EXERCISE 4 PORIFERA-II: MAKING OF TEMPORARY MOUNTS

Structure

4.1 INTRODUCTION

The mountings in porifera are used to study the hard and soft structures that form the skeleton in sponges. The spicules and tlie spongin fibres are present in tlie mesenchyme layer of the sponge body. The gemmules are asexual bodies and are formed in the sponge body under unfavourable condition chiefly with the advent of cold winter, when the surrounding water is unsuitable for a free existence. The gemmule is capable of forming a new sponge body at the return of favourable conditions prevailing in the water. Before performing tlie exercise you should observe the permanent slides of spicules, spongin fibres and gemmules under a compound microscope. Recall your knowledge of sponges about which you have studied in LSE-09.

Objectives

After doing this exercise you will be able to:

- locate and take out the gemmules, spicules and spongin fibres from their respective sponges,
- make a temporary mount of the material,
- make labelled diagrams of the mounts, and
- list the special features of the materials mounted.

4.2 MATERIAL REQUIRED

1. Sponge like *Sycon* for spicules, bath sponge for spongin fibres and fresh water sponge (*Spongilla*) for gemmules, preserved in 10% formalin.
2. Glycerine
3. Slides
4. Cover slips
5. Pasteur Pipettes/dropper
6. Spirit Lamp
7. Watch glass
8. Filter paper
9. Dissection kit
10. Compound microscope
11. 5% Potassium liydroxide solution (KOH)
12. 10% Potassium hydroxide solution (KOH)

4.3 GEMMULE

In this exercise you will learn to take out the gemmules from the given material, the fresh water sponge and make a temporary mount of it.

4.3.1 Procedure

Take a small portion of the freshwater sponge with gemmules (material provided – fresh water sponge, *Spongilla*) in a test tube. Add 5% or 10% **ICON** solution. Boil gently over a flame. The tissye (sponge body) will dissolve, and the gemmules will settle down in the test tube. Transfer the gemmules in a watch glass and wash well in water. For **mounting** in glycerine put the gemmules on the slide, add one to two drops of glycerine and cover with cover slip. Soak the extra glycerine on the sides of cover slip by filter paper. Observe under a compound microscope.

4.3.2 Observation

Each gemmule is a rounded body with a central mass of archaeocytes enclosed in a double layered cyst wall. The inner membrane is thick and is supported by monaxon spicules. Gemmules are asexual reproductive bodies formed by the freshwater sponges to tide over the unfavourable conditions (Fig. 4.1).

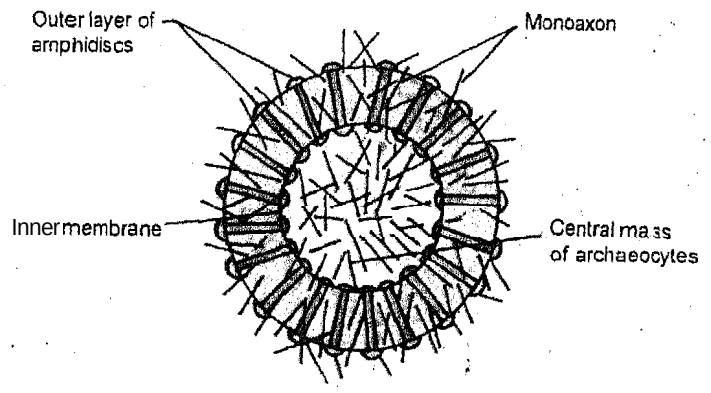

Fig. 4.1: Structure of gemmule of *spongilla* as seen under microscope.

4.4 SPICULE

Spicules are the skeleton of the sponges, that vary in shapes. In this exercise you will learn to take out monaxon spicules from the sponge body and make their temporary mount. The procedure for taking out the spicules from sponge body is same as used for gammules. As you have seen earlier monaxon spicules support the membrane of gemmule.

4.4.1 Procedure

Take a piece of sponge body in a test tube and add 5% or 10% KOH solution. Boil gently over a flame. The tissue (sponge body) will dissolve, and the spicules will settle down in the test tube. Wash well in water as done earlier. Mount in glycerine and observe under a Compound microscope.

4.4.2 Observation

You will be able to observe the different shapes of the monaxon spicules. Monaxon spicules are linear shaped in a single axis (Fig. 4.2).

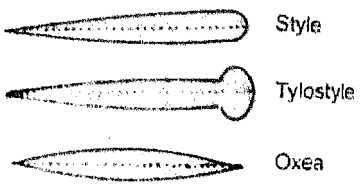

Fig. 4.2: Monaxon spicules.

4.5 SPONGIN FIBRE

Spongin fibres are proteinaceous in nature that form the skeleton of sponge body. In this exercise the procedure is again similar. However, treatment with concentrated KOH and boiling the solution will damage the sponging fibres.

4.5.1 Procedure

Take a piece of bath sponge in a test tube and add 5% KOH solution. Warm the solution. The sponge body will dissolve and the spongin fibres will be left behind in the test tube. Wash in water and transfer in a little glycerine on a slide as done earlier. Tease the material on the slide with needles to spread it evenly and put a cover slip. Observe under a microscope.

4.5.2 Observation

You will be able to observe a network of spongin fibres. It is a profuse network of fibres with cross links. It forms the supporting skeleton of the sponge body. Spongin fibres are somewhat elastic in nature and do not crack easily (Fig. 4.3).

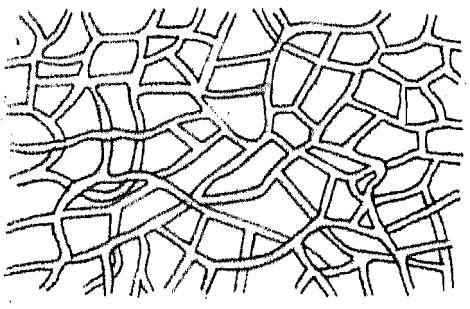

Fig. 4.3: Spongin fibres.

4.6 TERMINAL QUESTIONS

1. What is a gemmule?

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2. What are the different types of spicules?

3. What is the function of spongin fibres?