

**Dr. UMESH KUMAR**

**DEPARTMENT OF BOTANY**

**U.R. COLLEGE ROSERA  
(SAMASTIPUR)**

**B.Sc. PART- I**  
**PAPER- II, GROUP- [B]**

**(i) ANATOMY OF AERIAL  
STEM OF PSILOTUM.**

## Anatomy of Aerial stem of Psilotum

Transverse section of stem reveals following structures -

① Epidermis [Epi = outer, dermis = layer] → It is the outermost layer of the stem. It has heavily cuticled outer wall which is broken regularly by longitudinal rows of stomata in the grooves.

② Cortex → It is just below the epidermis. It is massive and resolves into three zones -

i) The outer cortex → It is also called hypodermal layer. It is formed of 2-5 layers of chlorenchymatous, vertically elongated, thin walled cells. These have intercellular spaces and full of chloroplasts and starch grains.

ii) The middle cortex → Below the outer cortex there is a zone of 4-5 layers of almost compact vertically elongated sclerenchymatous cells with little or no intercellular spaces.

iii) The inner cortex → Farther inwards there is a still broader zone of thin walled parenchymatous cells without

intercellular spaces but containing more starch grains.

③ Endodermis [Endo: Inner  
dermos: layer] → There is

a single layer of endodermis situated below the inner cortex. It is wavy and the cells of this layer have Caspation strips.

④ Pericycle [Peri: Around  
cycle: vascular bundle] → It is also single layered and wavy which encloses the stelar structures.

⑤ Stele → There is siphonostele with exarch xylem in the aerial stem of Psilotum. The protoxylem is towards the periphery while the metaxylem is towards the centre. It is 2-10 rayed structure but generally 5-rayed xylem is found. The protoxylem is composed of spiral and scalariform tracheids where the metaxylem is composed of scalariform and pitted tracheids.

In the centre of xylem is a patch of elongated sclerenchyma cells. As this is considered as a sclerenchymatous cylinder, the xylem is a bluted siphonostelic cylinder. In the thinner branches the pith is absent so that the structure is actinostelic or hoplostelic. At the extreme base also the stem is protostelic. At this

region sometimes xylem elements are present between the protoxylem and the phloem. As these elements do not seem to be secondary origin, the xylem may be considered to be an arch in such cases. The tissue between the xylem and the endodermis is composed of elongated, tubular, thin walled cells which, presumably function as the phloem through sieves have not been demonstrated.

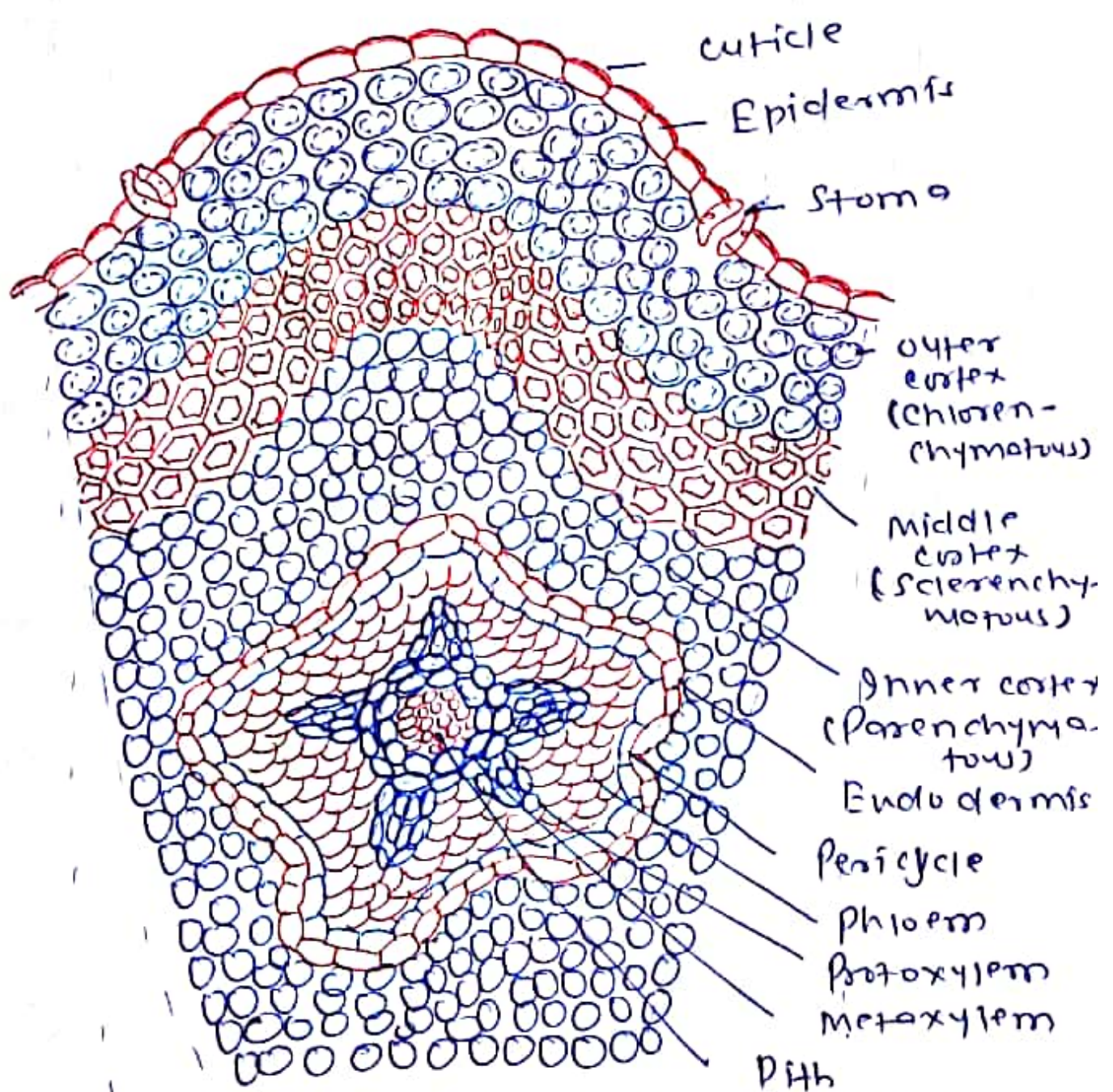


Figure - P.S. of Aerial stem of Psilotum

Dr. Umesh Kumar (Botany)  
 V.R. College, Rewari