

## B.Sc First year Zoology (Subsidiary)

### Paper-1

## The digestive system of palaemon

### Lecture-1

The digestive system of prawn is formed of two parts, namely: 1. Alimentary Canal 2. Gastric Gland

Alimentary canal:

It consists of three distinct regions:

- (i) fore-gut, comprising mouth, buccal cavity, oesophagus and stomach
- (ii) Mid gut including intestine and
- (iii) Hindgut or rectum.

#### **1. Mouth:**

It is a large slit-like aperture lying midventrally below the anterior end of head. It is bounded in front by the shield like fleshy labrum, laterally by the plate like incisor processes of mandibles and behind by the bilobed labium.

#### **2. Buccal cavity:**

Mouth opens into a short buccal cavity. It is lined by thick irregular folds of cuticle. The molar processes of mandibles lie opposite each other in the buccal cavity to crush the food between them.

#### **3. Oesophagus:**

It connects buccal cavity to the floor of cardiac stomach. Internally the thick muscular wall of oesophagus is thrown into four prominent longitudinal folds, one anterior, one posterior and two laterals.

### **1. Stomach:**

It is thin walled and double chambered structure consisting of

- (i) A large anterior cardiac stomach and
- (ii) A much smaller posterior pyloric stomach.

#### **(a) Cardiac stomach:**

The inner lining or intima of cardiac stomach has longitudinal folds covered by minute bristles. The wall of stomach is supported by the following cuticular plates:

##### **(i) Circular plate:**

It supports the anterior wall of the stomach near the esophageal opening.

##### **(ii) Lanceolate plate:**

It supports the roof of cardiac stomach.

##### **(iii) Hastate plate:**

Hastate plate makes the mid-ventral floor of cardiac stomach. It looks like the head of spear. Its upper surface has thick growth of delicate setae and has a median ridge with gradually sloping sides.

The posterior triangular part of hastate plate is depressed and fringed with setae along its edge.

A narrow lateral groove makes the lateral borders of hastate plate and is supported by grooved plates. Inner side of each lateral groove is guarded by the supporting rod, bears a row of delicate bristles.

While outer side is bounded by ridged plate. These bristles always keep moving in a living prawn.

The posterior part of hastate plate forms cardiopyloric aperture. The lateral longitudinal folds of hastate plate at the sides of cardiopyloric aperture act as guiding ridges and guide the food towards the cardio-pyloric aperture.

Further cardiopyloric aperture is gaurded by four valves, hastate plate makes anterior valve, and semilunar fold of stomach wall makes posterior valve. While guiding ridges of hastate plate form lateral valves.