the secretions of liver and pancreas.
- **Bile** secreted by liver makes the acidic food alkaline and acts on large globules of fat into smaller globules so that the enzymes can act on easily.
- The process of breakdown of large fats globules into small globules which increases the efficiency of the pancreatic enzymes is called emulsification of fat.
- Bile juice has no enzyme.
- Pancreas secrete **pancreatic juice** which contains enzyme **trypsin** to break for digesting proteins,



- **Intestinal lipase** for digesting emulsified fats.



- The walls of the small intestine complete digestion of food takes place i.e. after complete digestion food **carbohydrates got converted to glucose ,proteins got converted to amino acids and fat got converted to small droplets of fat called miscelles.**

### **ABSORPTION OF FOOD:**

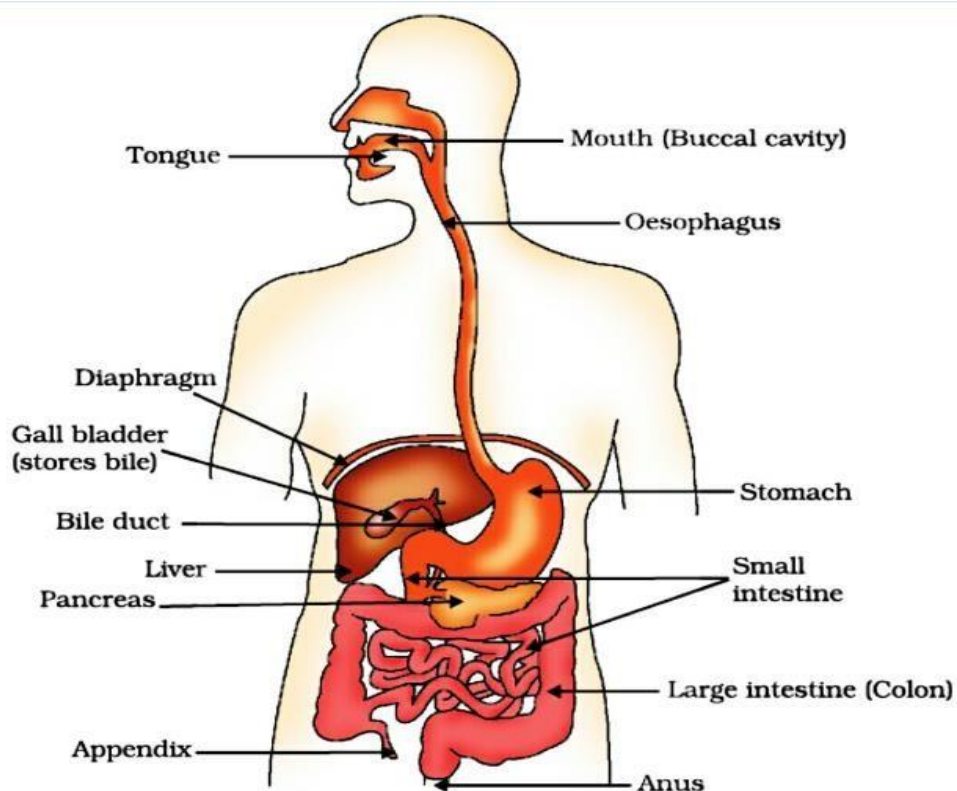
- The inner wall of small intestine has finger like projections called **villi** which are richly supplied with blood vessels and these take absorbed food to all the cells of the body.

### **ASSIMILATION OF FOOD:**

- This process all the digested components of food utilised by the body as glucose and digested fat are used to provide energy to the body whereas amino acids are used to form new cells and tissues of the body.

### **EGESTION OF UNDIGESTED FOOD:**

- The unabsorbed food is sent to the large intestine where more villi absorb water from this undigested material and the rest of the material is excreted from the body by **anus.**
- The excretion of waste materials by anus is regulated by the **anal sphincters.**



### HUMAN ALIMENTARY CANAL

#### **DENTAL CARIES:**

**Tooth** decay (**dental caries**) is damage to a **tooth** that can happen when decay-causing bacteria in your mouth make acids that attack the **tooth's** surface, or enamel. This can lead to a small hole in a **tooth**, called a cavity. If **tooth** decay is not treated, it can cause pain, infection, and even **tooth** loss.

#### **ACTION OF SALIVA ON STARCH:**

**Procedure:** Activity asks us to take a starch solution in the test tube, treat it with saliva and then check for the presence of starch through iodine.



**Explanation:** Saliva contains salivary amylase enzyme. It degrades starch into simple sugar. Iodine does not act on the simple sugar. Hence solution treated with saliva is not turned blue.

**Inference:** Saliva degrades the starch.