# Psilotum

Div – Psilophyta
class – Psilophytopsida
order – Psilotales
family – Psilotaceae
genus – Psilotum

**Occurance:** Psilotum occurs in tropical and sub-tropical regions and grows as terrestrial or epiphytes. Represented by two genera — P. nudum and P. flaccidum. P. nudum is generally terrestrial but P. flaccidum is an epiphytes. They are found in Bengal, Assam and madhya pradesh.



**Morphological appearance:** The plant body is Psilophyte

Psilotum is a sporophyte that bears spores and reproduces by asexual ~~means~~ means. The plant body is distinguished into 2 parts – (a) The rhizome ~~present~~ mostly hidden below the soil. (b) An erect aerial or pendent green aerial branch arises from the rhizome. Both aerial and rhizomes are dichotomously branched. The rhizome bear numerous scales and rhizoids instead of true root.

Some branches of the rhizome ~~her~~ grows upward and develop into aerial stem usually erect (P. nudum) or may be pendent (P. flaccidum). The aerial shoot bears small

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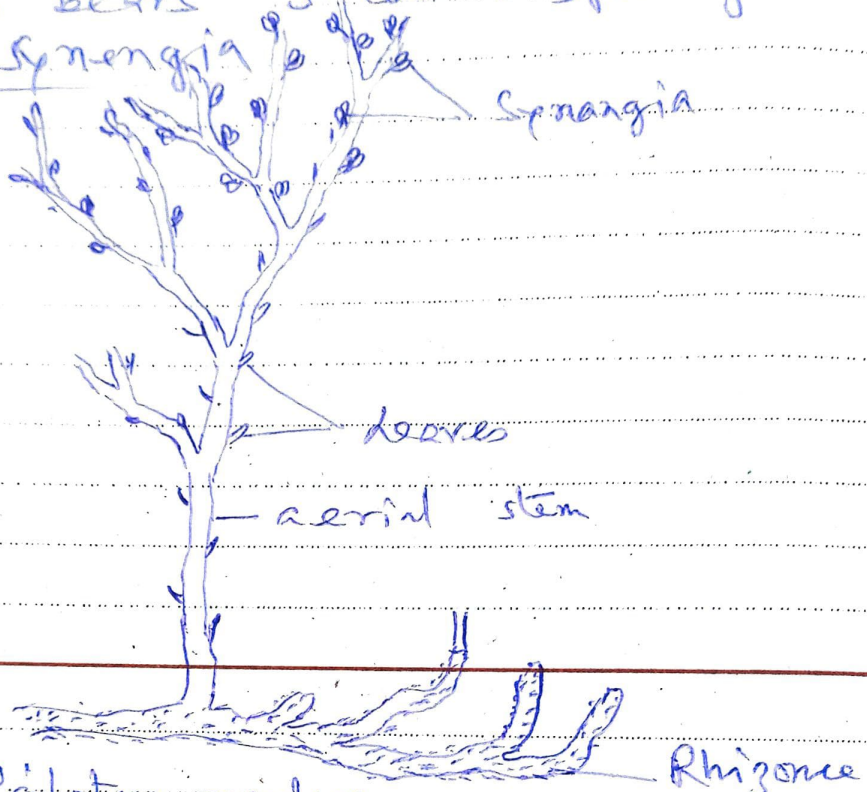
scale-like non vasculated leaves which are arranged spirally on it. On the upper regions of the stem, the leaves transform into fertile appendages which bears 3-lobed sporangia also known as Synangia




Psilotum nudum

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Anatomy of stem:

A transverse section of the stem reveals the following structures as —

Epidermis: The outermost single layer epidermis is composed of elongated cells which is nearly cutinized and interupted by stomata.

Cortex: Next to epidermis a broad cortical region is present which is differentiated into 3 regions —

① The outer cortex below the epidermis is made of thin-walled elongated cells with inter cellular

spaces. The cells contain ~~chlo~~ chloroplast and starch grains.

(ii) The middle cortex is composed of vertically elongated sclerenchymatous cells. They provide mechanical strength to the plant.

(iii) Inner cortex several layered and made of parenchyma cells having starch grain.

Endodermis: The cortical region is limited by a single layered Endodermis having Casparian strip.

Pericycle: Next to Endodermis is the single layered pericycle, made of thin walled cells.



Vascular Region:

The vascular region is typically Protostele in rhizome and becomes ~~sp~~ siphonostele in upper region of aerial stem. The xylem appears as star-shaped mass with projecting rays. The number of lobes reduces towards upwards. Xylem shows exarch arrangement. The protoxylem is of spiral or scalariform elements whereas metaxylem consist of scalariform or pitted tracheids.

The phloem surrounds the xylem and occurs in the form of a narrow irregular bands of sieve elements.

The stem has a large pith of sclerenchymatous fibre along with parenchyma cells.

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Anatomy of leaf:

One so-called leaves of Psilotum are small scale-like appendages without mid rib. The outermost layer is cutinized epidermis without stomata. Below the epidermis are photosynthetic parenchyma cells with intercellular spaces. There is no vascular bundle in the appendages, but a little leaf trace is present at the base of the appendage (e.g. flaccidum)

Reproduction:

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stomata that are

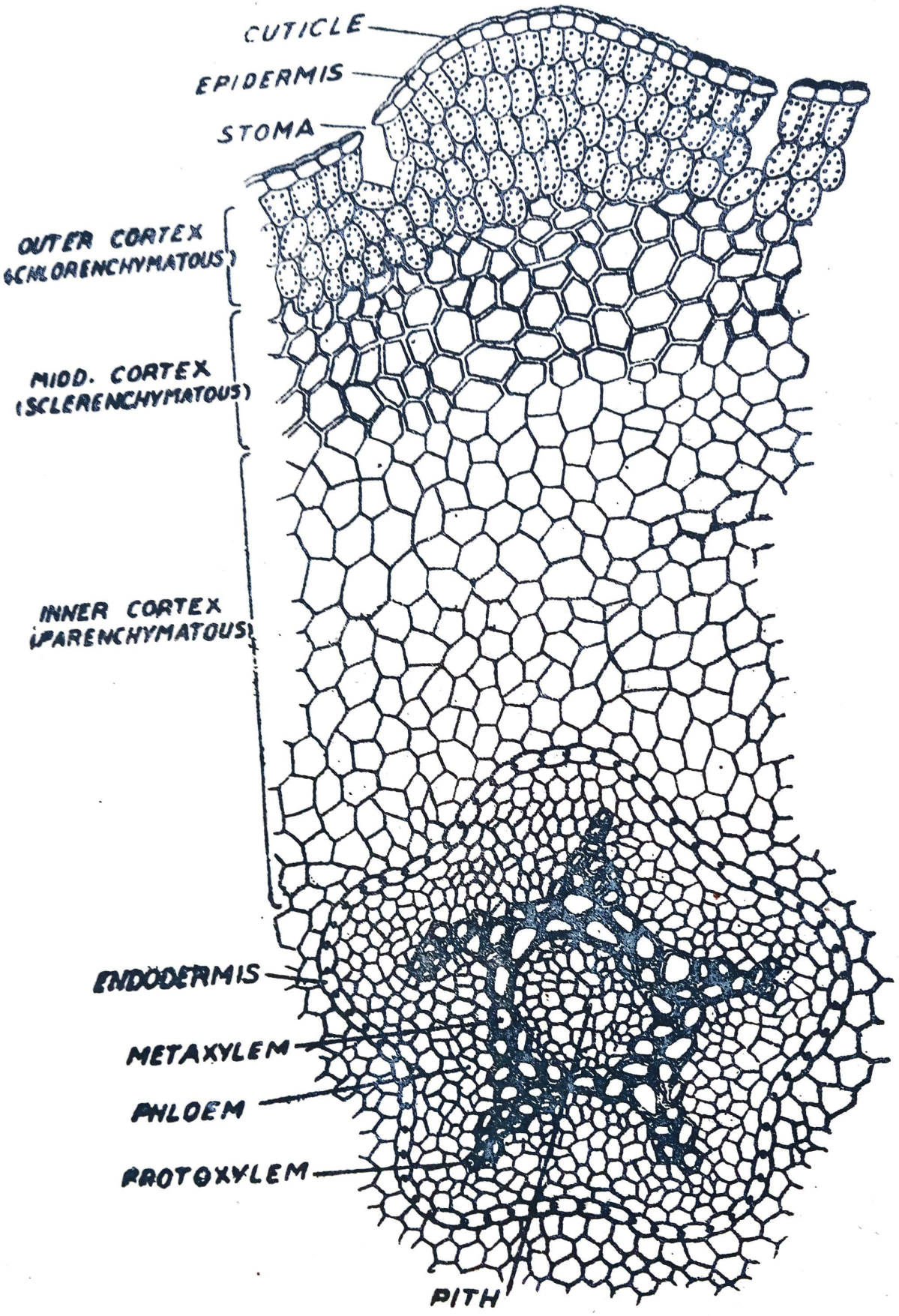


Fig. 3·2. **Psilotum nudum.** T.S. of a portion of aerial stem near the upper region.

**Cortex.** Next to the epidermis there is broad cortical zone