

COMPARATIVE NODAL ANATOMY OF SOME TAXA OF MYRTACEAE

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The present study is carried out on the nodal anatomy of nine species of Myrtaceae. The node is unilacunar single trace except *Barringtonia acutangula* where unilacunar three trace node is observed. Cortical vascular strands which are reported in the node of *B. acutangula* and *Couroupita guianensis* contribute to leaf vasculature only in *B. acutangula*. The nodal characters are used for the taxonomic position of genera.

Keywords: Myrtaceae; Nodal anatomy.

Introduction

Nodal anatomy has been an active area of interest as it is useful in understanding of natural relationship^{1,2}. Several workers have contributed on the structure and classification of nodes³⁻⁷. No detailed information is available on the structure of the nodes of Myrtaceae. The present work is carried out on the nine species of Myrtaceae with a view to have a comparative account of internal structure of node and its significance in the taxonomy. The taxa under study are *Barringtonia acutangula* Gaertn., *Callistemon lanceolatus* DC., *Couroupita guianensis* Aubl., *Eucalyptus umbellata* Domin., *Myrtus communis* L., *Psidium guajava* L., *Syzygium caryophyllatum* L., *S. cuminii* L. and *S. malaccense* Merrill and Perry.

Materials and Methods

The nodes and leaves were fixed in FAA, dehydrated in TBA-series and embedded in Paraffin wax for microtomy⁸. Serial transections of nodes and petioles were stained with Safranin and Fast green.

Observations

The shoot has petiolate leaves which are produced in opposite manner in *M. communis*, *P. guajava*, *S. caryophyllatum* and *S.*

malaccense. Their arrangement in other taxa is alternate.

In the nodal region the axial vascular system is consisted of a close cylinder with extensive secondary vascular tissue. An arc shape vascular trace departs from the central vascular cylinder leaving a parenchymatous leaf gap for each leaf at a node in *Callistemon lanceolatus*, *E. umbellata*, *M. communis*, *P. guajava*, *S. caryophyllatum*, *S. cuminii* and *S. malaccense* (Fig. 1A-D). It remains unbranched during its course and enters into petiole. Hence the nodal condition is unilacunar single trace. The leaf trace subsequently remains undivided and forms a single arc shape vascular strand of petiole and further extended as a central strand of midrib. Later, a bud trace diverges from the vascular cylinder which is smaller in the size (Fig. 1B,C).

There are few smaller and larger cortical vascular strands present in *B. acutangula* and *Couroupita guianensis* in addition to central vascular cylinder (Fig. 1E-H). In *B. acutangula* three leaf traces depart from the vascular cylinder forming a single gap. This nodal structure is unilacunar three trace in which the cortical strands do not contribute for the leaf vasculature. The leaf traces enter into petiole without branching or amalgamations (Fig. 1E-F).

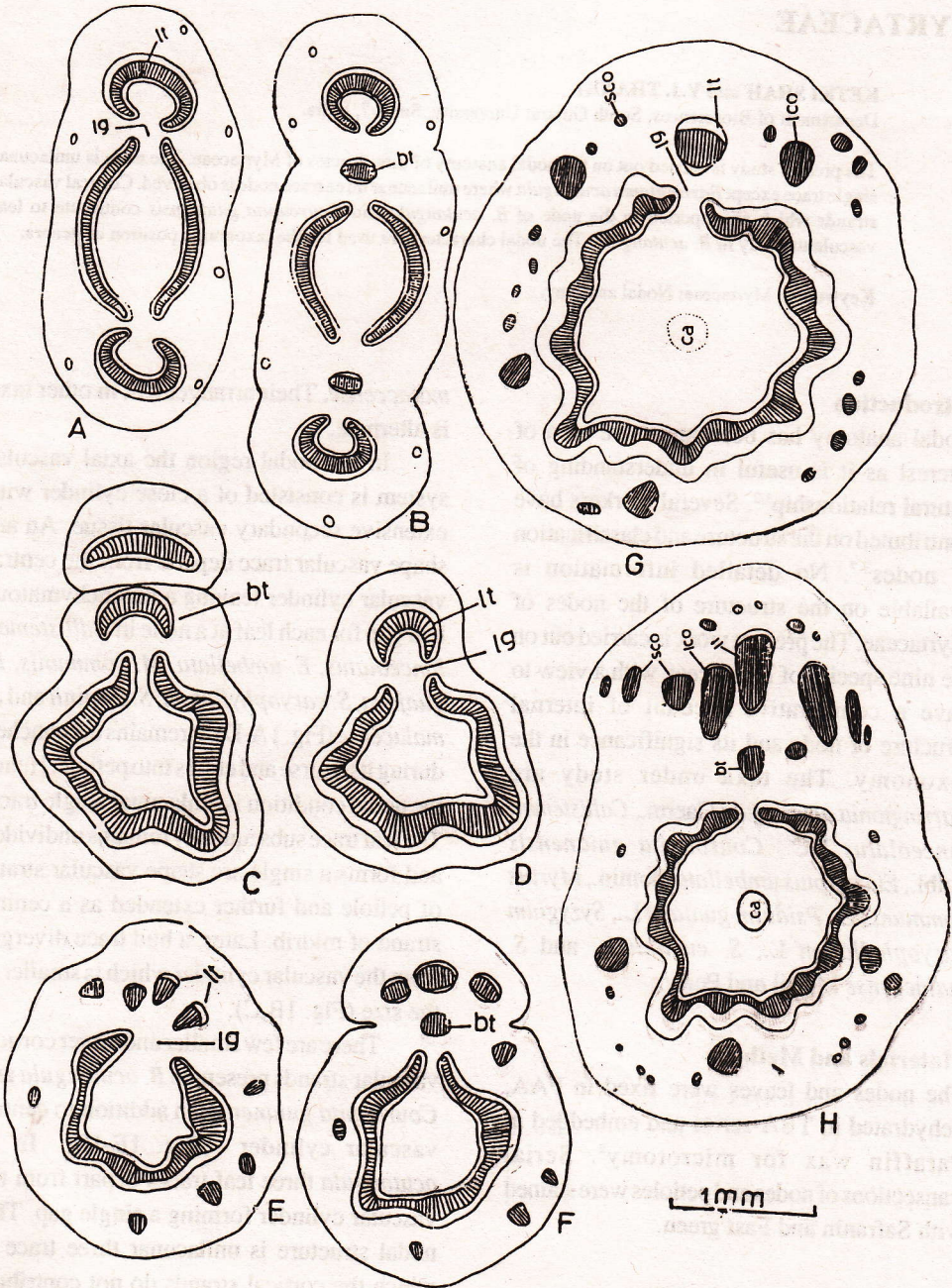


Fig. 1A-H. Transections of nodal region. A,B. *S. caryophyllum*; C,D. *Callistemon lanceolatus*; E,F. *B. acutangula*; G,H. *Couroupita guianensis*. (bt, bud trace; ca, central cavity; lco, large cortical strand; lg, leaf gap; lt, leaf trace; sco, small cortical strand).

Node is unilacunar single trace in *Couroupita guianensis* where a single leaf trace is formed. When it traverse towards leaf base, few cortical vascular strands are also extended to the petiole and contribute for the petiole vasculature (Fig. 1G-H).

Discussion

Cortical bundles are present in many families of dicotyledons⁹. The reports of their contribution to the vascular system of leaf are few¹⁰⁻¹³. In the present study it is found that the cortical strands of *Couroupita guianensis* do not associate with the vascular system of petiole but of *B. acutangula* contribute to the leaf vasculature. Balfour and Philipson¹¹ suggested that they have varied roles in their relationship to particular vascular system and in their contribution to the vascular supply of the leaf.

The presence of cortical strands and their relationship with leaf vasculature in *B. acutangula* and *Couroupita guianensis*; and departure of three leaf from the vascular cylinder in *B. acutangula* indicate that they differ from the other taxa of Myrtaceae in

nodal characters which support the separation of *Barringtonia* in the Barringtoniaceae and *Couroupita* in the Lecythidiaceae from Myrtaceae by Hutchinson¹⁴.

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