

Four new records of family *Botryobasidiaceae* from Jammu Division (Jammu and Kashmir)

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ABSTRACT

Four corticioid species viz., *Botryobasidium robustius*, *B. subcoronatum*, *B. vagum* and *Botryohypochnus isabellinus*, of the family *Botryobasidiaceae* are described and illustrated. All these are new reports for the Jammu division (J&K). Among these, *Botryobasidium robustius* is a new record for India and *B. vagum* is new for Union Territory of Jammu and Kashmir.

Keywords : *Basidiomycota*, *Agaricomycetes*, Corticioid fungi.

INTRODUCTION

The members of family *Botryobasidiaceae* are characterised by resupinate, loosely adnate basidiocarps, branched, septate, broad, with or without clamps generative hyphae which are branched at right angles, clavate to subcylindrical to obovate to suburniform, 4-8 sterigmate basidia and ellipsoid to navicular to subglobose to globose, smooth or echinulate, inamyloid, acyanophilous basidiospores. Earlier, only *Botryobasidium subcoronatum* and *Botryohypochnus isabellinus* have been reported from the Kashmir division (J&K) by Rattan (1977). Keeping in view the rich floristic diversity and diverse climatic conditions, the Jammu division of Union Territory of Jammu and Kashmir was surveyed for the collection of corticioid fungi. During the fungal forays, some interesting specimens were collected. Based on macro- and micro-morphological features and comparison with literature (Eriksson and Ryvarden, 1973; Dhingra *et al.*, 2006, 2011, 2014; Sharma, 2012; MycoBank, 2021) these were identified as *Botryobasidium robustius*, *B. subcoronatum*, *B. vagum* and *Botryohypochnus isabellinus*. All these four taxa are the first reports from the study area. Of these, *Botryobasidium robustius* is a new record for India and *B. vagum* is new for Union Territory of Jammu and Kashmir. The material of all the four species has been deposited at the Herbarium, Department of Botany, Punjabi University, Patiala (PUN). The colour standards used are as per Kornerup and Wanscher (1978). Key to the genera and species has also been provided.

TAXONOMIC DESCRIPTIONS

Botryobasidium robustius Pouzar & Hol.-Jech., *Ceská Mykologie* 21(2): 69, 1967 (Fig. 1 a-c).

Fruitbody resupinate, up to 200 µm thick in section, loosely adnate, effused. Hymenial surface hypochnoid, colour varies from orange white to grayish white to grayish orange when collected. Margins pruinose to somewhat fibrillose, concolorous, or indistinct. Hyphal system monomitic. Generative hyphae branched at right angles, septate, without clamps; subicular hyphae loosely interwoven, horizontal, thick-walled, long-celled, less branched, up to 9.1 µm wide (more than twice as wide as the subhymenial hyphae); subhymenial hyphae vertical, thin- to somewhat thick-walled, more branched, short-celled, up to 4.5 µm wide. Sterile structures absent. Basidia short, subcylindrical, 6-sterigmate, without basal clamp, 11-20 × 9.1-9.8 µm; sterigmata up to 5.2 µm long. Basidiospores subfusiform to

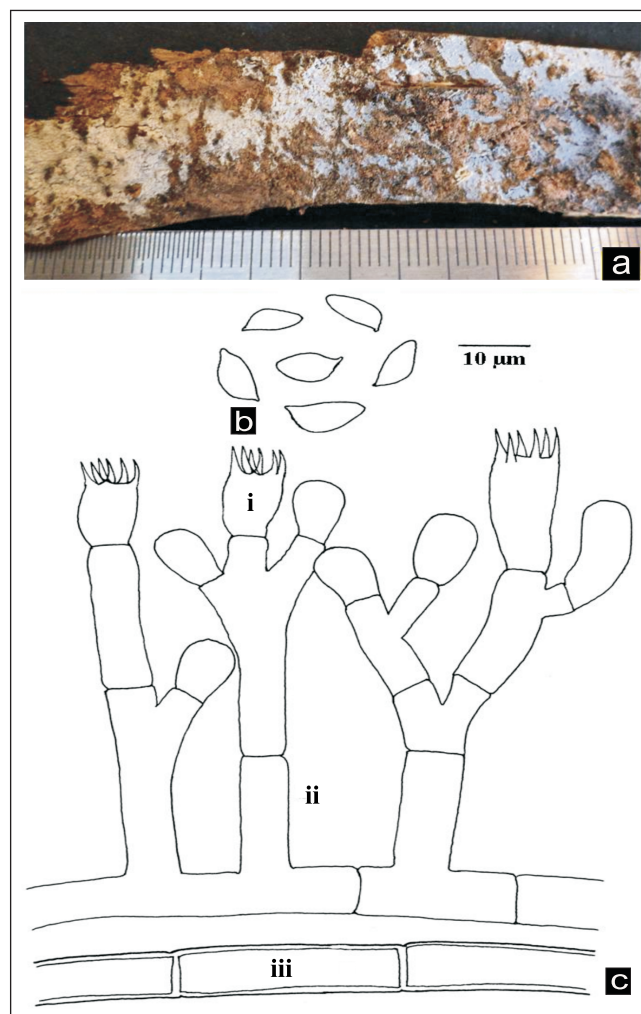


Fig. 1: *Botryobasidium robustius*: a) Basidiocarp showing hymenial surface b) Basidiospores c) Vertical section through basidiocarp showing i) Basidium ii) Subhymenial hyphae iii) Subicular hyphae

navicular, thin-walled, apiculate, smooth, inamyloid, acyanophilous, often glued in clusters of 2 to 3, 9-11 × 3.9-5.8 µm.

Specimen examined - India, Union Territory of Jammu & Kashmir, Jammu, Kathua, Billawar, about 8 km from Sukrala towards Machhedi, on stump of *Pinus roxburghii*, Jyoti 7988 (PUN), July 28, 2013.

Remarks : It is the first report of this species from India, which is characterized by simple-septate hyphae, subcylindrical, 6-sterigmate basidia and subfusiform to navicular basidiospores, often glued in clusters. It has earlier been described from France, Germany, Serbia, Austria, Italy, Portugal, Spain, and the Caucasus (Mycobank, 2021).

Botryobasidium subcoronatum (Höhn. & Litsch.) Donk, *Mededelingen van de Nederlandse Mycologische Vereeniging* **1820**: 117, 1931 (**Fig. 2 a-d**).

- *Corticium subcoronatum* Höhn. & Litsch., *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften Math.-naturw. Klasse Abt. I* **116**: 822, 1907.

Fruit bodies resupinate, up to 150 μm thick in section, loosely adnate, effused. Hymenial surface hypochnoid, color varies from grayish white to gray to grayish yellow when collected. Margins pruinose, concolorous, or indistinct. Hyphal system monomitic. Generative hyphae branched at right angles, nodose-septate; subicular hyphae loosely interwoven, horizontal, thick-walled, up to 7.2 μm wide; subhymenial hyphae somewhat denser, vertical, thin-walled, up to 5.8 μm wide. Sterile structures absent. Basidia subcylindrical, often constricted, 6-sterigmate, with basal clamp, 14-17 \times 5.8-7.2 μm ; sterigmata up to 4.5 μm long. Basidiospores navicular, thin-walled, apiculate, smooth, inamyloid, acyanophilous, 7.7-11 \times 3.2-3.9 μm .

Specimens examined - India : Union Territory of Jammu & Kashmir, Jammu, Kathua, Billawar, Sukrala, on bark of *Pinus roxburghii*, Jyoti 8085 (PUN), July 28, 2013; Kathua, Billawar, about 8 km from Sukrala towards Machhedi, stump of *P. roxburghii*, Jyoti 8066 (PUN), September 15, 2014; Doda, Bhadarwah, Nalhi, on stump of *Cedrus deodara*, Jyoti 8209 (PUN), September 26, 2014; Doda, Bhadarwah, Duggi, on stump of *C. deodara*, Jyoti 8167 (PUN), September 27, 2014.

Remarks: This species differs from *B. robustius* in having nodose-septate generative hyphae and is a new report for the study area. Earlier, it has been reported by Rattan (1977) from district Anantnag (J&K) and Himachal Pradesh, followed by Sharma (2012) from Uttarakhand and Himachal Pradesh and Ranadive (2013) from unspecified localities. Later, it has been listed by Prasher and Ashok (2013) and Dhingra *et al.* (2014) from Himachal Pradesh.

Botryobasidium vagum (Berk. & Curtis) Rogers, *Stud. nat. Hist. Iowa Univ.* **171**: 1935 (**Fig. 3 a-e**).

- *Corticium vagum* Berk. & Curtis, *Grevillea* **1** (12): 179, 1873.

Fruit bodies resupinate, up to 180 μm thick in section, loosely adnate, effused. Hymenial surface hypochnoid, colour varies from yellowish white to grayish white to grayish orange to brownish gray when collected. Margins pruinose, concolorous, or indistinct. Hyphal system monomitic. Generative hyphae branched at right angles, septate, without clamps; subicular hyphae loosely interwoven, horizontal, thick-

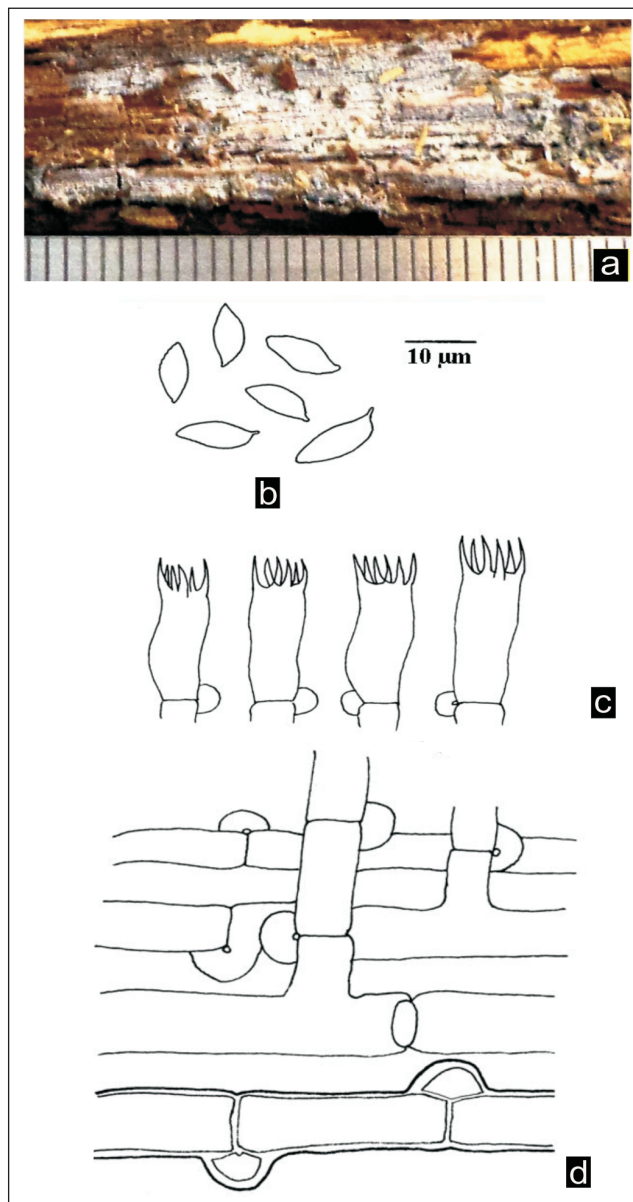


Fig. 2: *Botryobasidium subcoronatum*: a) Basidiocarp showing hymenial surface b) Basidiospores c) Basidia d) Generative hyphae

walled, up to 9.8 μm wide; subhymenial hyphae somewhat denser, vertical, thin- to somewhat thick-walled, up to 5 μm wide. Sterile structures absent. Basidia short, obovate, subcylindrical, 6-sterigmate, without basal clamp, 9-17 \times 7.8-10.4 μm ; sterigmata up to 4.5 μm long. Basidiospores navicular, thin-walled, apiculate, smooth, inamyloid, acyanophilous, 7-11.1 \times 3.3-3.9 μm .

Specimens examined - India : Union Territory of Jammu & Kashmir, Jammu, Kathua, Billawar, Sukrala, on stump of *Pinus roxburghii*, Jyoti 7986 (PUN), July 28, 2013; Kathua, Billawar, about 8 km from Sukrala towards Machhedi, on stump of *P. roxburghii*, Jyoti 7987 (PUN), July 28, 2013; Kathua, Billawar, about 2 km from Sukrala towards Machhedi, on decaying angiospermous stump, Jyoti 8215

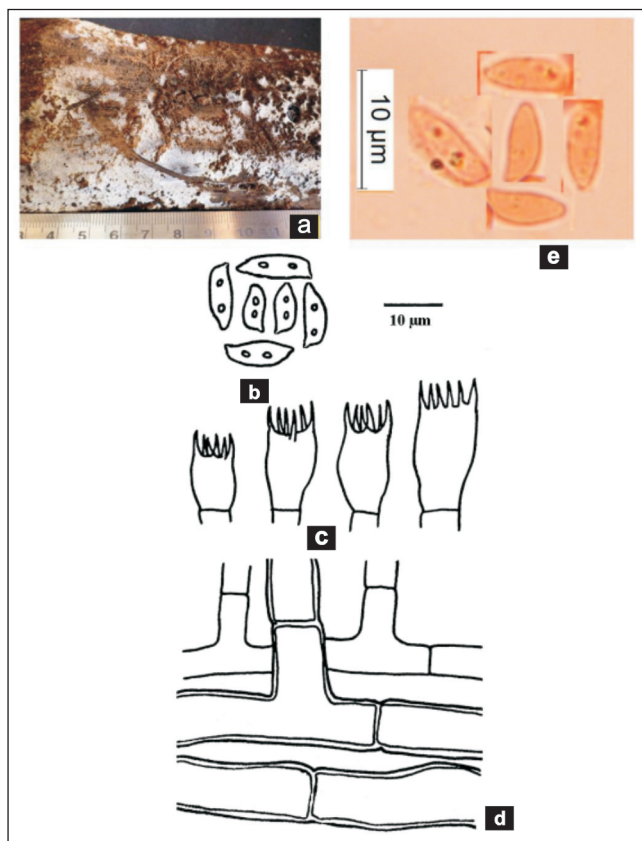


Fig. 3: *Botryobasidium vagum*: a) Basidiocarp showing hymenial surface b) Basidiospores c) Basidia d) Generative hyphae e) Photomicrograph showing basidiospores

(PUN), September 15, 2014.

Remarks : This species is different from *B. subcoronatum* in lacking clamps on generative hyphae as well as on subicular hyphae and being described for the first time from Jammu and Kashmir. It has earlier been listed from India by Prashar and Ashok (2013) from Himachal Pradesh.

Botryohypochnus isabellinus (Fr.) Erikss., Sv. Bot. Tidskr. 52: 2, 1958. *Thelephora isabellina* Fr., *Epicr.* **544**, 1838 (**Fig. 4 a-d**).

Fruit bodies resupinate, up to 250 µm thick in section, loosely adnate, effused. Hymenial surface hypochnoid, colour varies from light brown to brown when collected. Margins fibrillose, concolorous, or indistinct. Hyphal system monomitic. Generative hyphae branched at right angles, septate, without clamps, up to 9 µm wide; subicular hyphae loosely interwoven, horizontal, thick-walled; subhymenial hyphae somewhat denser, vertical, thin- to somewhat thick-walled. Sterile structures absent. Basidia subcylindrical, 4-sterigmate, without basal clamp, 17-25 × 9.8-13 µm; sterigmata up to 7.2 µm long. Basidiospores globose, thin-walled, apiculate, echinulate, with blunt spines, inamyloid, acyanophilous, 9-12.5 µm in diameter.

Specimens examined - India: Union Territory of Jammu & Kashmir, Jammu, Doda, Bhadarwah, Nalthi, on stump of

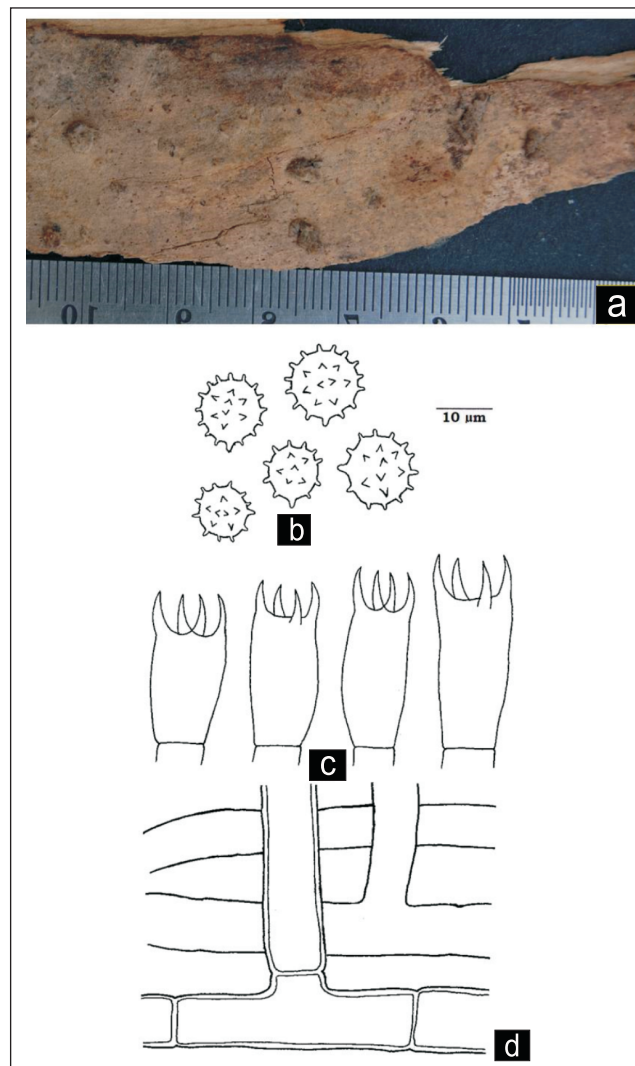


Fig. 4: *Botryohypochnus isabellinus*: a) Basidiocarp showing hymenial surface b) Basidiospores c) Basidia d) Generative hyphae

Cedrus deodara, Dhingra 7981 (PUN), September 26, 2014; Doda, Bhadarwah, Nalthi, on stump of *C. deodara* Jyoti 8042 (PUN), September 26, 2014.

Remarks: It is the first report of this species from Jammu division (J&K). Earlier from India, it has been reported/listed by many workers (Rattan, 1977; Dhingra, 2005; Dhingra *et al.*, 2006, 2011, 2014; Ranadive *et al.*, 2011; Sharma, 2012; Prashar and Ashok, 2013; Ranadive, 2013) from district Anantnag (J&K), Arunachal Pradesh, Himachal Pradesh, Maharashtra, Punjab, and Uttarakhand.

Key to the genera of *Botryobasidiaceae* in Jammu division (Jammu and Kashmir):

1. Basidiospores smooth.....*Botryobasidium*
1. Basidiospores echinulate.....*Botryohypochnus*

Key to the species of genus *Botryobasidium* :

1. Hyphae nodose-septate.....*B. subcoronatum*

1. Hyphae simple-septate.....2
2. Subicular hyphae considerably wider (more than twice) than subhymenial hyphae, spores subfusiform to navicular.....*B. robustius*
2. Subicular hyphae not more than twice as wide as subhymenial hyphae, spores navicular.....*B. vagum*

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