Indian J.Sci.Res. 7(2) : 35-38, 2017

ISSN : 0976-2876 (Print)
ISSN : 2250-0138 (Online)

MORPHOLOGICAL STUDIES OF NEPALESE PTERIDOPHYTES-FAMILY-ASPIDIACEAE

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ABSTRACT

The occurrence of *Tectaria macrodonta* species belonging to the family Aspidiaceae is reported from Phulchauki, Nepal. The present paper deals with the anatomical details like structure of pinnae, structure of stomata, guard cells, other epidermal cells etc. Although several workers has reported about the pteridophytic plants from Nepal but it is the first time to work about the epidermal details of Nepalese fern.

KEYWORDS : Nepal, Epidermal Details, Ferns, Pinnules

The pteridophytes of Nepal Himalayas are well represented by nearly 70 genera and 400 species (Gurung 2002).Nepal is represented by the rich pteridophytic vegetation and it is constituted as one of the most important group of plants in this country. Nepal is also famous for its richness of pteridophytic plants among the botanists. In 1950's when Nepal is opened to the botanist from abroad, a new era of research on Nepalese ferns began. Many Japanese expeditions were planned to this country and explored. Thus a large number of plants of pteridophytes were collected. Nakao, Namikawa, Kawakita and others made exhaustive survey of these plants from Nepal and collected them. These are kept now in KYO. The enumerations of some important collections such as those of Kihara's Fauna and Flora of Nepal Himalaya (1955), Hara's Flora of Eastern Himalayas (1966-71) and Ohashi's Flora of Eastern Himalaya (1975) has given valuable knowledge about several species.

Aspidiaceae Mett.ex Frank

Terrestrial fern, ascending or creeping, clothed with narrow basally attached scales. Stipe erect and long, lamina simple to pinnately decompound or dissected, venation pinnate with the lateral veins free or variously anastomosing , sometimes forming a complicated network. Fertile leaf similar to that of sterile ones or with reduced lamina. Sori usually rounded, either at vein apices or superficial on veins and usually protected by a reniform indusium or sometimes exindusiate. Annulus of sporangium usually have 12-16 cells. Spores are distinct with a characterstic perine. This is either loose or adherent to the exine and both exine as well as perine are either spinulose or sometimes smooth. The lamina of early juvenile leaves is nearly entire with dichotomous veins.

MATERIALS AND METHODS

The material of *Tectaria* has been collected from Phulchauki, Nepal. Only one species *Tectaria macrodonta* is collected .

The collected specimens were dried and treated with mercuric chloride. The specimens were duly numbered. For the identification help has been taken from BSI (Central circle Allahabad) and thanks to Late Dr. R. D. Dixit for identified these plants.

For the study of cuticle, stomata and epidermal details, small pieces of mature pinnules were fixed in FAA. The usual technique employed by Pant school, has been employed. Epidermal peels were taken out by treating the material with Shulze's techniques of maceration. Venation pattern has been studied by making preparations of transparency using Foster's technique (Foster, 1966). Lastly it is mounted in euparol.

Spores were studied by Erdtman and Nair procedure. Several microchemical tests of Lignin, Cutin were made by Johnson (1940) techniques.

***Tectaria macrodonta* (Fee) C.Chr.- (Plate-A-J)**

Plant is terrestrial fern. Rhizome stout and strong, woody, stipes erect and long, creeping or erect, stipes 10-20 cm long and dark in colour. Fronds pinnate, 10-20 cm long, 5-10 cm broad, deltoid-oblong, broader at base and narrower at the tip, texture thinly herbaceous. Fertile and sterile pinnules are nearly same. Margin of pinnules are not smooth it is wavy. Sori are arranged in groups and in two

[1]Corresponding author

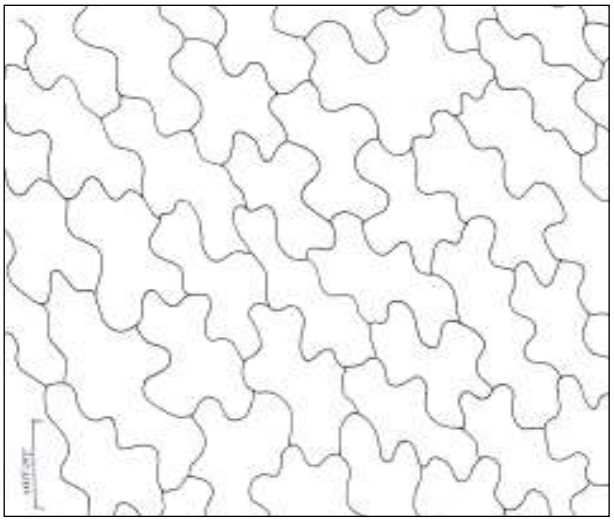

Plate A

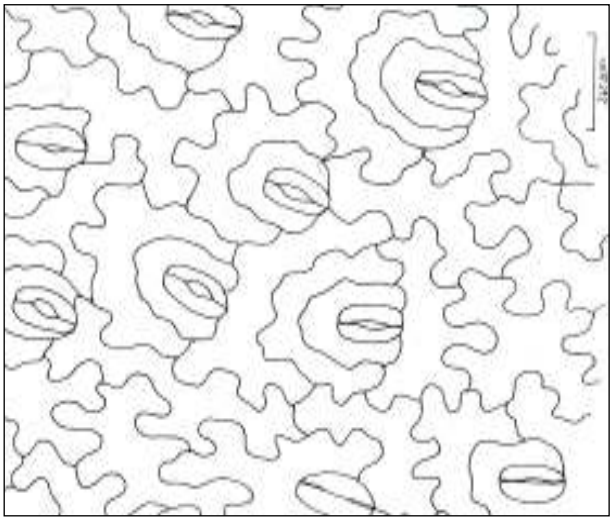

Plate B

Plate C

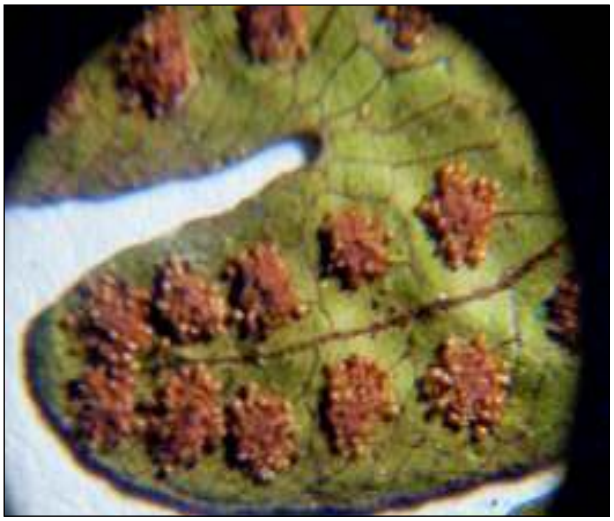

Plate D

Plate E

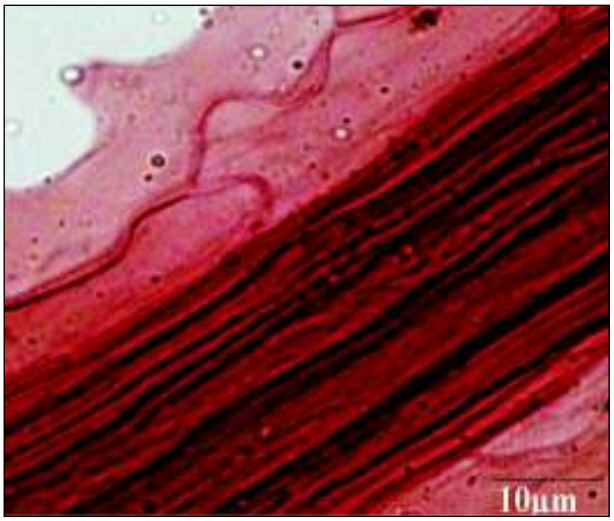

Plate F

Plate I

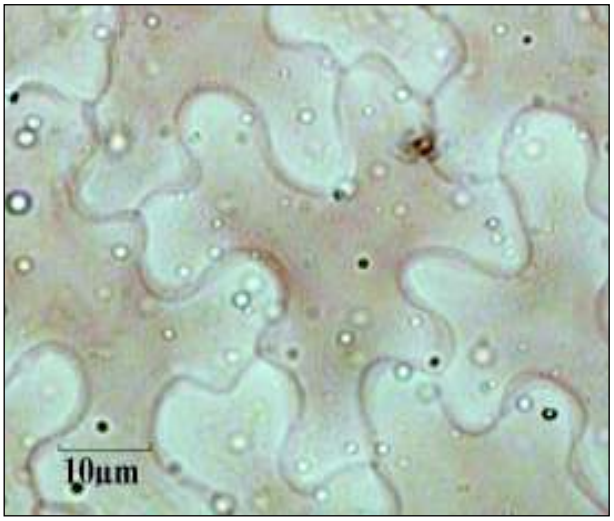

Plate G

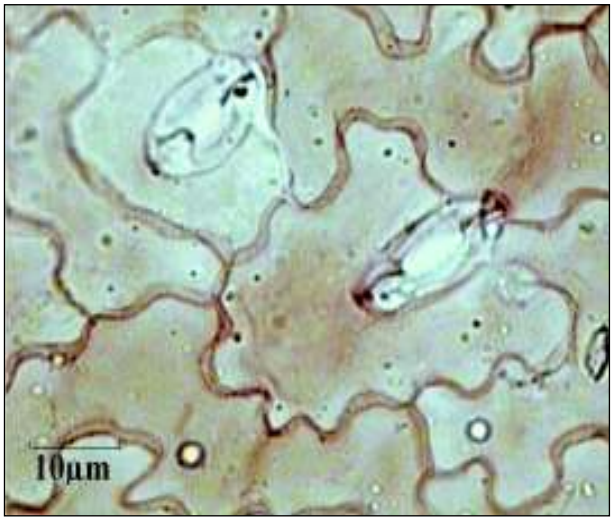

Plate J

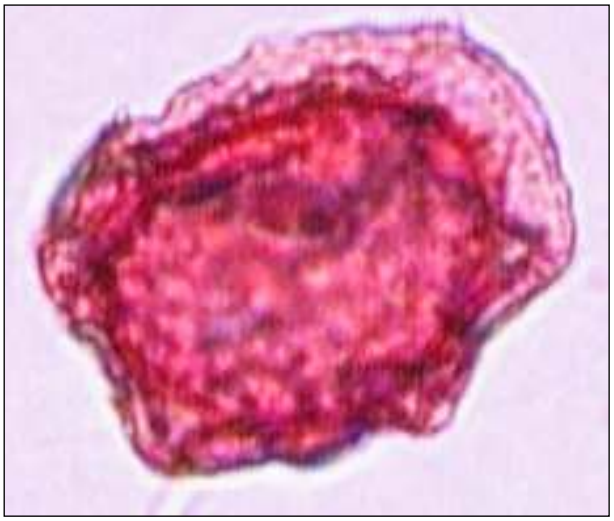

Plate H

rows between the mid veins. Sori are arranged rounded in shape. Sporangia has 14-16 annulus cells in number. Spore is monolete, bilateral with a distinct perine which is either loose or adherent to the exine. Ornamentation of the exine is nearly smooth. The size of the spore is 36µm X 40 µm.

Venation pattern is unique and main vein is distinct up to the margin on abaxial side. Side veins are anastomosing and forming areoles with free endings. Both the upper and lower epidermal cells are sinuous walled. Leaves are hypostomatic i.e. stomata are present only on the lower surface. Stomata is surrounded by 3-5 cells but sometimes copolo-mesoperigenous type. The amplitude of sinuosity of lower epidermal cells is 36 µm and wavelength

of sinuosity is 113 µm. the upper epidermal cells are also sinuous walled and irregular in shape. The amplitude of sinuosity and wavelength of sinuosity is 32 µm and 161 µm respectively.

Distribution

Himalayas, India, Phulchoki of Nepal.

RESULTS AND DISCUSSION

Four species of *Tectaria* is reported from Nepal as for as author knows. *Tectaria macrodonta*, *T. polymorpha*, *T. coadunata* and *T. heterosa* (Gurung 1997, Sinha and Gurung 1985). Pant and Khare in 1969 studied the epidermal details for the Indian species of *Tectaria macrodonta*. In the present study author has collected and studied one species i.e. *Tectaria macrodonta* from Nepal which is a bit different from the internal structure of the epidermal peel of Indian species. Author has studied the copolo-mesoperigenous type of stomata which is very frequent in the lower epidermis (Fryns-classens and Van cotthem 1973). Epidermal cells of both the surfaces are sinuous walled but the veins are anastomosing and forming areoles which are not very frequent in the pteridophytes. Spores are perigenous.

ACKNOWLEDGEMENTS

We express our deep sense of gratitude to the respective Late dr. R.D.Dixit from B.S.I., Allahabad and Late Prof. P.K.Khare from University of Allahabad, Allahabad. For helping us in identification of species. We are grateful to Prof. D. R. Misra, University of Allahabad who has given me support at every step.

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