

Digestive System of Nereis

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Digestive System of Nereis:

The alimentary canal begins from mouth and runs straight to end in another aperture, called anus. The presence of two openings (mouth and anus), for inlet and outlet respectively.

The gut wall exhibits following histological structures:

(1) Outer visceral epithelium;

(2) Next one layer of longitudinal muscles followed by another layer of circular muscles; and

(3) Innermost layer of enteric epithelium .

The alimentary canal consists of following parts:

(a) Mouth:

It is present on the ventral side of the peristomium as a transverse aperture and opens to the buccal cavity.

(b) Buccal cavity:

It is a broad chamber with cuticular lining. The cuticles have been thickened to form teeth or denticles or paragnaths. The buccal cavity leads into the pharynx.

(c) Pharynx:

It extends up to the fourth segment and is also lined internally by cuticle. One pair of cuticular teeth is enlarged to form jaws at the posterior end of pharynx. The jaws are extended along the longitudinal axis of the body and are round at the base and pointed at the apex.

The base is provided with muscular attachment while the inner edge of the apex is serrated. Special bands of protractor and retractor muscles are present in the pharyngeal region. The protractor muscles evert the buccal cavity and pharynx as proboscis and the retractor muscles withdraw it. The pharynx leads to the oesophagus.

(d) Oesophagus:

It traverses through next five segments and receives a pair of large glandular caeca. The oesophagus communicates with the intestine.

(e) Intestine:

It is a more or less straight tube which is constricted at each segment. The constrictions are intense at the posterior end.

(f) Rectum:

In the last segment, intestine continues as rectum. It is lined internally with cuticle and opens to the exterior through an aperture, called anus.

Developmentally, the buccal cavity, pharynx and rectum originate from the ectoderm which also forms the outer covering. And for this reason, like the outer wall, these are also lined by cuticle.

Food and Mechanism of Feeding:

Nereis is carnivorous and devours small animals like crustacea and small molluscs.

It seizes the food by means of jaws and teeth. The entire bucco-pharyngeal region during capture of prey is everted out. The eversion is caused by the pressure of coelomic fluid and contraction of protractor muscles. When this happens the buccal cavity becomes turned inside out while the pharynx is thrown forward so that the jaws are opened and come to lie in front of the head.

The folding in of the buccal cavity and pharynx is caused by contraction of retractor muscles and relaxation of protractor muscles. Another type of Nereis exhibits two different mechanisms of food-capture. Sometimes the animal comes out of its burrow and ingests small and nutritious particles from the surface of mud.

On other occasions, it remains within the burrow and secretes mucus. Then by the undulations of the body it draws a current of water into the burrow. The mucous cone acts as a sort of net where small particles carried in with water are strained off. Then, at intervals, the animal engulfs the net.