



# **Riccia**

**By**

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# Systematic position:-

Division - Bryophyta

Class - Hepaticopsida

Order - Marchantiales

Family - *Ricciaceae*

Genus - *Riccia*



# Identification, Classification with reason

- Bryophyta:

1. Plant body is gametophytic and independent
2. Amphibious in nature.
3. Absence of true roots and vascular strands.

- Hepaticopsida:

1. Plant body is thalloid.
2. Absence of pyrenoids.
3. Presence of scales and two types of rhizoids.
4. Absence of columella.

- Marchantiales:

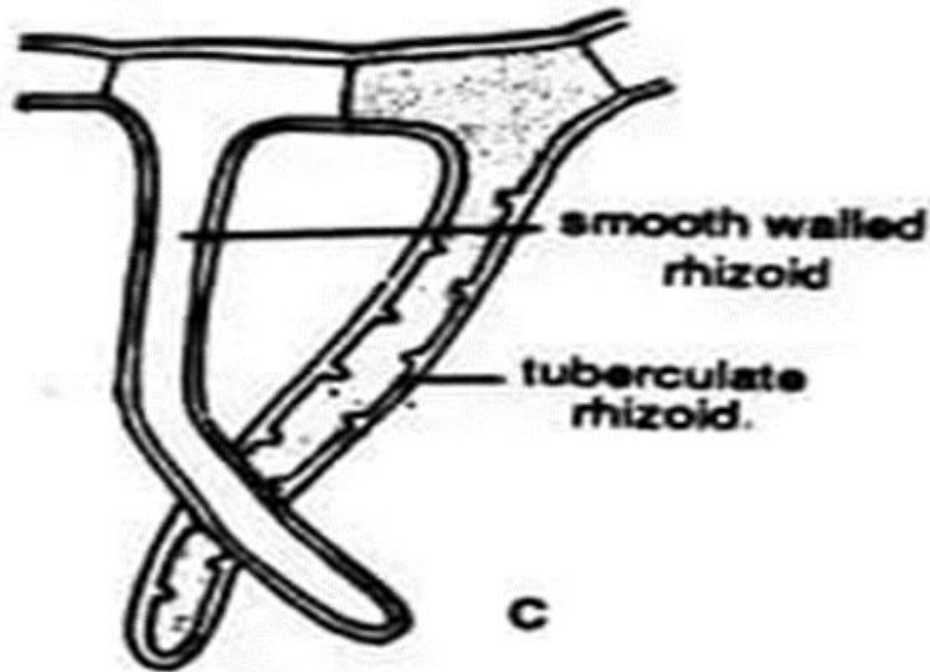
1. Thallus is dichotomously branched.
2. Clear photosynthetic and storage regions are present.
3. Presence of air chambers.

- Ricciaceae:
  1. Gametophyte is green, flat and ribbon like.
  2. Air pores are very simple.
  3. Absence of foot and seta.
- Riccia:
  1. Thallus present in rosette shaped structures.
  2. All scales are alike and present on margins
  3. Presence of only capsule without foot and seta.

**A.) Morphological characters of Gametophyte :-**

The thallus is a flattened dichotomously branched, green structure showing a dorsal (upper) surface with a distant mid rib and a ventral (lower) surface with usually a row of scales at the margin and a number of rhizoids.

- Rhizoids are of two types **smooth walled** and **tuberculated**.
- The smooth walled rhizoids have their inner walls smooth, where as tuberculated rhizoids posses tuber like or peg like ingrowths of their inner wall which project into the lumen of the rhizoids.



- The function of scales is to give protection to marginal thallus and growing cell.
- The thallus is thicker in middle and thinner at the two margins.
- Sex organs and sporophyte remain embedded in the gametophyte i.e. thallus.
- Thallus is deeply branched and the apex of each lobe, there is a notch and inside the notch single growing cell is present.

## **B.) Anatomy-Internal morphology-V S of thallus**

- The thallus internally divided into two regions.
- Dorsal or upper region which is green and photosynthetic region.
- Ventral or lower region which is storage region

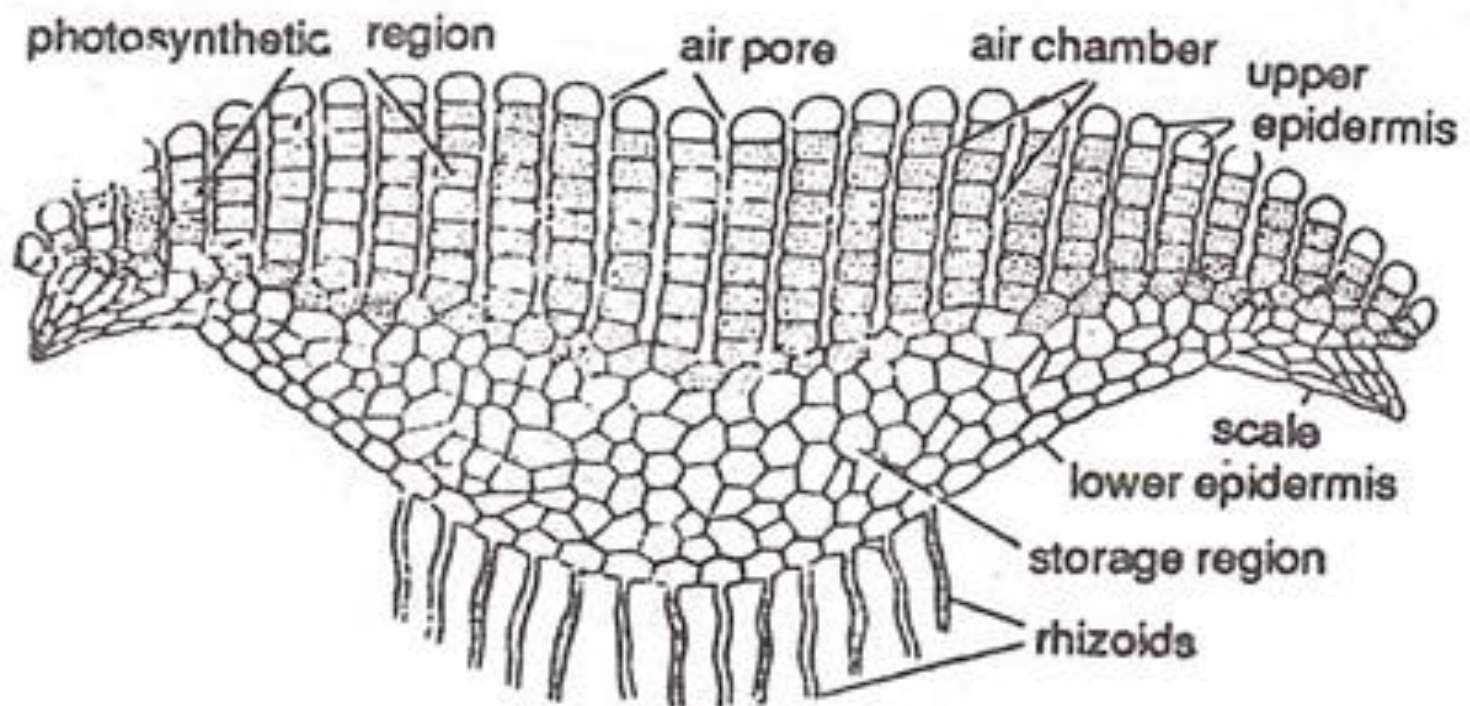
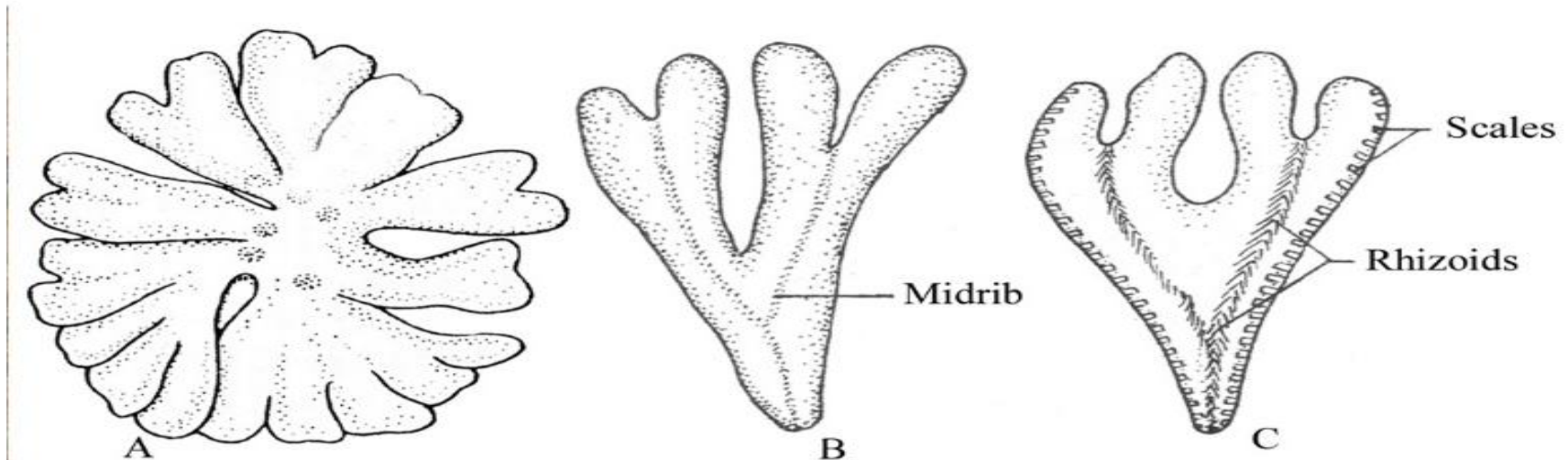


Fig. 158. Riccia. V.T.S. of a young thallus (cellular).

- **a) Dorsal or upper region** which is green and photosynthetic region.
- It is thicker in the middle region and gradually thins out towards the margins.
- Upper portion consists of loosely arranged green, parenchymatous tissue containing chloroplasts hence green and photosynthetic.
- This region consists of vertical column of unbranched green filaments, separated by narrow air chambers
- The air chambers open to the exterior through the simple air pores.
- The uppermost cells of each column is some what distended and they form discontinuous epidermis.
- This is colourless and one cell in thickness



- **b) Ventral or lower region** which is storage region.
- This region is colourless, parenchymatous. It store water and food (starch).
- Hence called storage region.
- The parenchymatous cells are compactly arranged without intercellular spaces.
- The lowermost cells of this region forms lower epidermis. From this lower epidermis rhizoids and scales are formed

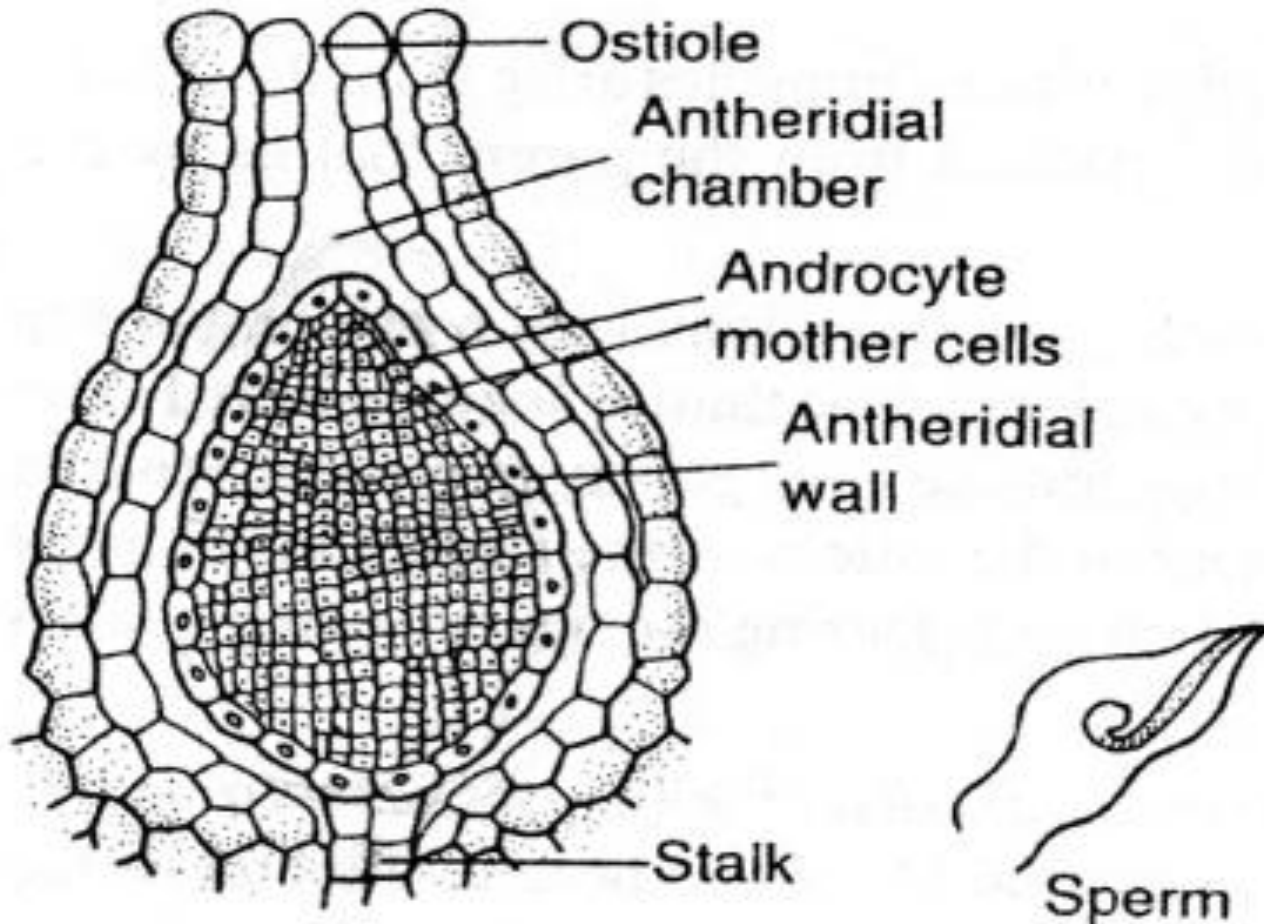


**Fig:** *Riccia* spp. (A) A habit; (B) Dorsal view of the thallus; (C) Ventral view of the thallus.

- **3. Structure of reproductive organs:-**
- The thalloid plant body of Riccia is gametophyte. It reproduces sexually by gametes.
- Some species of Riccia are monoecious, where both sex organs being situated on the same thallus.
- While some species of Riccia are dioecious, where both sex organs being situated on the separate thallus.
- Male sex organ is **antheridium**. Female sex organ is **archegonium**.
- **V. S. of thallus showing antheridia (P. S.)**
- **Position of Antheridium:** - Antheridium is present in the median groove on the dorsal side of thallus, in a chamber formed by the cells of thallus.
- The antheridial chamber with antheridium lies embedded partly in the tissue of the photosynthetic region and partly in the tissue of the storage region.

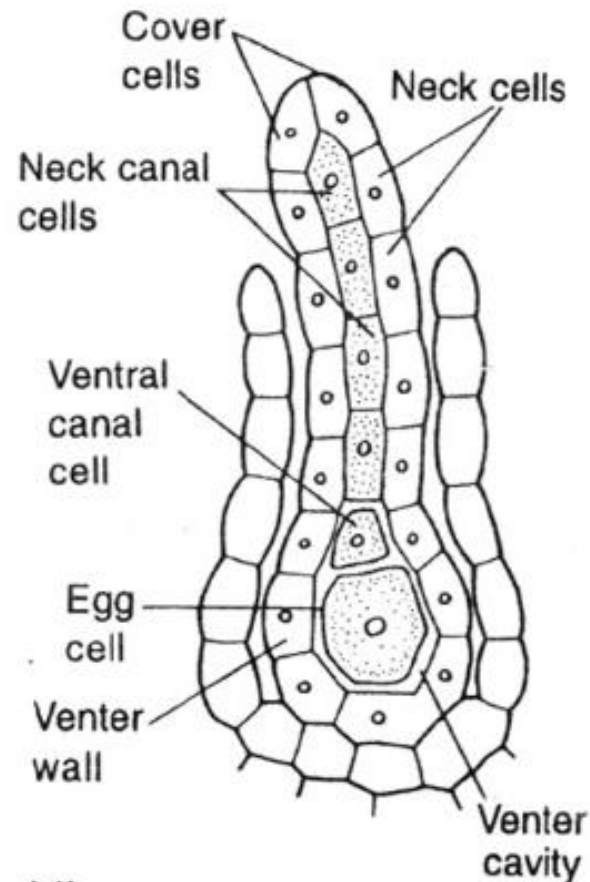
- **Structure of Antheridium:-**

- A mature antheridium consists of a small stalk and a globular or club shaped body.
- It has a sterile jacket surrounded by a compact mass of antherozoids or androcytes.

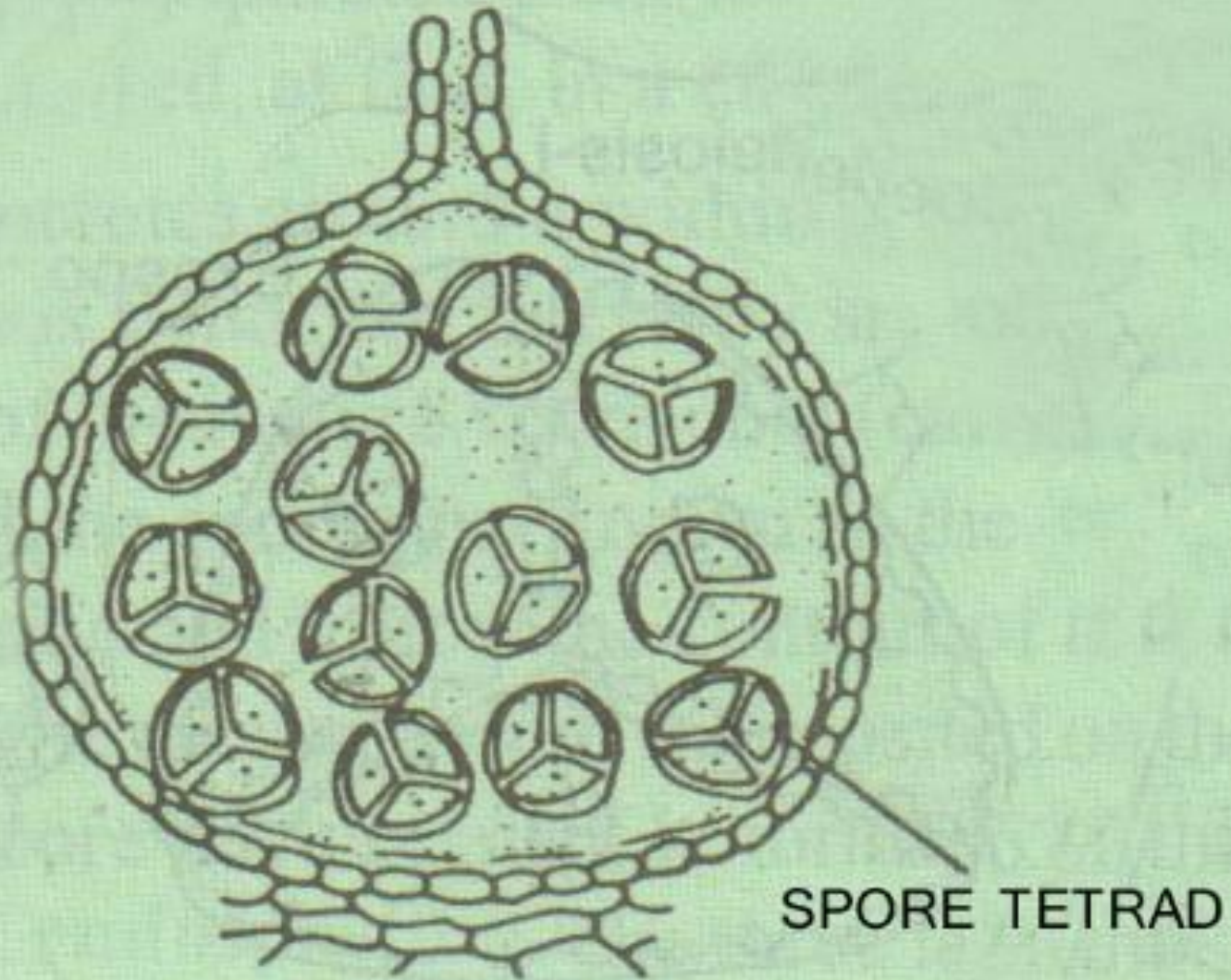


- **V S of thallus showing archegonia( P S)**
- **Position of Archegonium: -**
- Archegonium is present in the median groove on the dorsal side of thallus.
- chamber formed by the cells of thallus.
- The archegonial chamber with archegonium lies embedded partly in the tissue of the photosynthetic region and partly in the tissue of the storage region.
- **Structure of Archegonium:-**
- A mature archegonium is a flask shaped body with a short basal stalk, by which it is attached to the tissue of the thallus.
- It has a broad venter and a long neck.

- Both are surrounded by a sterile jacket.
- venter remains embedded in the thallus but neck is projecting.
- Neck consists 6 vertical rows of cells and is 6-9 cells in height.
- It posses 4 neck canal cells and venter consists one venter canal cell and single egg cell. Cover Cells



- **V. S. of thallus showing sporophyte (P. S.)**
- Position of Sporophyte: -
- Sporophyte lies embedded partly in the tissue of the photosynthetic region and partly in the tissue of the storage region.
- It occupies the venter of fertilized archegonium.
- The sporophyte develops in situ. i.e. within the' venter of archegonium.
- **Structure of Sporophyte: -**
- Sporophyte represented only by the capsule. Foot and seta completely absent.
- The young sporophyte has a jacket layer and two layered calyptras.
- The mature sporophyte has spore tetrads. At maturity of spores, jacket disintegrates.
- Spores are released from tetrads. Single spore is almost round in shape.



SPORE TETRAD

**Fig : Sporangium bearing spore tetrad**

**THANKS**