

Topic: Gnetum; Structure of Sporophytic Plant Body

B.Sc. Botany Hons. II

Paper: III Group:

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Leaf of *Gnetum*

External Morphology:

- *Gnetum* exhibits leaf dimorphism bearing both the foliage leaves and scale leaves.
- A dwarf shoot bears 9 to 10 foliage leaves, arranged in an opposite decussate manner.
- The leaves are large, simple having an oval-shaped broad coriaceous lamina with unicostate reticulate venation.
- The leaves are exstipulate, shortly petiolate with entire margin.
- The leaf of *Gnetum* resembles a dicot leaf.

Internal Structure:

- Anatomically, the leaves of *Gnetum* resemble those of dorsiventral dicot leaves.
- The epidermis (both upper and lower) has undulating walls, covered with thick cuticle.
- The mesophyll is differentiated into palisade and spongy parenchyma.
- The palisade consists of single-layered compactly arranged elongated cells.
- The spongy parenchyma is composed of loosely arranged lobed cells.
- In addition, some spicular cells, sclerotic cells, latex tubes and fibres are also present.
- The vascular bundles are arranged in a curved in the midrib region.
- Each bundle is of conjoint, collateral and endarch type with an adaxial xylem and abaxial phloem.

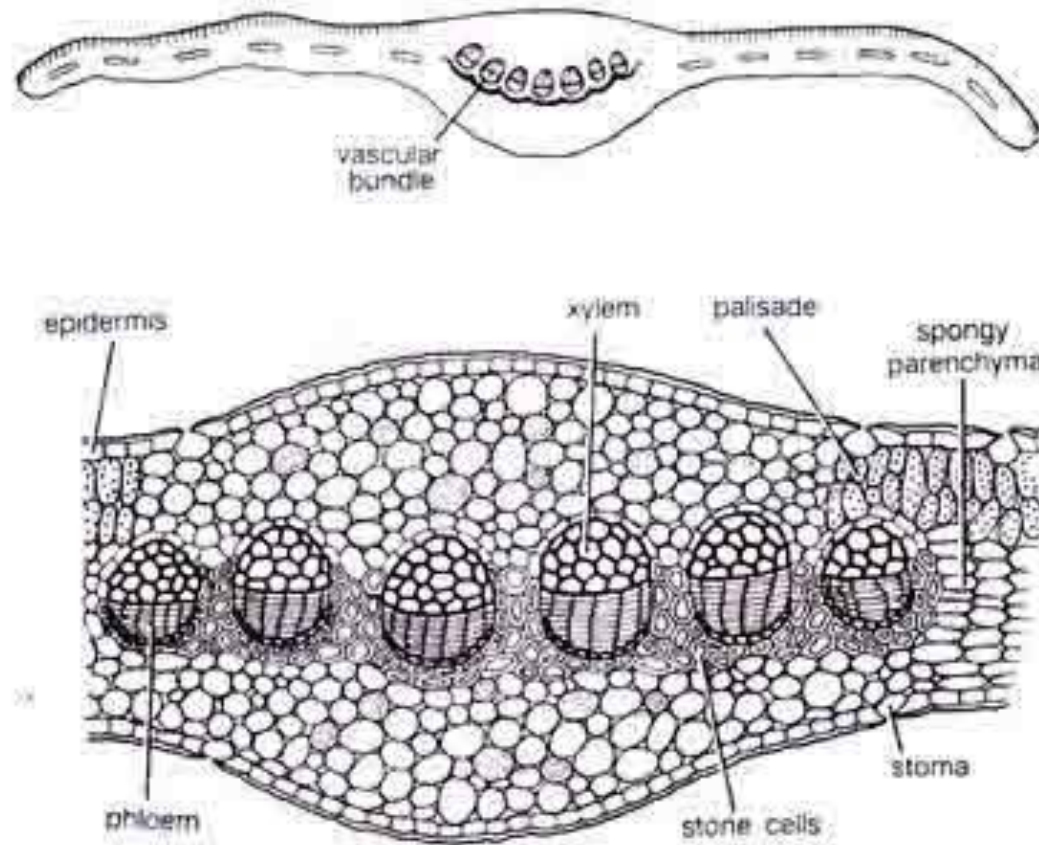


Fig. *Gnetum* Upper-T.S. leaf (diagrammatic) , Lower-T.S. leaf (a part cellular)

- There are distinct patches of stone cells outside the phloem.
- The xylem is composed of vessels, tracheids and xylem parenchyma, while the phloem consists of sieve cells and phloem parenchyma.
- Transfusion tissue is present in the petiole in association with vascular bundles.
- According to Takeda (1913) and Florin (1931), the stomata of *Gnetum* is of syndetocheilic type (i.e., both the guard cells and subsidiary cells develop from a common stomatal initial).
- But, Maheswari and Vasil (1961) reported that the development of stomata in *G. ula* is haplocheilic where the stomatal initial forms only guard cells, while irregularly arranged epidermal cells around them do not function as subsidiary cell.