

COMPONENTS OF VASCULAR TISSUE IN
THE CORM OF *ISOETES TAIWANENSIS*

Volume 31

June, 1986

Su-Hwa Tsai Chiang & Shu-Yu Chen*

(Received for publication October 8, 1985 and in revised form February 26, 1986)

ABSTRACT

TAIWANIA

Three cell types, namely, parenchyma, phloem, and xylem, are recognized in the secondary vascular tissue of *Isoetes taiwanensis* (Lever). The cambium gives rise to several layers of phloem cells, alternating with several layers of xylem cells. The earliest radial derivatives are phloem cells. Phloem is composed of short cells only with some areas uniformly distributed on both radial and transverse walls, whereas xylem is composed of long cells with small amount of tracheids and vessels. One, occasionally two, radially free vascular tracheids (small tracheids) lying radially across the vessel walls are observed.

Editorial Committee

Chi-ying Huang, Editor-in-chief

INTRODUCTION

The corm of the genus *Isoetes* has long been the subject of structural and developmental studies. The anatomy of the corm of the genus has been made as early as 1865 by Van Mohl, and his studies have been followed by those of other workers (Yang, Chiang and Devoti, 1975), and the secondary vascular tissue of the corm, in fact, has been described by several workers (Rusow, 1921; Seng and Seng, 1973; Yang et al., 1975). Yang et al. (1975) have given a detailed description of the organization of xylem and phloem within the secondary vascular tissue of the corm of *I. taiwanensis*. A rather detailed description of the structure of the secondary vascular tissue of *I. taiwanensis* was provided by Tsai (1983).

Although occasional reports are made on results from electron microscopy (Krauss and Reuter, 1974; 1977), most of these studies refer to activities on optical microscopical level. The improvement of the transmission electron microscope (TEM) revealed the ultrastructure of various organelles, whereas the scanning electron microscope (SEM) shows and notes the surface as well as the entire intercellular association of the given tissue more evident. The previous reports have mentioned the general structure of the various cells in the vascular tissue of the corm of *I. taiwanensis* merely on the optical microscopic (OM) level (Chiang, 1976; Yang et al., 1975). The present report shows the peculiar distribution pattern of cell types in the secondary vascular tissue of the corm of *I. taiwanensis* as seen under SEM; contrasts them with that observed under OM in our previous work, and other species by the earlier workers.

The most important purpose is to correct the previous descriptions concerning the wall thickening of tracheids.

* (1983-1984) - Department of Botany, National Taiwan University, Taipei, Taiwan, R.O.C.

TAIWANIA

Information for Contributors

1. **Scope:** A manuscript should be an original research on any aspect of botanical science.
2. **Submission of manuscripts:** Submission of a paper to the Editor, Department of Botany, National Taiwan University, ROC will be held to imply that it has not previously been published; that it is not under consideration for publication elsewhere; and that if accepted it will not be published elsewhere in the same form, in English or in any other language, without the written consent of the Editors.
3. **Form of manuscript:** A manuscript must be in English. Manuscripts should be typewritten, with wide margins of high quality bond paper, using double or triple spacing throughout. Subdivision of articles into *Abstract, Introduction, Materials and Methods, Results, Discussion, Acknowledgements, and References* is recommended. The manuscript must begin with an English *Abstract*, and include a Chinese *Abstract* at the end. A proposed running head of no more than 30 characters should be included in Chinese and English.
4. **Tables:** Tables should be typed on separate pages, numbered consecutively with Arabic numbers and arranged at the end of the manuscript if possible. All tables must have descriptive headings and should be understandable without reference to the text.
5. **Illustrations:** Illustrations should be limited to materials essential for the text, and line drawings should be used wherever possible. Colored or previously published illustrations are not accepted except under special circumstances. All figures, whether photographs, graphs or diagrams, should be numbered consecutively. Please submit on separate sheets. Photo- or micrographs which are to appear as a group should be mounted together, with no spaces between the individuals. Line drawings should be submitted as original drawings. They should be drawn clearly in deep-black Indian ink on smooth white paper or Bristol board, the whole no more than the size of 18×14 cm. Each illustration should be provided with a concise but descriptive caption.
6. **Nomenclature of organisms:** Binomial Latin names, with authorities, should be used in accordance with the International Code of Botanical Nomenclature. Binomials should be underlined in the type-written copy. A brief Latin diagnosis for each new taxon is preferred to a complete Latin description and should be accompanied by appropriate illustrations. A specific name should not be used without an accompanying capitalized generic name. The generic name for each species should be written in full where it first occurs in the text, and again in the summary or abstract. Where the generic name appears frequently in the text it may be abbreviated by using the initial letter.
7. **Citation of specimens:** The citation of specimens should be concise. Geographic names are put in order of decreasing political magnitude. Only the barest essential data concerning each specific locality should be given. Collectors are cited by family name and collection number. If there is no collection number, the year of collection should be given. Herbaria are designated according to the current edition of *Index Herbarium*.
8. **Abbreviation:** Only standard abbreviations should be used. Abbreviations should be checked for consistency. Periods are used after all abbreviations except metric measures, compass directions, and herbarium designations.
9. **References:** The list of *References* should include only publications cited in the text. The references should be cited in alphabetical order under the first author's name, listing all authors, the date of publication, the full title of the paper, the abbreviated title of the journal, the volume number and the first and last page numbers. References to books should include the number of edition, the name of the publisher and town of publication. In the text a reference should be quoted by the author's name and the date placed in brackets, e.g. Chen & Thimann (1966) or both author's name and the date placed in brackets, e.g. (Chen & Thimann, 1966).

CHEN, S.H. and T. C. HUANG, 1980. Aeropalynological study of Taipei Basin, Taiwan. *Grana* **19**: 147-155.

LIN, C. Y., T. J. GUILFOYLE, Y. M. CHEN, R. T. NAGAO and J. L. KEY, 1974. The separation of RNA polymerase I and II achieved by fractionation of plant chromatin. *Biochem. Biophys. Res. Commun.* **60**(2): 498-506.

KEY, J. L. and L. N. VANDERHOFF, 1973. Plant hormones and developmental regulation: role of transcription and translation. In: S. J. Coward, ed., *Aspects of Cell Differentiation*. Academic Press, New York, pp. 49-83.
10. **Proof and Reprints:** Author will receive page proof. Authors will be charged for alternations on illustrations. Reprints must be purchased at cost plus postage.