J. Phytol. Res. 13 (2) : 179-181, 2000

STUDIES ON THE NODAL ANATOMY OF THE SEEDLINGS OF SOME TILIACEAE

Y. J. THANKI, K. K. GARASIA and KETAKI SHAH

Department of Bio-sciences, South Gujarat University, Udhna Magdalla Road, Surat - 395 007, Gujarat, India.

The nodal anatomy of cotyledonary node and first leaf node of seven species of Tiliaceae has been studied. The cotyledonary node is unilacunar single trace or two trace and first leaf node is unilacunar single trace or trilacunar depending upon the species. The approximation of two traces from cotyledonary node and of three traces from first leaf node forms a single trace in lamina region. This suggests that the unilacunar single trace node is a derived character.

Keywords : Anatomy; Node; Seedlings; Tiliaceae.

The nodal anatomy has always been of interest to the investigators as it is significant in the systematic and phylogenetic studies[1-10]. However, there is no information about the nodal anatomy of the seeding of Tiliaceae. The present study is, therefore, carried out on the cotyledon and first leaf of seedlings in seven species of Tiliaceae, which are *Corchorus aestuans L., C. capsularis L., C. fascicularis Lam., C. olitorius L., C. trilocularis L., Grewia subinequalis DC.* and *Triumfetta rhomboidea Jacq.*

The various parts of seedlings were processed through the usual procedures for microtomy. The serial transections of cotyledonary and first leaf node; and of other parts viz., petioles, lamina of cotyledons and first leaf were taken and stained with mordant safranin and FCF fast green[11]. The diagramatic illustrations were made by using camera lucida.

Cotyledonary node : There are two opposite foliaceous, simple, petiolate, exstipulate and green cotyledons present at the cotyledonary node. In the various species of *Chorchorus* the cotyledonary node is unilacunar single trace as only one trace departs from each of the two opposite lateral sides of the central vascular cylinder and traverse obliquely into the base of cotyledon (Fig. 1A-C). It forms a single central vascular strand of cotyledonary petiole and is extended as a single central strand of midrib.

The Cotyledonary node in *G. subinequalis* and *T. rhomboidea* is unilacunar two trace as two traces depart from each of the two opposite lateral sides of central vascular cylinder. The approximation of these two traces during their further course in the cotyledonary base forms a single trace in the cotyledonary petiole and midrib (Fig. 1D-G).

First leaf node : This node has a single, simple, petiolate, exstipulate (except *G. subinequalis* and *T. rhomboidea*), small, green leaf.

The first leaf node is unilacunar single trace in *C. aestuans, C. capsularis, C. olitorious* and in *C. trilocularis.* In these species a single leaf trace after its departure from the vascular cylinder enters in the leaf base and traverse as a single central strand of petiole and midrib. (Fig. 1H-K).

The first leaf node is trilacunar in *C. fascicularis, G. subinequalis* and *T. rhomboidea.* The larger median trace along with laterals extend into the petiole (Fig. 1L-N). They traverse separately into the petiole (Fig. 1N) and come closer towards the distal end of petiole and form a single crescentic strand before entering into the midrib of lamina by approximation (Fig. 1O). Midrib has a single crescentic strand.

The present study shows that in the species having unilacular single trace cotyledonary and first leaf node, the trace enters into the base of petiole without

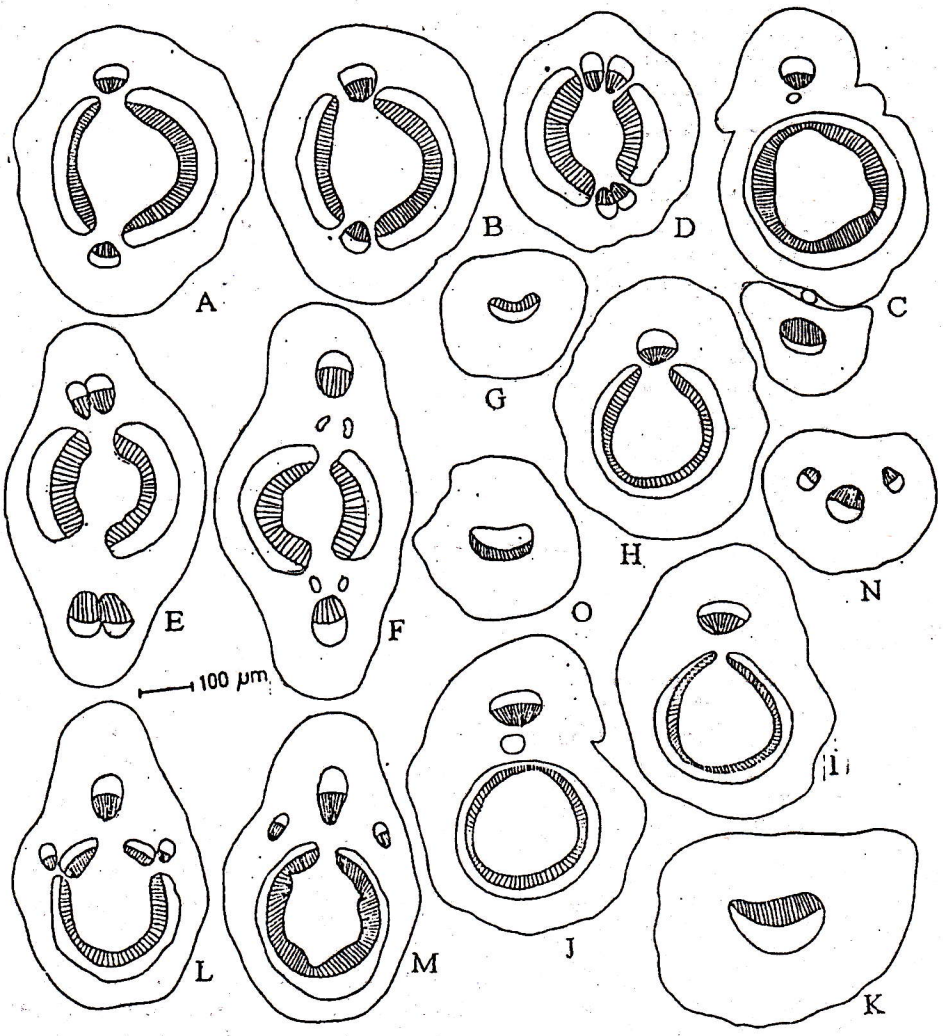

Fig. 1A-O. A-F, cotyledonary node; H-J,L,M, first leaf node; G, cotyledonary petiole; K,N, leaf petiole; O, distal end of leafpetiole. (A-C, C. *fascicularis;* D-G, *T. rhomboidea;* H_K, *C. capsularis;* L-O, *G. subinequalis*).

splitting and forms a single strand of petiole. In *G. subinequalis* and *T. rhomboidea* the approximation of two traces of unilacunar cotyledonary node forms a single strand of cotyledon. Similarly, approximation of traces received from trilacunar node is observed in the distal end of the leaf petiole forming a single strand of midrib in *C. fascicularis, G. subinequalis* and *in T. rhomboidea.* The approximation of traces is a derived character[1,3,8].

The cotyledonary node is normally described as conservative and less alterable[1,4]. In other work the cotyledonary stage of a seedling exhibits ancestral characters. This is supported by the occurrence of unilacunar two trace cotyledonary node in *G. subinequalis* and *in T. rhomboidea,* where the first leaf node of same plants exhibits trilacunar node. At the same time rest of the taxa under study show derived cotyledonary nodal structure i. e., unilacunar one trace node.

References

1. Bailey I W 1956, *J. Arn. Arbor.* **37** 269
2. Bisalputra T 1962, *Aust. J. Bot.* **10** 13
3. Canright J E 1955, *J. Arn. Arbor.* **36** 119
4. Carlquist S 1961, *Comprative Plant anatomy,* Holt, Rinehart and Winston N Y
5. Fahn A and Baily I W 1957, *J. Arn. Arbor.* **38** 107
6. Howard R A 1974, *J. Arn. Arbor.* **55** 125
7. Kumar A 1976, *Acta. Bot. Indica* **4** 76
8. Marsden M P F and Bailey I W 1955, *J. Arn. Arbor.* **36** 1
9. Sinnott E W 1914, *Am. J. Bot.* **1** 303
10. Sinnott E W and Bailey I W 1914, *Am. J. Bot.* **1** 441
11. Berlyn C P and Miksche J P 1976, *Botanical microtechnique and cytochemistry* Ames Iowa.