

## A new corticolous *Opegrapha* (*Opegraphaceae*) species from India

Siljo JOSEPH and Gopal Prasad SINHA

**Abstract:** A corticolous lichen species, *Opegrapha granulosa* Siljo & G. P. Sinha, with a UV+ pale yellow thallus, is described as new to science from the Sundarbans Biosphere Reserve, West Bengal, India.

**Key words:** *Arthoniales*, lichenized Ascomycota, taxonomy, West Bengal

Accepted for publication 22 October 2011

### Introduction

*Opegrapha* Ach., recently reinstated into the *Opegraphaceae* (Ertz & Tehler 2011), is a large genus with over 361 species of both lichenized and lichenicolous species (Kirk *et al.* 2008). It is a complex genus, especially with regard to corticolous and lignicolous species, with many contradictions in the literature and some unsolved problems (Ertz & Egea 2007; Ertz 2009). The corticolous species of *Opegrapha* have recently been revised for the Palearctic (Ertz 2009), but many of the lichenized and lichenicolous species in India are still insufficiently known. Based on Ertz (2009), Singh & Sinha (2010) enumerated 16 *Opegrapha* species from India, which was followed by four additional species (Jagadeesh & Sinha 2010). Further studies on this genus, as part of a revision of the family *Roccellaceae sensu lato* in India, revealed a new species which is described below.

### Material and Methods

The material studied is deposited in the ASSAM herbarium. Morphological details were examined using a Nikon SMZ 1500 stereomicroscope. Hand-cut sections of thalli and apothecia were studied mounted in distilled water and KOH. The amyloid reactions were tested in Lugol's iodine solution (I), with and without pre-treatment of KOH. Anatomical details were studied using a

S. Joseph and G. P. Sinha (corresponding author): Botanical Survey of India, Central Regional Centre, Allahabad – 211 002, India. Email: drgpsinha@gmail.com

Leica DM 2500 compound microscope. Measurements of asci and ascospores were made on material mounted in distilled water whereas drawings were made from material in KOH. The chemistry was studied by spot tests and thin-layer chromatography following Orange *et al.* (2001).

### The New Species

#### *Opegrapha granulosa* Siljo & G. P. Sinha sp. nov.

MycoBank No.: MB 563536

Thallus crustaceus, tenuis, albus, granulatus. Ascumata lirelliformia, discus rimiformis, epruinatus. Excipulum atrobrunneum, K+ olivaceum, infra clausum. Epiphymenium I+ rubrum. Hymenium I+ rubrum (parte superiori), I+ caeruleum deinde rubescens vel violaceum (parte inferiori). Hypothecium I+ caeruleum-violaceum, K+ viridescens. Ascosporae hyalinae, 7–9 septatae, (39–)44–57(–60) × (3.2–)4.2–5.5 µm; perispora 0.9–1.5 µm lata. Conidia 3.5–4.8 × 0.7–1.2 µm.

Typus: India, West Bengal, Sundarbans Biosphere Reserve, Chamta National Park, on bark of *Heritiera fomes* Buch.-Ham, 25 February 2003, T. A. M. Jagadeesh Ram 13585 (ASSAM—holotypus; BSA—isotypus).

(Fig. 1)

*Thallus* crustose, thin, continuous, rarely cracked, white, granular, matt, 30–45 µm thick (in section). *Border line* dark brownish, c. 0.3 mm wide.

*Ascumata* lirellate, sparse, scattered, straight to curved, simple, rarely forked, emergent, black, 0.4–2.0(–3.5) × 0.2–0.3 mm. *Disc* always a slit, rarely ± exposed, black, epruinose, 30–59(–202) µm wide. *Excipulum* dark brown, continuous below the hypothecium,

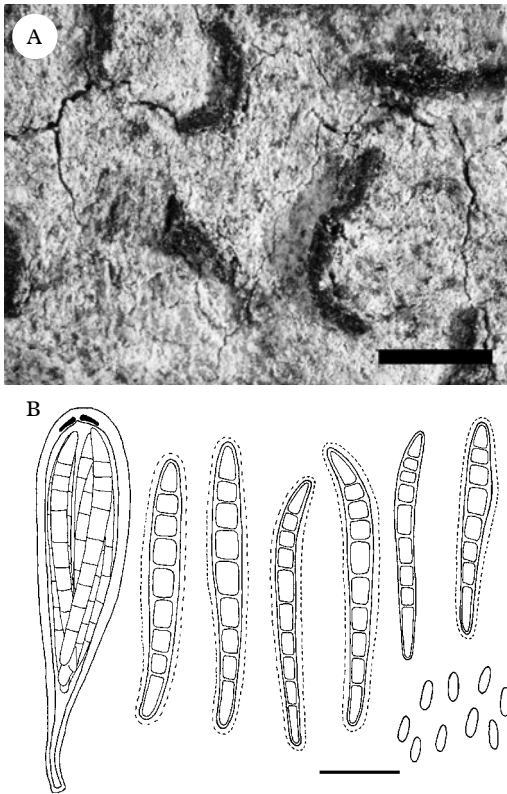


FIG. 1. *Opegrapha granulosa*. A, thallus; B, ascus, ascospores and conidia. Scales: A = 1 mm; B = 15 µm.

K+ olivaceous green, N+ reddish brown, 30–61 µm thickened laterally, 60–89 µm thickened basally. *Epihymenium* hyaline to pale brownish, 16–26 µm thick, K± olivaceous, N–, I+ red. *Hymenium* hyaline, 75–96 µm high, I+ red (upper part), I+ blue turning red or blue-violet (lower part), K–, K/I+ blue. *Paraphysoids* branched, anastomosing, 0.8–2.0 µm wide, not or slightly thickened apically. *Hypothecium* hyaline to pale brownish, 24–27 µm thick, I+ blue-violet, K+ green. *Asci* cylindrical, 8-spored, 52–90 × 12–22 µm, K/I+ apical blue ring distinct. *Ascospores* hyaline, (39–)44–57(–60) × (3.2–)4.2–5.5 µm, 7–9 septate, ontogeny of type 2 (macrocephalic), not constricted at the septa; perispore distinct, hyaline, no

brown pigmentation observed, 0.9–1.5 µm wide.

*Pycnidia* visible as small black dots, 150–200 µm wide. *Conidia* hyaline, bacilliform, 3.5–4.8 × 0.7–1.2 µm.

*Chemistry*. Thallus K+ pale yellow, C–, KC–, Pd–, UV+ pale yellow fluorescence with some pink spots. An unidentified UV+ red spot with Rf value 83 in C detected by TLC after treatment of the plate.

*Etymology*. The specific epithet '*granulosa*' refers to the granular thallus surface of the new species.

*Remarks*. The new species can easily be distinguished from the similar *O. apomelaena* A. Massal., which has an interspersed hymenium, lacks pycnidia, and has a K– and UV– thallus. At present the species is known only from the type locality.

The authors thank Dr D. Ertz, National Botanical Garden of Belgium, for help in identification, and the Director, Botanical Survey of India, Kolkata and Dr A. A. Ansari, Head of Office, B.S.I, Allahabad for the use of facilities.

#### REFERENCES

- Ertz, D. (2009) Revision of the corticolous *Opegrapha* species from the Paletotropics. *Bibliotheca Lichenologica* **102**: 1–176.
- Ertz, D. & Egea, J. M. (2007) *Opegrapha*. In *Lichen Flora of the Greater Sonoran Desert Region. Vol. III* (T. H. Nash III, C. Gries & F. Bungartz, eds): 255–266. Tempe: Lichens Unlimited, Arizona State University.
- Ertz, D. & Tehler, A. (2011) The phylogeny of Arthoniales (Pezizomycotina) inferred from nuLSU and RPB2 sequences. *Fungal Diversity* **49**: 47–71.
- Jagadeesh Ram, T. A. M. & Sinha, G. P. (2010) Four species of *Opegrapha* Ach. (Lichenized *Ascomycota*) new to India. *Indian Journal of Forestry* **33**: 107–110.
- Kirk, P. M., Cannon, P. F., Minter, D. W. & Stalpers, J. A. (2008) *Ainsworth and Bisby's Dictionary of the Fungi*. 10th edn. Wallingford: CAB International.
- Orange, A., James, P. W. & White, F. J. (2001) *Microchemical Methods for the Identification of Lichens*. London: British Lichen Society.
- Singh, K. P. & Sinha, G. P. (2010) *Indian Lichens: An Annotated Checklist*. Kolkata: Botanical Survey of India.