International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Anatomy Concerning Leaf of *Ficus Carica* Linn.

Sneha Y. Ingle[1], Surekha S. Tayade[2]

Email: [1]*syingle7[at]gmail.com*, [2]*surekhatayade19[at]gmail.com*

Abstract: ***This paper refers to the anatomical features of Ficus carica Linn. (Moraceae). Phytochemical study displayed it has wide variety of chemical constituents, used in traditional medicine as remedies for many health problems, and its biological activities. However, there is little information available on anatomy, anatomy concerning leaf, petiole and stem of Ficus carica Linn. described in detail in this paper. The most remarkable therapeutic effects include anticancer, hypolipidemic, hepatoprotective, hypoglycemic and antimicrobial activities. The capitate secretive trichomes observed on abaxial epidermis. Abundant crystals, tannin cells, laticifers were noted. Anatomical information included in this paper will be useful for further research to discover the potential of Ficus carica Linn.***

Keywords: *Ficus carica* Linn., Anatomy, Crystals, Tannin cells etc.

1. Introduction

Ficus carica Linn. is one of the oldest deciduous tree of family Moraceae, cultivated for figs. Pomological characteristic is a device for identification of fig successions. *Ficus carica* Linn. has been broadly used as traditional medicine in several countries. All parts of this plant have been used in the treatment and prevention of numerous health complications. Flavonoids are the main bioactive compounds in this plant and different extracts have been found to possess biological activity. Less toxicity of this plant represent the possible uses as therapeutic remedy for several ailments. *Ficus carica* Linn. is adaptable for arid and semi-arid region. The plant has been used traditionally to treat various disorders such as gastric problems, cancer and inflammation. Phytochemical studies on the leaves and fruits of the plant have shown that they are rich in phenolic, organic acids, and volatile compounds. The lobed leaves of *Ficus carica* Linn. are harsh in surface but appear less equipped in mechanical tissue.

2. Material and Method

The plant material of *Ficus carica* Linn. was collected from different localities in Amravati and botanical garden of GVISH Amravati in early of January 2018. Species grows in semi-arid, dry local region.

Confirmation of species was made with standard floras. The required samples of leaf, petiole and stem were cut and fixed in formalin solution; hand cut sectioning had been taken with the help of raiser. Permanent slides were prepared by double staining method. Under different magnifications of light microscope slides were studied, and detail microscopic features of each section of leaf, petiole and stem were noted.

Morphology and macroscopic characters

Large shrub or small tree deciduous, aerial erect, solid cylindrical, branching from base, hairy, brown, leaf simple alternate, 5 ranked or 2/5, 8-30 cm long and 12-25 cm broad, petiole filiform terete 2-5 cm, stipules two caduceus leaving scar on falling, ovate, margine crenate, serrate, apices acute, subacute, and obtuse, surface rough hairy base and upper pubescent hairs, Reticulate unicosted venation, base cordate, inflorescence hypanthodium.

Transverse section of leaf

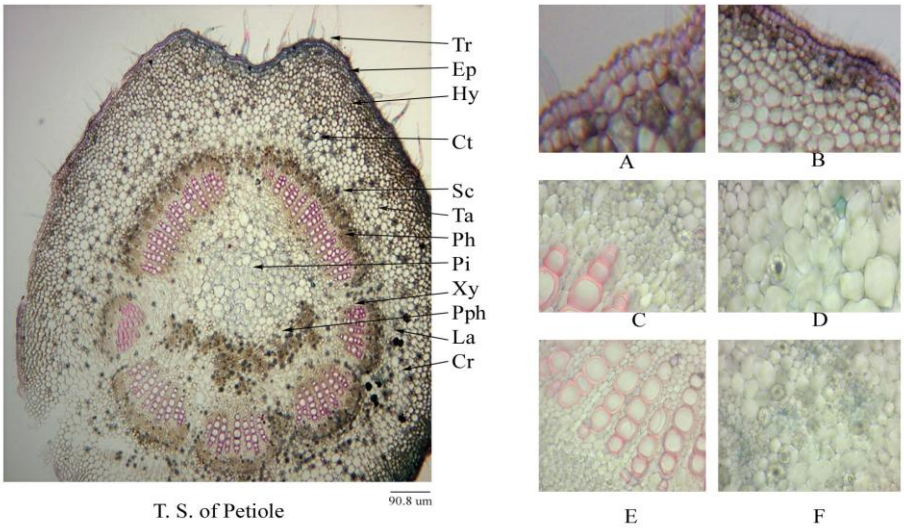
Lamina:

Upper epidermis with elongated large cells, single layered; below the epidermis mesophyll with 2-3 layered palisade cells, spongy parenchyma loosely arranged lower epidermis with elongated cells but cell size was smaller as compared to upper epidermis, capitate secretive trichomes on lower epidermis. Trichomes were both glandular and non-glandular type noted. Stomata present on abaxial surface and absent on adaxial surface.

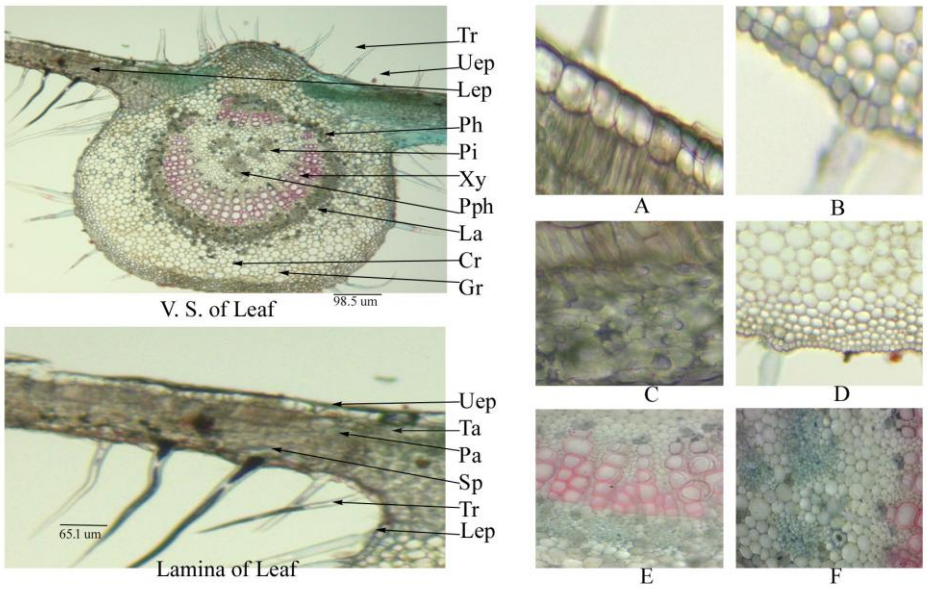
Midrib:

Cuticle thin, upper epidermis with single layered papillose cells, below that collenchyma cells forms 7-8 layers, simple parenchyma loosely arranged, vascular bundles form incomplete ring like structure, in central portion some phloem patches with conjunctive tissue, surrounded by xylem, lower epidermis was as same as upper. Large trichomes were noted both on lower and upper side, trichomes were unicellular nonglandular and glandular type. Crystals were present in large quantity in ground tissue, in vascular bundles and pith region. Many latex ducts recorded in ground tissue.

PHOTOPLATE- XI B
***Ficus carica* L.**



T. S. of Petiole: (M-4X) Tr- Trichome, Ep- Epidermis, Hy- Hypodermis, Ct- Cortex, Sc- Sclerenchyma fibres, Ph- Phloem, Xy- Xylem, Pi- Pith, Cr- Sphaeraphide crystals, La- Laticifers, Pph- Perimedullary phloem patche Ta- Tannin cells
A- Epidermis, B- Hypodermis and cortex, C- Sclerenchyma fibres and phloem, D- Crystals, E- Xylem, F- Peri-medullary phloem patches



V. S. of Leaf: (M-4X) Tr- Trichome, Uep- Upper epidermis, Lep- Lower epidermis, Pa- Palisade tissue, Sp- Spongy tissue, Hy- Hypodermis, Gr- Ground tissue, Sc- Sclerenchyma fibres, Ph- Phloem, Xy- Xylem Pi- Pith, Pph- Perimedullary phloem patche, La- Laticifers, Cr- Crystals, Ta- Tannin cells
A- Upper epidermis, B- Lower epidermis, C- Palisade tissue and Spongy tissue, D- Hypodermis and ground tissue, E- Vascular bundle, crystals, F- Perimedullary phloem patches

3. Conclusion

The species showed presence of latex, crystals, tannin. The Data in present study provide detail Anatomical information which will be very useful for researchers and students. Latex ducts were recorded in leaf midrib structure. Trichomes were both glandular and non-glandular types present on same leaf transverse section. Cystolith trichomes present on leaf of *Ficus carica* L.

References

[1] Abdelhakim Bouyahya, Mariem Bensaid, Youssef Bakri and Nadia Dakka (2016). Phytochemistry and ethnopharmacology of *Ficus carica. International Journal of Biochemistry Research & Review,* 14 (1), 1-12.

[2] Ali, Z. A., Mustafa, N. S., Abdeal-Raouf, H. S., El-Shazly, S. M. and El-Berry, I. M. (2013). Characterization of some fig cultivars by anatomical traits on both leaves and stems, J. World applied sciences, 24(8). pp. 1065-1071.

[3] Almeida, M. R. (2003). Flora of Maharashtra, Orient press, 4(B). pp. 356-370.
[4] Baby Joseph, and S., Justin Raj (2011). Pharmacognostic and Phytochemical Properties of *Ficus carica* Linn -An Overview. *International journal of Pharmtech Research,* 3(1), 08-12. Barbarous Yaman (2014). Anatomical Differences Between Stem and Branch Wood of *Ficus carica* L. Subsp. *carica*. *Modern Phytomorphology,* 6, 79-83.
[5] Badii Gaaliche., Olfa Saddoud. and Messaoud Mars., (2012). Morphological and Pomologicaldiversity of Fig *Ficus Carica* Cultivars in North West of Tunisia, *Hindawi, http://dx.doi.org/10.5402/2012/326461,* 1-5.
[6] Bercu, R. and Popoviciu, D. R. (2014). Anatomical study of *Ficus carica* L. leaf. *Annals of R. S. C. B.*, 19(1), 33-36.
[7] Chawla Anshul, Kaur Ramandeep and Sharma Anil Kumar (2012). *Ficus carica* Linn.: A review on its pharmacognostic, phytochemical and pharmacological aspects. *International Journal of Pharmaceutical and Phytopharmacological Research*, 1(4), 215-232.
[8] Dhore, M. A. (2002). Flora of Amravati district with special reference to the distribution of tree species, 2nd ed. Amaravati University, Amravati, pp. 306-308.
[9] Kaji, C. Morita, T. and Kuroda, K. (2014). Laticifers of *Ficus carica* and their potential role in plant defense, *International Association of Wood Anatomists*, 35(2), 109-115.
[10] Kirtikar, K.R., Basu, B.D. (1956). Indian medicinal plants, Lalit Mohan Basu; Allahabad, PP. 22-23.
[11] Metcalfe, C. R., and Chalk. (1950). Anatomy of the dicotyledons, clarendon press, Oxford. Vol. I and II. 6 and 2. pp. 65-78.
[12] Murty, Y. S., Johri, B. M., Mohan Ram, H. Y. and Varghese, T. M. (1972). Advances In Plant Morphology, Sarita Prakashan, pp. 76-84.
[13] Naik, V. N. (1998). Flora of Marathwada. Amrut prakashan, MIDC Station road, Aurangabad, 2, pp. 808-814.
[14] Okeke, C. U., Iroka, C. F., Izundu, A. I., Okereke, N. C., Onwuasoeze, C. I. and Nyananyo, B. L. (2015). Comparative systematic leaf and petiole anatomical studies of the genus Stachytarpheta found in Awka Nigeria, J. JMPS, 3(4), PP. 82-84.