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## Class - DIH and DIS

### Water vascular system in star fish

Water vascular system or ambulacral system is most unique system of echinoderms which helps mainly in locomotion. It is modified part of coelom. It is system of canals containing sea water and amoeboid corpuscles. The water vascular system of star fish consists of following parts -

① Madreporite - It is a small, circular sieve like plate lying at the base of two arms. It is situated on the aboral surface of central disc. Its surface bears numerous radiating furrow bottom of which there are 200 to 250 microscopic pores. Each pore leads into a pore canal. The pore canals unite to form large collecting canals which leads into ampulla. Ampulla continues into the stone canal.

② Stone canal - It is S shaped

tube and also known <sup>②</sup> as madreporic canal. It starts from madreporite and ends in the ring canal which is five sided. Stone canal wall supported by many calcareous rings hence the name stone canal.

The stone canal along with axial organ is enclosed in a coelomic sac called axial sinus. These three together form axial complex.

③ Ring canal (water ring) → It is wide five sided canal around the oesophagus.

④ Tiedemann's bodies (Racemose gland) - These are nine, small, spherical, yellowish hollow, glandular sac like bodies on the inner side of water ring. The exact nature of Tiedemann's nature is unresolved. A/c to some zoologist it is enzyme forming body, or it is phagocytic amoebocytes manufacturing body.

⑤ Polian vesicles - In most starfishes thin walled, pear shaped, bladder like polian vesicles are present opening into

ring canal. (3) Polian vesicles are totally absent in Asters. These vesicles probably store water and help in controlling the pressure in the water vascular system.

(6) Radial canal - From the ring canal 5 radial canals originate which run in each arm.

(7) Lateral canal - Throughout its length each radial canal gives off two series of narrow podial or lateral canals.

(8) Tube feet - Each lateral canal ends into tube foot or podium. Each tube foot consists of an internal swollen (i) ampulla (ii) middle tubular podium (iii) disc like sucker.

### Function of water vascular system -

- chief function of water vascular system is locomotion.
- Tube feet also help in anchoring the body to substratum.
- Tube feet help in capturing and

handling of food. (4)

The thin wall of the tube feet helps in exchange of gases.

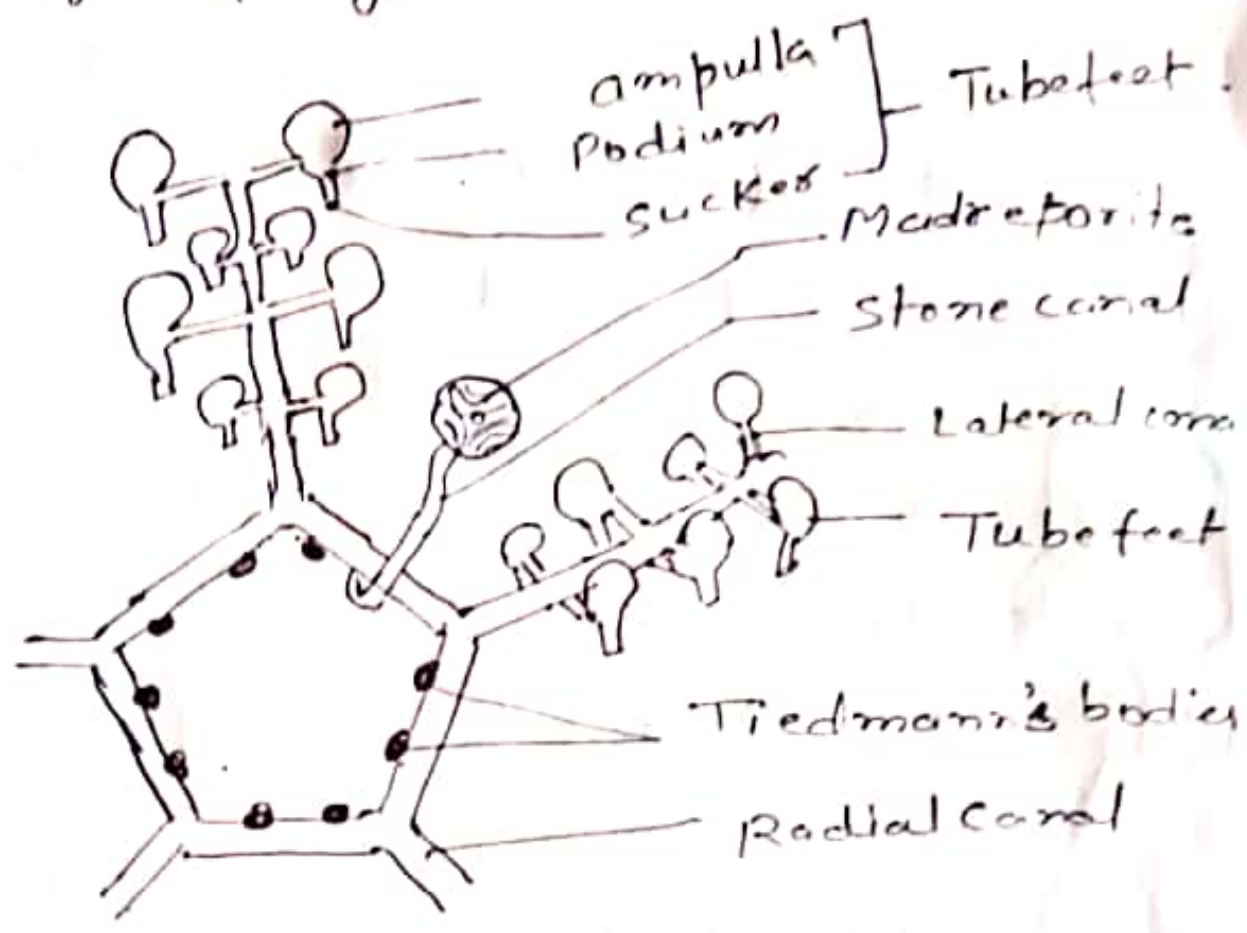


Fig- Asterias - Water vascular system.

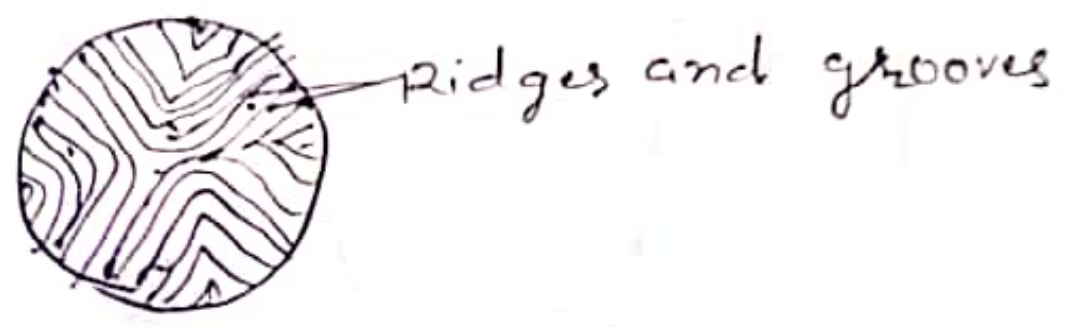


Fig- Asterias - Madreporite seen from outside.