

The lichen genus *Porpidia* in India

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Upreti, DK & Chatterjee, S 2002. The lichen genus *Porpidia* in India. *Geophytology* 30(1&2): 99-101.

A taxonomic revision of three taxa of *Porpidia* from India is presented. Two species, *Porpidia crustulata* (Ach.) Hertel & Knoph in Hertel and *P. macrocarpa* (D.C.) Hertel & Knoph in Hertel are new records for the lichen flora of India.

Key-Words– Lichen, *Porpidia*, India.

INTRODUCTION

THE lichen genus *Porpidia* Körber belongs to the family Porpidiaceae and is characterized by a crustose saxicolous thallus which may be continuous to rimose-areolate; the apothecia are hemiangiocarpic, sessile; the disc is black to dark brown; margin even to crenulate; the exciple is black and carbonaceous throughout or black only at margin and paler hyaline inside, often K+ reddish; hymenium hyaline to greenish; hypothecium dark brown to black; the paraphyses conglutinate, often branched in the upper region and anastomosing; the asci are 8 spored with simple colourless, ascospores.

A clear concept of the genus, geographical distribution and phenotypic variation of North American and European species are available in the publications by Gowan (1989) and Hertel (1977). Awasthi (1991) mentioned the occurrence of single species, *Porpidia albocoerulescens*, from N.W. Himalaya and Manipur in India.

All the three species known from the country exhibit their restricted distribution in temperate and alpine Himalayas.

MATERIAL AND METHOD

The investigation is based on specimens of the Botany Department, Lucknow University, Lucknow (LWU) and the personal collection of D.D. Awasthi (HB Awasthi) lodged in the herbarium of the National Botanical Research Institute, Lucknow (LWG).

Thin layer chromatography (TLC) was done in

solvent A(TDA) according to Culberson (1972) on precoated Aluminium Silica gel sheets.

Key to Indian species of *Porpidia*

1. Medulla K + yellow, PD+ yellow-orange, stictic acid, constictic and norstictic present, growing mostly in shaded, moist habitats between altitudes of 1000-2500m in Himachal Pradesh, Manipur and Uttaranchal-----*P. albocoerulescens*
- 1a. Medulla K-, PD-; only stictic acid present -----
-----2
2. Apothecia up to 1.0 mm diam, hymenium 60-90 (-100) μ m high; ascospores 12-22 x 6x10 μ m; in Jammu & Kashmir and Uttaranchal Himalayas.--
-----*P. crustulata*.
- 2a. Apothecia up to 3.0 mm diam., hymenium 100-120 μ m high, ascospores 16-20 x6-8 μ m; in Jammu & Kashmir and Uttaranchal Himalayas.--
-----*P. macrocarpa*.

Porpidia albocoerulescens (Wulfen) Hertel & Knoph in Hertel Fig. 1

Beih. Nova Hedwigia 79 : 433. (1984).- *Lichen albocaerulescens* Wulfen in Jacquin. Collect. Bot. 2: 184-185, (1788).

Habitat and distribution : The species grows on siliceous rocks in humid, shaded areas. In India, it is distributed in Himachal Pradesh, Uttar Pradesh and Manipur. It is reported to be distributed in Middle Europe, eastern to southern Asia, Himalaya Mountains, Australia and New Zealand (Hertel 1977, 1981; Hertel & Knoph 1984; Inone 1983).

Notes: Porpidia albocoerulescens is distinguished by smooth thallus, sunken or partially sunken apothecia, pruinose discs, noncarbonaceous exciple large spores and presence of stictic acid.

Gowan (1989) reported two chemotypes in the North American specimens of this taxon. Chemotype I with stictic acid (major), cryptostictic acid, Por-I, constictic acid, norstictic acid, traces of hypostictic or menegazzic acid or both. Chemotype II with norstictic acid (major) and a trace of connorstictic acid. The Indian specimens have chemicals similar to chemotype I.

Specimens examined: India: Himachal Pradesh: Simla district, Jakhu to Sanjoui, 2200 m, 15 June 1952, Awasthi 1430 (HB Awasthi); Kullu district, Great Himalayan National Park, Gati Beat, 2500 m, 8 June 1999, Upreti 217396 (LWG); Jubkutar Thach, 2900m, 10 June 1999, Upreti L 65188/A (LWG); Majharna village, 2000 m 8 June 1999, Upreti 217519 (LWG). Uttaranchal: Chamoli district Mandakini River valley, Sonprayag to Gaurikund, 18-1900 m, 17 September 1976, Dange 76.75 (LWU); Nanda Devi Biosphere Reserve, north west part, 2500 m Negi April 1993 (LWG).

Porpidia crustulata (Ach.) Hertel & Knoph in Hertel.

Beih. Nova Hedwigia 79: 435 (1984).- *Lecidea parasema* var. *crustulata* Ach., Lich. Univ.,: 176 (1810).

Habitat and distribution: The species grows on exposed granite rocks and pebbles. According to Hertel (1977) the world distribution of this taxon is unclear. Gowan (1989) and Inone (1983) reported it from North America and Japan respectively. Hertel (1977) described this species from Nepal Himalayas, China, Japan and Indonesia. It is a new record for India. In India it occurs in Jammu and Kashmir and Higher Uttar Pradesh Himalaya between altitude of 2700 m and 3750 m.

Notes: Porpidia crustulata is distinguished by a smooth to cracked, verruculose thallus, 0.3-0.8mm diam., sessile apothecia and 60-90 µm high hymenium. The species is similar to *P. macrocarpa* but has narrower hymenium smaller apothecia and smaller

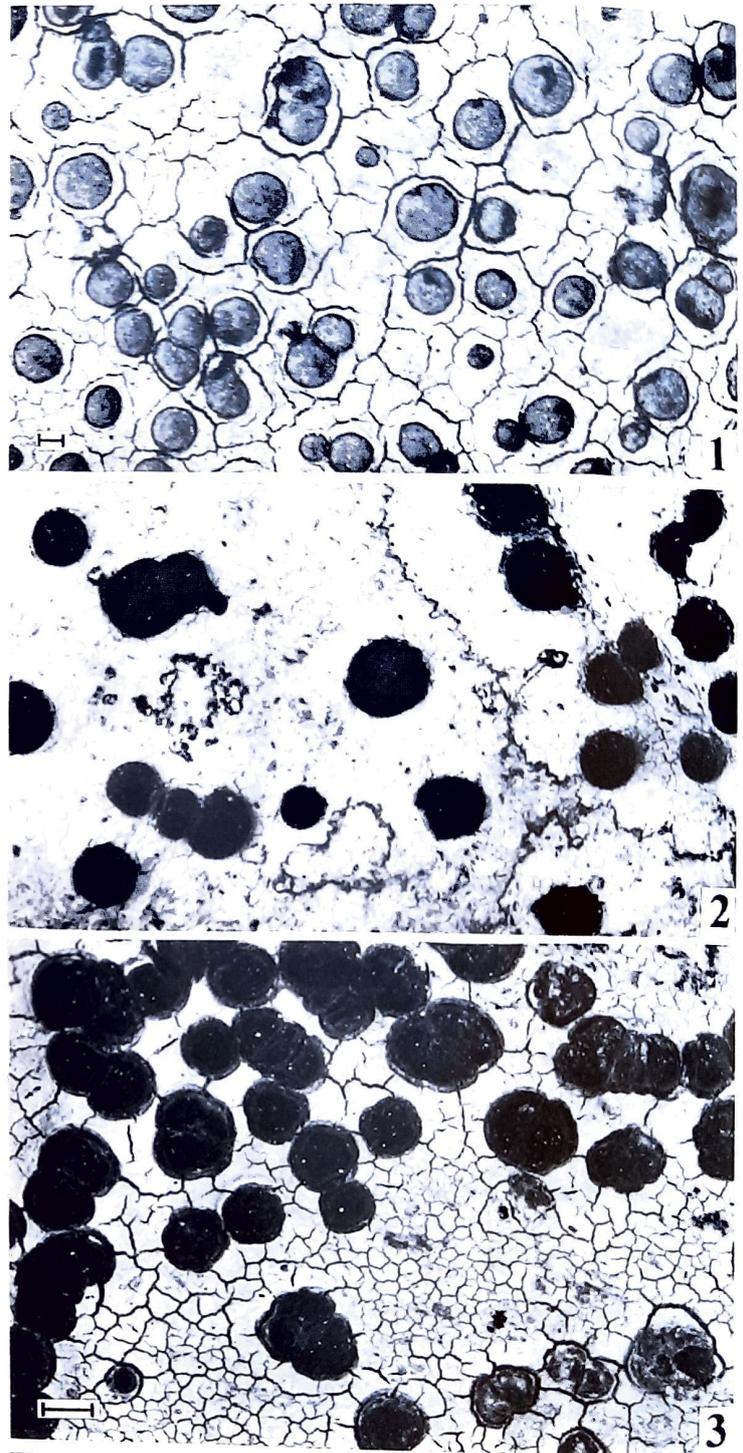


Fig 1-3 *Porpidia* species (scale bar = 1.0 mm)

Fig. 1 *Porpidia albocoerulescens* (Wulfen) Hertel & Knoph in Hertel

Fig.2. *Porpidia crustulata* (Ach.) Hertel & Knoph in Hertel

Fig.3. *Porpidia macrocarpa* (D.C.) Hertel.

ascospores. Gowan (1989) mentioned that the Asian and North American specimens commonly have smaller thalli. The Indian specimens have also the smaller thalli and stictic acid usually in low amount similar in chemistry to the north american taxa.

Specimens examined: India: Jammu & Kashmir: Gulmarg, south east side 25-2800 m, 2 July 1977, Dange 77.464 (LWU). Uttaranchal; Almora district, en route to Pindari Glacier, between Loharkhet and Dhakuri, 3000 m, 27 June 1997, Upreti, Chatterjee and Tandon L68942 (LWG); Chamoli district, on way to Hemkund, 3450 m, 19 Oct 1964, A. Singh 85825 (LWG); Hemkund to Lokpal, 4260 m, 19 October 1964, A. Singh 85827 (LWG). Tungnath, Chandrashila, 3750m, 27 September 1975, A. Singh 107153 (LWG); Mandakini river valley, way to Rambara, 3500m, 21 September 1976, Dange 76-372 (LWU); Badrinath, South of temple, near Brahmini village, 3200m, 27 September 1976, Dange 76-746 (LWU).

Porpidia macrocarpa (D.C.) Hertel,

Herzogia 3: 374 (1975).- *Patellaria macrocarpa* DC. in Lam. & DC., Fl. Franc., Ed. 3, 2: 347 (1805).

Habitat and distribution: The species grows on granite or other HCl-rocks. It is reported from Asia (Hertel 1977), Europe (Knoph 1984) and North America (Gowan 1989). In Asia, Hertel (1977) described it from Nepal, China and Japan, It is a new record for India.

Notes: The species is distinguished by greenish grey to whitish, patchy oxidized orange, continuous to dispersed-areolate thallus, 0.5-3.5 mm diam., brownish black to black, apothecia, epurinoose disc, 80-120 µm high hymenium, 16-23 x 7-10 µm sized ascospores.

Most of the Indian specimens have no chemical substance in TLC while few have traces of stictic acid and unidentified triterpenes.

Specimens examined: India: Jammu & Kashmir; Gulmarg, on way from Gulmarg to Khilanmarg, 25-2700 m, 3 July 1977, Dange 77-513 (LWU).

Uttaranchal: Chamoli district, Tungnath to Chandrashila, 3750 m, 27 September 1975, Singh & Ranjan 107138, 107167, 107169, 107172 (LWG); on way to Hemkund, 3600 m, 19 October 1964, Singh 85823 (LWG); Hemkund-Lokpal, 4260 m, 19 October 1964, Singh 85835 (LWG); Kedarnath, 36-3700 m, 20 September 1976, Dange 76-222, 75-250, 76-290 (LWU). Dehra Dun district, Chakrata Hills, Deoban, 2700m, 23 June 1976, Awasthi & Joshi 76-124, 76-129 (LWU); Pithoragarh district, Nanda Devi Biosphere Reserve, North West region, 2500m, May 1993, Negi L-527, L1501, L1839, L2328, L2541 (LWG); Munsiyari, on way to Khaliya top, 2900-3200m, 29 June 1993, Upreti 212444 (LWG).

ACKNOWLEDGEMENTS

Our thanks are due to the Director, National Botanical Research Institute, Lucknow for providing laboratory facilities to work, and to Dr. M.P. Andrew for his valuable suggestions.

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