

PALYNOLOGICAL STUDIES OF NEPALESE FERN- FAMILY ADIANTACEAE**P. C. MISRA^a AND S. TIWARI^{b1}**^aDepartment of Botany, Government P. G. College, Obra, Sonebhadra, Uttar Pradesh, India^bDepartment of Botany, Bhawan's Mehta Degree College, Bharwari, Kausambi, Uttar Pradesh, India**ABSTRACT**

Palynology of two pteridophytic species belonging to the family Adiantaceae from Nepal are investigated by light microscope (LM). These are: *Adiantum caudatum* L. and *Adiantum philippens* L.. Sori close to the margin, born on orbicular to very long, strongly recurved modified margin lobes, the sporangia confined to the veins or sometimes also on the tissue, indusium false, spores with tetrahedral trilete, light brown to dark brown, exine withscrabrate smooth granulate or reticulate, size quite variable. All studied spores are more or less triangular in shape. General characteristics like spore type, ornamentation could be useful for taxonomy of *Adiantum*.

KEYWORDS : Triangular, Ferns, Palynology, Pteridophyta, Nepal

The present day pteridophytes consists of more than 400 living genera and approximately about 13000 living species are (Crabbe et al., 1975 and Verma, 2000). The pteridophytes of Nepal Himalayas are also well represented by nearly 70genera 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.

Pteridophytes are themselves characterized by their essential prerequisites like- Presence of cuticle which is meant for protection of plant body, occurrence of vascular strand for conduction of water and other solutes and presence of stomata essentially meant for ventilation purposes or exchange of gases and sporopollenized spores for continuing their reproductive generation.

The gametophyte origin of pteridophytes is from a spore, which in turn in a product of meiotic (reductional) division of spore mother cells in the sporangium. Spores are regarded as a conservative character in pteridophytes and are considered as the important tool in the classification of plants. Spores of the pteridophytes have studied by a number of workers and these include Erdtman (1957), Lugardon (1963), Tardieu Blot (1963 a, b, 1965), Markgra & D'Antioni (1978).

Since spores of pteridophytes has a great role in the taxonomy and in alternation of generation also. So many workers emphasized their importance as Nayar (1961a), Devi (1981,1988), Verma (1966-67), Waterkeyn & Beinfait (1971). The author has studied the sporangia and spores of the Nepalese fern. Before that very few sporadic works have

been done by Gurung 1986.

MATERIALS AND METHODS

The material of *Adiantum* sp. is collected from different localities of Nepal including Kathmandu and Pokhara district road side collections were made to Kathmandu and Phulchoki. The plants like *Adiantum caudatum* and *A. philippens*.

The collected specimens were dried and treated with mercuric chloride and they are deposited in the Duthie Herbarium of Botany Department, University of Allahabad. The specimens were duly numbered. For the identification help has been taken from BSI (Central circle Allahabad) and thanks are due to Late Dr. R. D. Dixit for identified these plants.

Several microchemical tests of Lignin, Cutin were made by Johnson and Foster techniques.

RESULTS AND DISCUSSION*Adiantum caudatum* L.(Plates-A,C,G-I)**Common name-**'MAYURSHIKHA'

Plant length are 35-40.5cm and found in moist shady places, mesophytic, terrestrial, rhizome are 0.3-0.5cm thick, short, erect, densely covered with scales, varying much in size, roots are 4 to 16.50cm long fibrous, scale leaves are copious, lanceolate, narrow usually broad at base and pointed at tip, dark brown and cells are longer than broader, stipe tufted, wiry dark chestnut brown with multicellular hairs, lamina simply pinnate bearing sessile pinnae on each side of rachis attached by pointed

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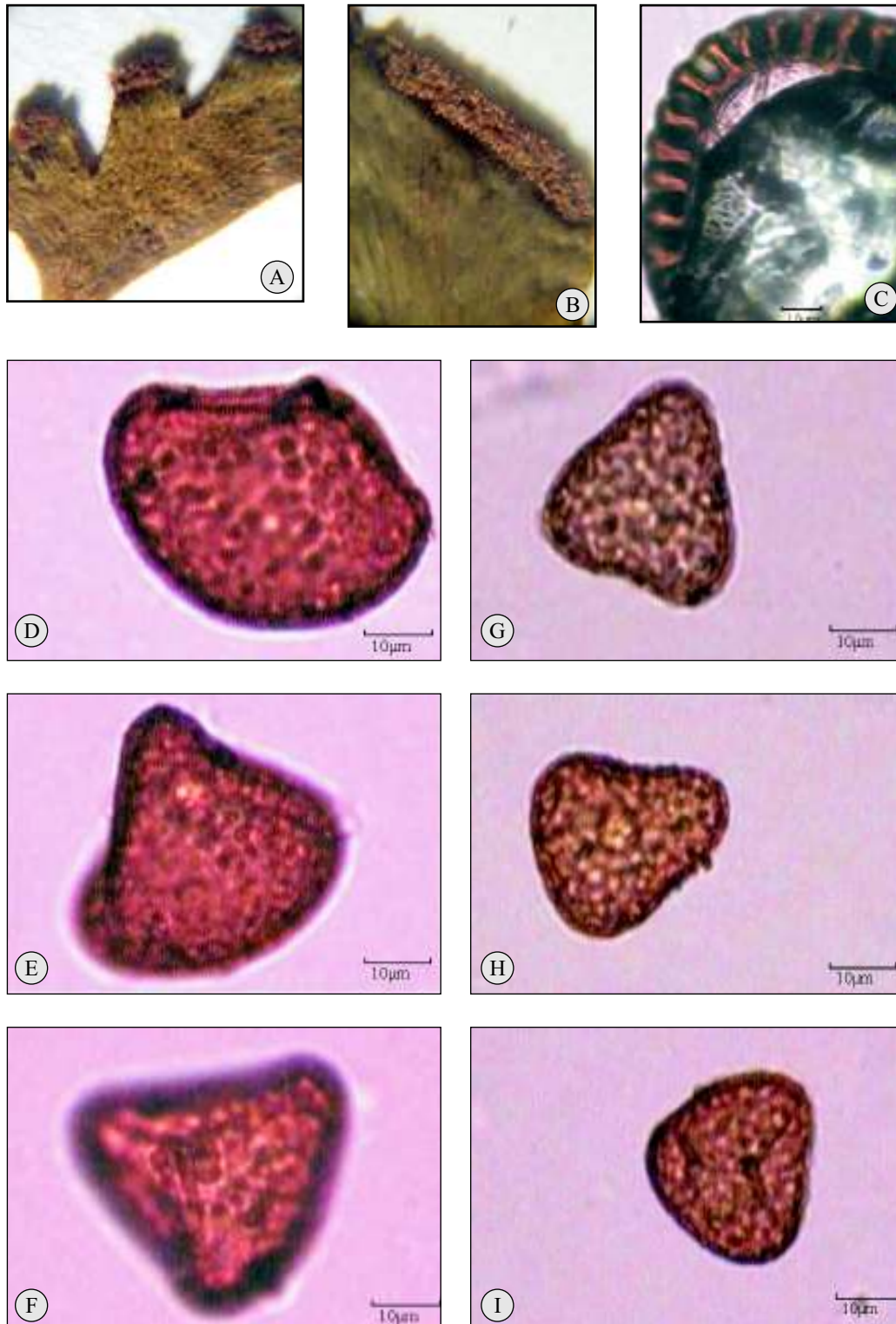


Plate No. 1.

A. Pinnules showing Sporangial attachment *Adiantum caudatum*.
B. Pinnules showing Sporangial attachment *Adiantum philippense*.
C. Sporangia of *Adiantum caudatum* X 40.

D,E,F. Spores of *A. philippense* X 40.
G,H,I. Spores of *Adiantum caudatum* X 40.

base. Pinnae are 0.5-1cm x 0.3-0.4cm and deeply cut into several narrow spreading lobes, shape more or less trapiziform in outline, apex blunt or rounded, lower margin is slightly concave and smooth. Upper margin is convex and dissected, texture coriaous. Fertile pinnae posses a lot of sporangia on the tip of pinnae, they appears cap like on the pinnae. Both surfaces are hairy, hairs multicellular, hairs base are broad and tip is pointed, veins quite prominent on abaxial side but not on adaxial side. Sori on apices of lobes, hairy, sporangia small, and annulus is generally 14-18 cells long. Spores are 32 x 30 µm. Spores are more or less triangular in shape with trilete mark, exine shows reticulate form.

Distribution

Widely distributed in Pokhara and Kathmandu areas including Phulchoki of Nepal, Himalayan ranges at lower elevation from Kasmir, western and eastern Ghats at higher elevation of Satpura, Vindhayan hills Mahadev and Aravalli ranges.

Adiantum philippens L.(=A.lunulatum) (Plates-A,D-F)

Common name- 'HANSAPADI'

Plants are 15-17cm long, occurs in moist shady places, mesophytic, terrestrial, rhizome 0.3-0.5cm, short, erect or suberrect, bearing a dense tuft of fronds as well as of fibrous roots, scale leaves narrow, lanceolate, dark, stipe dark brown or black, polished, grooved, glabrous, leaf simply pinnae, pinnae present on each side of the rachis and a terminal leaflet of irregular shape, pinnae articulated to the rachis and stalked. Pinnae are 1-1.5cm x 0.5-0.7cm, dissected on the outer margin and convex, lower margin is smooth and more or less convex, fertile pinnae with outer margin smooth and sori are present on the margin of pinnae, veins radiate from the attachment of the petiole. Sporangia small and annulus is generally 16-19 cells long. Spores are 40 x 43 µm. Spores are more or less triangular in shape with trilete mark, exine shows reticulate ornamentation.

Distribution

Widely occurs in Pokhara and Kathmandu areas including Phulchoki of Nepal, North India, and tropics of the whole world.

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