

Except near the base, the surface of the dorsal tubercle is formed of ciliated epithelium and the interior is filled with loose connective tissue strewn with nerve fibres and blood sinus.

There is great controversy as regards to the nature and function of dorsal tubercle. It was considered simply as an opening of the neural gland by some, while an olfactory organ by others. However, due to its rich innervation, no doubt, it is a sensory structure but it may be olfactory or gustatory or both.

■ Reproductive System

The reproductive organs are a pair of gonads embedded in the mantle and projecting into the atrial cavity. The left gonad lies in the loop of intestine while the right one is situated dorsal to the heart. Each gonad is an elongated lobulated structure consisting of 10-25 globular lobes on either side of the gonoduct. Each lobe comprises of **cortical spermatogenic region** and a **medullary ovarian region**. Each gonoduct consisting of an oviduct and a vas deferens and each receives a short ductule from each lobe. The gonoducts open into the cloaca.

TEST OF HERDMANIA

The body of *Herdmania* is enclosed in a leathery, translucent test composed of **tunicin**, a substance akin to plant-cellulose. The test is composed of matrix, cells of various shapes, interlacing fibrils, calcareous spicules and branching vascular vessels.

1. **Matrix**: It forms the ground substance of the test. It is a 'gelatinous substance in which cells of various shapes, fibrils, spicules and blood vessels are embedded.

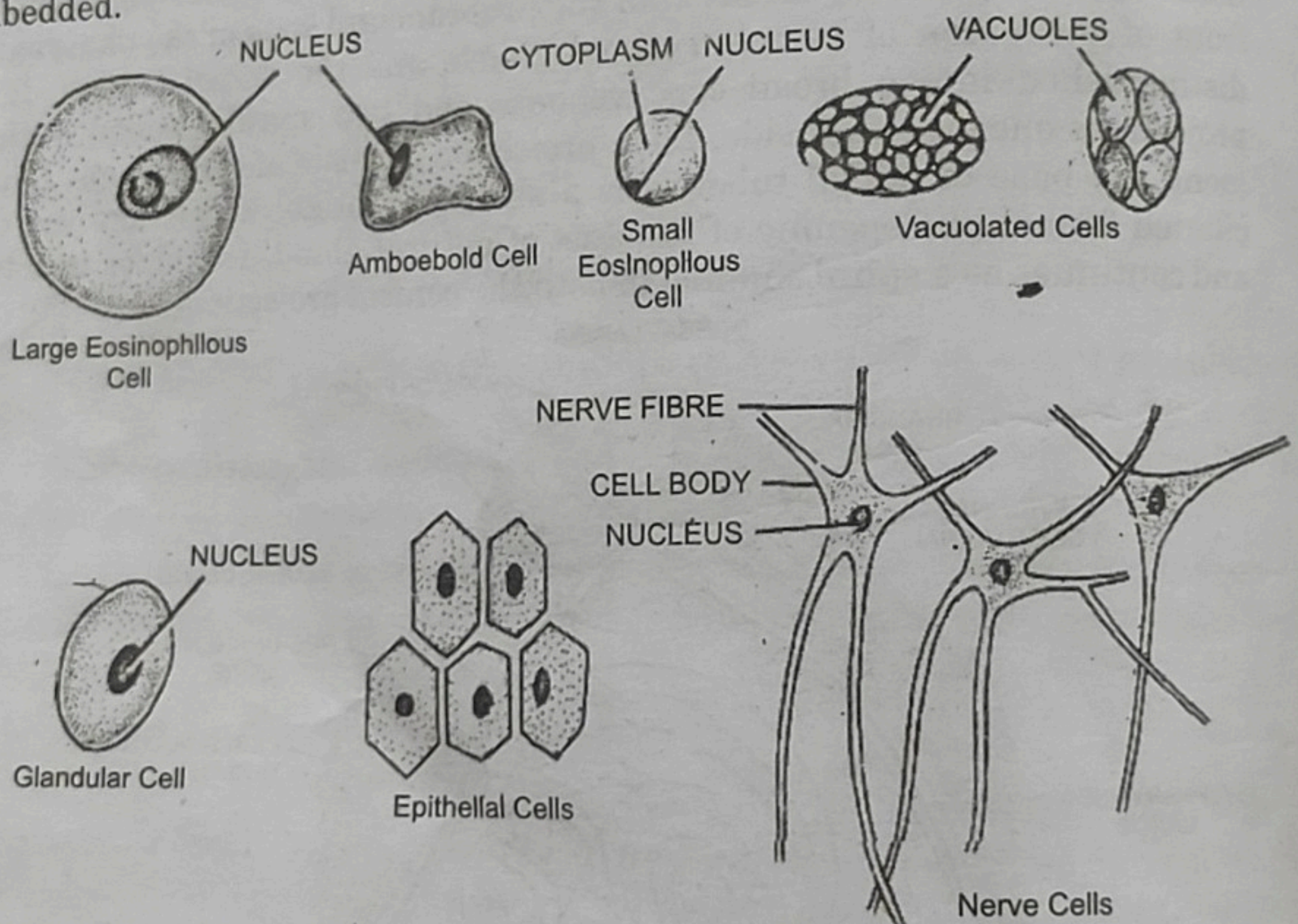


Fig. 5. Different types of cells found in the test of *Herdmania*.

2. **Cells**: These are of various shapes and sizes :

- (a) **Large eosinophilous cells :** As these cells stain bright red with eosin, these are known as eosinophilous cells. These may be rounded or ovoid with a large and prominent nucleus and plenty of cytoplasm.
- (b) **Small eosinophilous cells :** These are comparatively small cells with an eccentric nucleus.
- (c) **Amoeboid cells or amoebocytes :** These are amoeboid in shape and smaller than the large eosinophilous cells but larger than the small eosinophilous cells.
- (d) **Vacuolated cells :** These are more or less spherical in shape, each containing few or more vacuoles. The nucleus is not clear in these cells.
- (e) **Granular cells :** These are oblong in shape and with a large and definite nucleus.
- (f) **Nerve cells :** These are irregular cells each with a number of processes and a single large nucleus,

3. **Fibrils :** These are found embedded in the matrix and resemble unstripped muscle fibers.

4. **Spicules :** These are calcareous bodies found embedded in the matrix. These form the skeletal framework of the body and attach the test with the mantle. These are of two types : **microscleres and megascleres :**

(a) **Microscleres :** These are small spicules about 40-80 μ m long. Each microsclere is made up of a distinct knob and an elongated body with 5-20 rings of spines directed towards the knob.

(b) **Megascleres:** These are larger than the microscleres and are of two types :

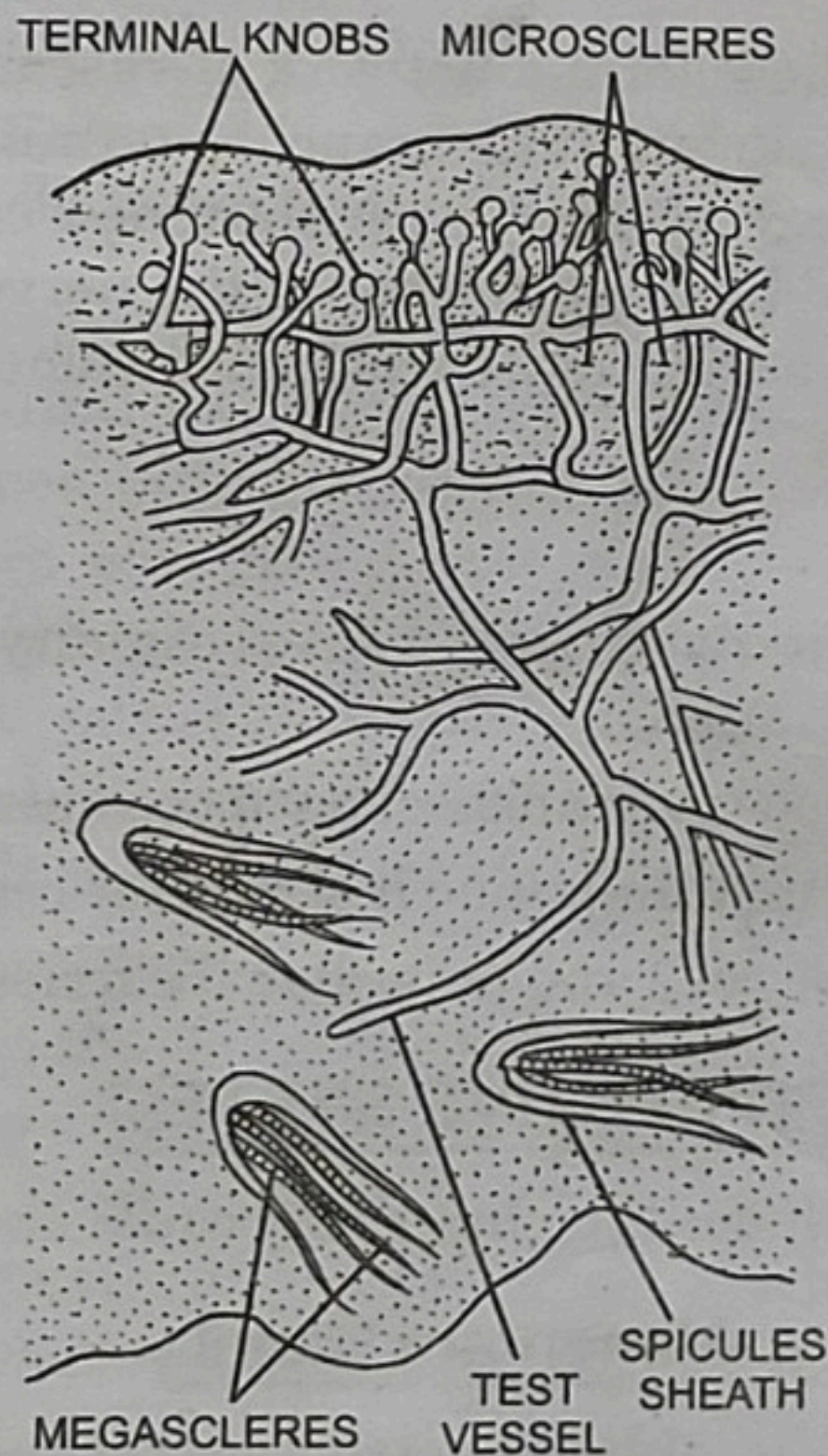


Fig. 6. T. S. Test of *Herdmania* showing test-vessels, microscleres and megascleres.

(i) **Spindle-shaped** : These are 1.5 to 2.5 mm long with several rings of minute spines.

(ii) **Pipette-like** : These are about 3.5 mm long with a swollen bulb in the middle. These also possess several rings of minute spicules.

The spicules form a skeletal framework of the body and attach the body wall with the test. These also form the framework of certain blood vessels.

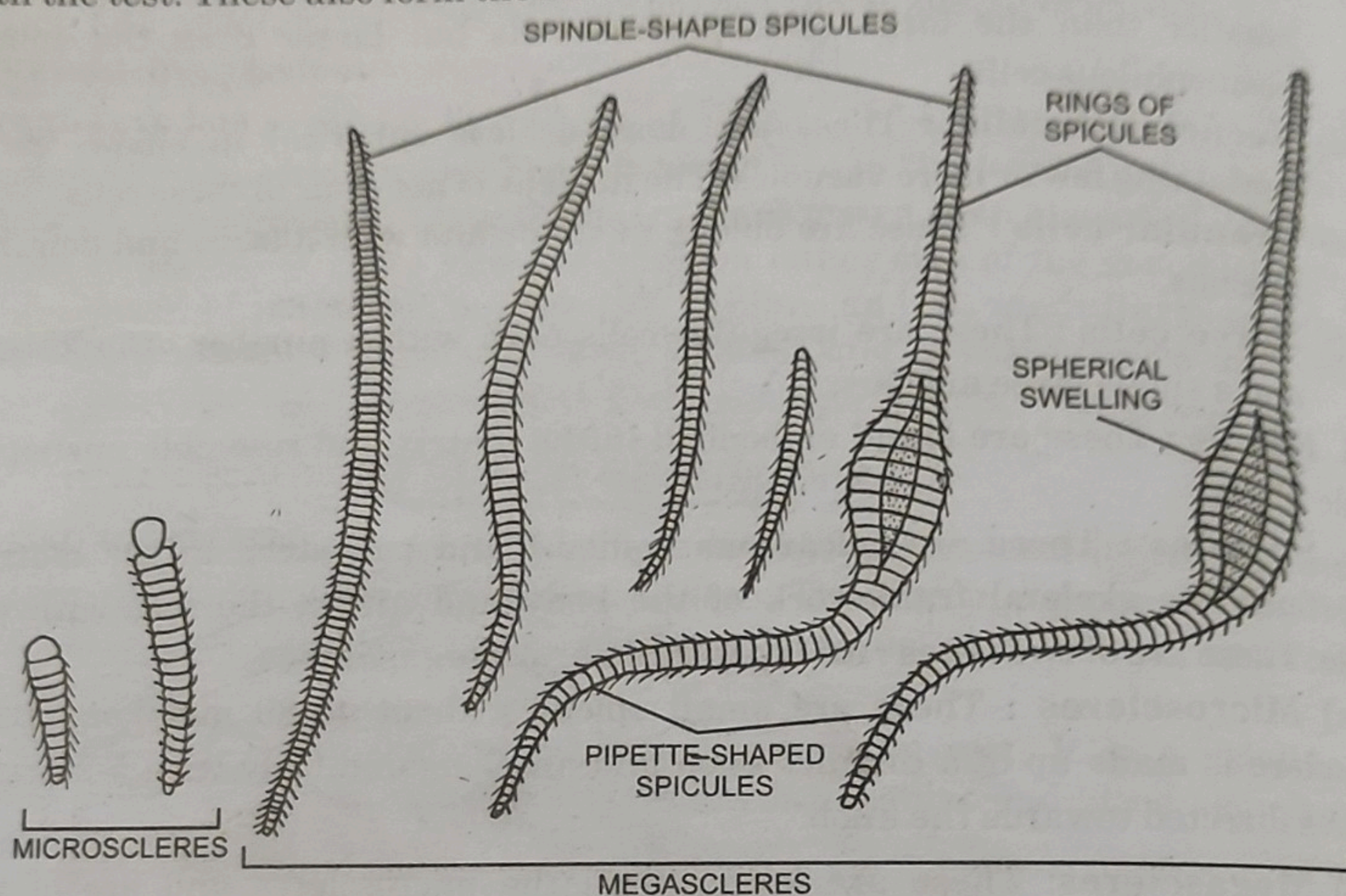


Fig. 7. Different types of spicules of *Herdmania*.

5. Vascular Tubes : These form a network of vascular tubes in the test with their branches towards the surface. The branches terminate into small knob-like vascular ampullae. These are covered with flattened cells with red pigmented granules and are innervated by the branches of the nerve cells. They serve in the gaseous exchange and also as sensory spots which communicate the impulses of the stimuli received by them.

■ Functions of the Test

1. It forms a protective covering and gives rigidity to the body. It forms a sort of armour for the animal.
2. It forms the foot which gives anchorage to the animal.
3. With the help of vascular ampullae it serves for respiration.
4. With the help of nerve cells and ampullae it carries the tactile function.