

SEM study of *Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A. Evans

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ABSTRACT

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SEM details of sporoderm and leaf surface ornamentation, the two taxonomically important parameters, have been provided in Indian plants of *Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A. Evans.

Key-words: Bryophyta, Hepaticae, Lejeuneaceae, *Leucolejeunea*.

INTRODUCTION

Leucolejeunea, a widely distributed pantropical genus belonging to subfamily Lejeuneoideae, is characterized by having typical lejeuneoid seta anatomy (12 peripheral and 4 medullary cells) and unlobed underleaf which relates to subfamily Ptychanthoideae of family Lejeuneaceae. The genus *Leucolejeunea* (Spruce) Schiffn. is represented in India by three distinct species, viz. *L. xanthocarpa* (Lehm. & Lindenb.) A. Evans, *L. paroica* Kitag. and *L. turgida* (Mitt.) Verd. (Udar & Awasthi 1983a). One of these, *L. xanthocarpa*, has been collected from several localities of Nilgiri Hills forming smooth mats (in convex patches) as corticolous population on angiospermic trees and shrubs. The species is characterized by compact convex appearance, involute leaf-lobule, and invisible apical tooth, postical margin of leaf-lobe highly revolute up to apex with gynoecia on lateral position, and androecia spikate almost hidden in leaf.

In recent years, SEM details of sporoderm and leaf surface topography have been used as important markers in taxonomy of Hepaticae in general and leafy liverworts in particular (Udar & Awasthi 1983b, Udar & Srivastava 1984, Van Slageren & Berendsen 1985, Sharma & Srivastava 1993, Asthana & Srivastava

2003). The present communication provides similar details of sporoderm and leaf surface architecture in the Indian plants of *Leucolejeunea xanthocarpa*.

MATERIAL AND METHOD

For SEM studies, specimens of *Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A. Evans were collected, during April 2002, from Parsons Valley situated between Mukuruthy National Park and Governorsholai of the Nilgiri Hills, Tamil Nadu at an elevation of 2250 m (08.04.2002, P. K. Verma, A. Alam and N. Sahu 15302/2002, LWU).

Both spores as well as leaves were prepared for SEM studies following conventional methods of dehydration and critical point drying. Properly cleaned material was dehydrated through usual series of ethanol. The material was then centrifuged at 5,000 RPM for about 15 minutes for its cleaning. The dehydrated capsule as well as leaf surface were placed over the sticky double sided adhesive tape affixed on glass stubs fixed to aluminum stubs. The material was then coated with Gold palladium in PS-2 coating unit for about 1-2 minutes. The specimens were stereo-scanned at an accelerating potential of 10-30 kv. The sporoderm and leaf surface pattern were investigated under Scanning

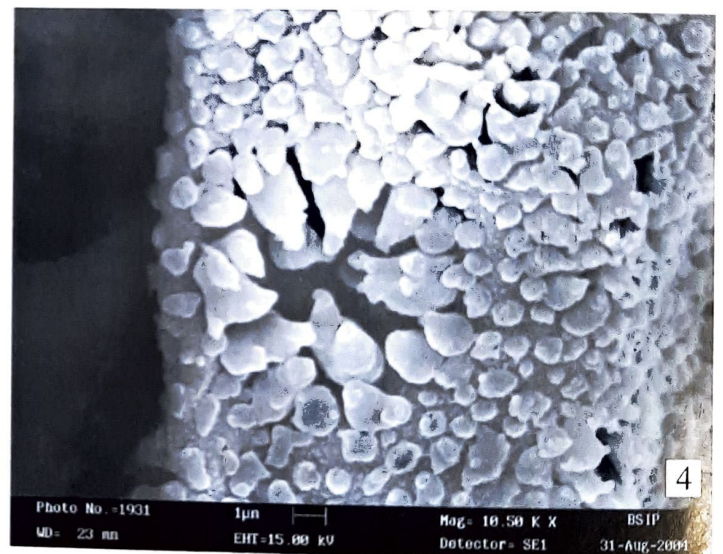
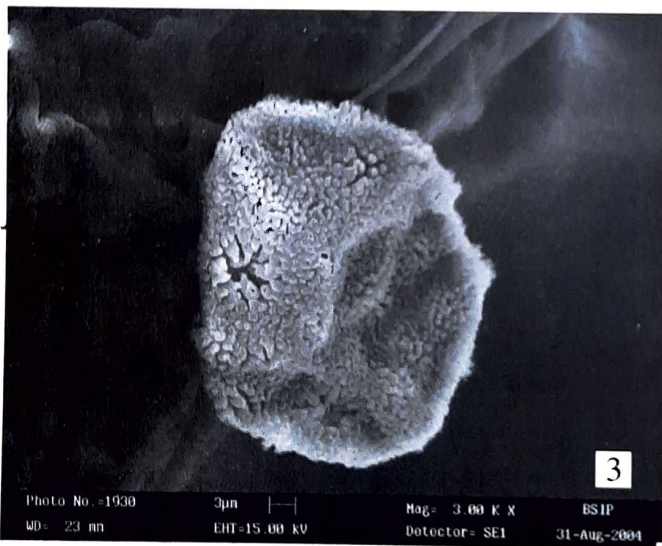
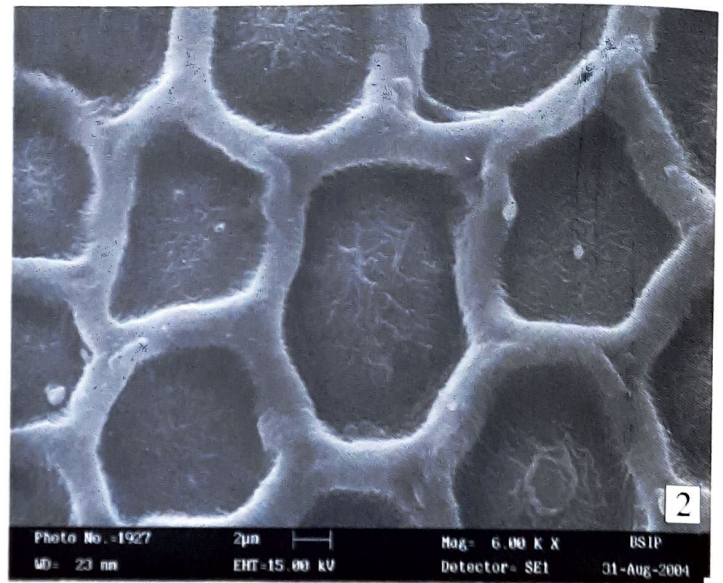
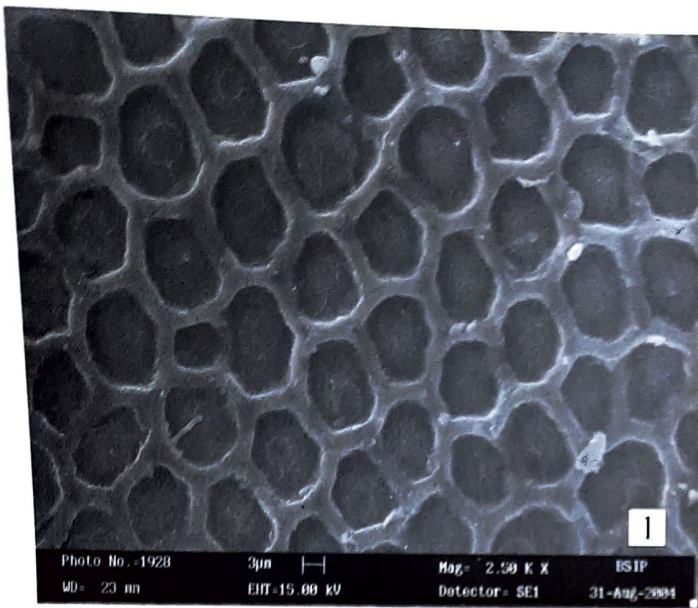


Plate 1

1-4. *Leucolejeunea xanthocarpa*. 1. Leaf surface (dorsal view). 2. Same, magnified (showing verrucae). 3. Spore (showing rosettes). 4. Same, magnified

Electron Microscope installed at the Birbal Sahni Institute of Palaeobotany, Lucknow.

RESULTS

Leaf surface: Under LM: Leaf cells thick-walled, trigones indistinct sometimes with intermediate nodular thickening (mainly in basal cells), median cells 22-34x19-26 μm. The surface ornamentation under LM is not clearly discernible. **Under SEM:** The SEM studies clearly indicate conspicuous verrucate surface of leaf cells (Plate 1, figures 1-2).

Spore: Under LM: The spore is apolar,

chlorophyllous, oblong, 50-80 x 36-54 μm, with granular sporoderm interrupted at places with 1-3 (4) rosettes consisting of radiating mammillose spines. **Under SEM:** The spore under SEM shows conspicuous dense irregular granules with clearly defined rosettes. Spines in each rosette 9-12, triangular or mammillose, with tapered apex (Plate 1, figures 3-4).

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