

Leaf Structure in *Tabebuia* Games (Bignoniaceae)

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Abstract

Leaf anatomy of three species of belonging to genus *Tabebuia* have been investigated. The leaves are simple linear, oblong, ovate. The leaves are dorsiventral and hypostomatic. The stomata absent on the adaxial surface and present on abaxial surface. The mesophyll is differentiated into palisade and spongy tissue in all species. The palisade is three layered in *Tabebuia argentea*, palisade is one to two layered in *T. Pallida* and palisade is two layered in *Tabebuia sp.*

INTRODUCTION

Studies on leaf structure have been provided valuable characters for systematics. Canne-Hillier and kampay (1991) have advocated that the leaf characters have systematic utility in *Agalinis*. Sistrunk and Tucker (1974) have investigated the leaf development in *Doxantha unguis- cati* and indicated polymorphic structure. Perisamy and Muruganathan (1985) have made a detailed study on the ontogeny of palmately compound leaves in *Tabebuia pentaphylla*. Ogundipe and Wujuk (2004) have worked out on the leaf structure in some African species of Bignoniaceae.

In earlier communication taxonomic importance of vessel elements in some Bignoniaceae and Nodal Vasculature in some Bignoniaceae were presented (Aswale and Sutar 2021a, 2021 b).

MATERIALS AND METHODS

Plant material of 3 species of *Tabebuia* i.e. *Tabebuia argentea* (Burand scheme) Britt, *Tabebuia pallida* (Lindl) Miers and *Tabebuia sp.* were collected from Botanical garden of Dr. Babasaheb Ambedkar Mararhwada University, Aurangabad. Transections of leaf were taken at

middle region and the customary dehydration and staining methods followed using safranin and light green.

Observations

Tabebuia argentea (Fig.-1 a,b)

The leaves are dorsiventral and hypostomatic. the cells of adaxial epidermis are larger with thick outer walls. The cuticle is thick, the cells of abaxial epidermis are smaller. The cuticle is comparatively thin. Stomata are restricted to the abaxial surface, the guard cells with outer ledges. The parenchymatous hypoderm is located at adaxial side. It has one layered cells. The mesophyll is composed of palisade and spongy tissue. Palisade is three layered which is interrupted at many places by spongy tissue. The spongy tissue is of loosely arranged cells. The vascular bundles are many, collateral with xylem facing upwards. They extend through the spongy tissue. The midrib is distinct, raised above and lobed at abaxial side. The epidermis is followed by collenchymatous hypodermis. The cortex is parenchymatous. Many unequal sized vascular bundles occur in distinct ring. Some get interconnected to each other. Patches of sclerenchyma surround them. The pith is parenchymatous.

***Tabebuia pallida* (Fig.-2 a,b)**

The leaf is dorsiventral and hypostomatic. The adaxial epidermis is of unequal sized cells. The outer walls are with thick cuticle. The abaxial epidermis is of thin walled cells, with thinner cuticle. The stomata are restricted to abaxial surface. The guard cells have outer ledges. The parenchymatous hypoderm is located at adaxial side. It has one layered cells. The mesophyll is of palisade and spongy tissue. The palisade is one to two layered and spongy tissue is of loosely arranged cells. The vascular bundles are many, collateral and extend through the mesophyll. The midrib is distinct raised above with unlobed abaxial side. Next to epidermis, the collenchymatous hypodermis is followed by parenchyma. The vascular tissue consists of three-four vascular bundles which form a ring. The patches of sclerenchyma surround the vascular tissue. Pith is parenchymatous.

***Tabebuia* Species (Fig.-3 a,b)**

The leaves are dorsiventral and hypostomatic. the cells of adaxial epidermis are larger with thick outer walls. The cuticle is thick. The cells of abaxial epidermis are smaller. The cuticle is thin on lower surface. the stomata are confined to abaxial surface. The guard cells are with outer ledges. The parenchymatous hypoderm is located at adaxial side. It has one layered cells. The mesophyll is composed of palisade and spongy tissue. The palisade is two layered. The spongy tissue is of loosely arranged cells. The vascular bundles are many and collateral with xylem facing upwards. They extend through spongy cells. The bundle sheath is parenchymatous. The midrib is distinct but raised above and has lobed abaxial side. The epidermis is followed by collenchymatous hypodermis. The cortex is parenchymatous. The vascular tissue is in the form of ring. The sclerenchymatous patches are associated with it. Pith is parenchymatous.

Discussion

The leaves are variable and they are mostly dorsiventral and hypostomatic. The cells of epidermis vary in size, shape, form and occurrence. Beneath the adaxial epidermis a hypoderm of single layer is recorded, Solereder (1908), Metcalf and Chalk (1950) describe one or several layered

hypoderm in *Pandorea jasminoides* and *Schlegelia parasitica* respectively on the upper side of leaf. Suradkar (1987) reported such type of hypoderm in some species of Anacardiaceae. Hufford (1992) showed its occurrence in *Bessaya* of Scrophulariaceae.

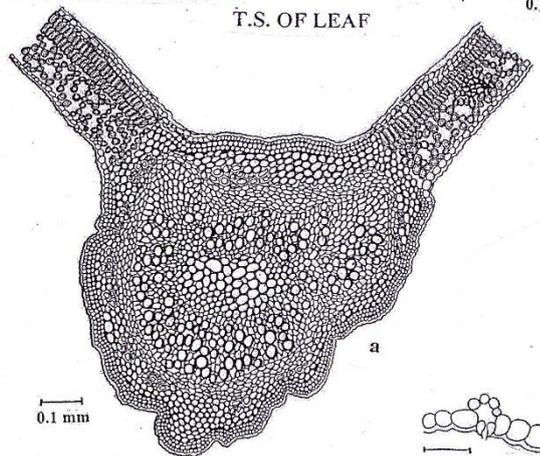
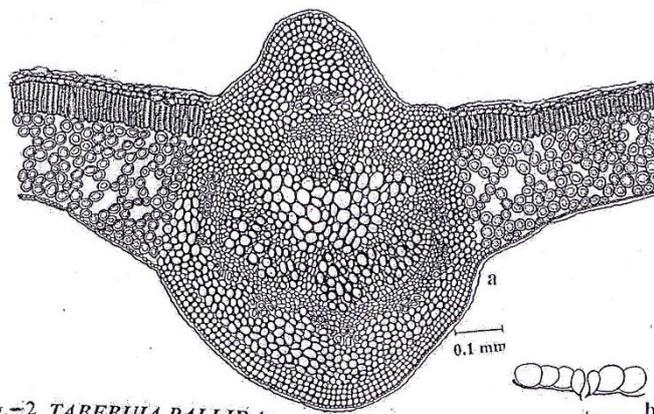
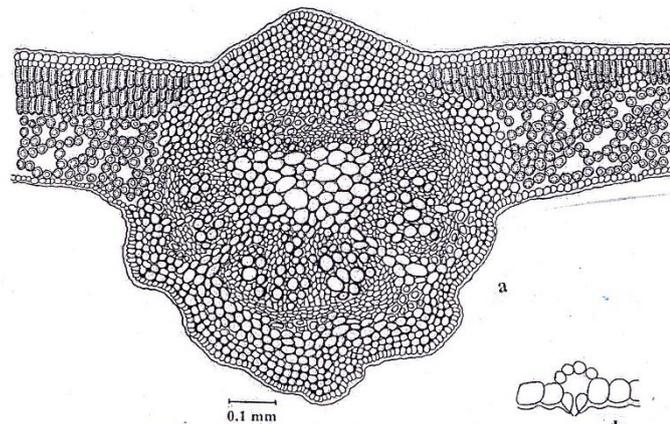
The mesophyll is differentiated into palisade and spongy tissue. Palisade is three layered in *Tabebuia aegentia* one to two layered in *Tabebuia pallida* and two layered in *Tabebuia* sp. These three species can be separated on the basis of variation in palisade.

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