

DIVERSITY OF RESUPINATE, NON-POROID AGARICOMYCETOUS FUNGI IN THE HIMALAYA AND ADJOINING AREAS

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ABSTRACT

An account of more than 400 taxa belonging to more than 105 genera of the different families and orders of class *Agaricomycetes* (phylum *Basidiomycota*, subphylum *Agaricomycotina*) has been given. These include one genus (*Confertextum*), 12 species (*Byssocorticium microsporium*, *Confertextum macrosporium*, *C. microsporium*, *Corticium mussooriensis*, *Cylindrobasidium indicus*, *Leptosporomyces singularis*, *Tomentella garhwaliana*, *Vararia himalayana*, *V. indica*, *Xylodon mussooriensis*, *X. subglobosus* and one variety (*Scytinostroma phaeosarcum* var. *angustispora*) new to science; six genera (*Cordochaete*, *Dendrophlebia*, *Hallenbergia*, *Radulomycetopsis*, *Repetobasidiopsis*, *Trimitiella*), two subgenera (*Stereum* subgen. *Acanthostereum*, *Stereum* subgen. *Aculeatostereum*), as many as 48 species (*Aleurodiscus himalaicus*, *A. indicus*, *Athelopsis parvispora*, *Candelabrochaete himalayana*, *Ceraceomyces bizonatus*, *Clavulicium hallenbergii*, *Conohypha grandispora*, *Cristinia tubulicystidiata*, *Dendrophlebia crassispora*, *Flavophlebia sphaerospora*, *Fibulomyces cystoideus*, *Hallenbergia singularis*, *Hyphoderma bicycystidiata*, *H. clarusproprietas*, *H. densustextum*, *H. hallenbergii*, *H. parvisporum*, *H. sikkimia*, *H. sporulosum*, *H. subglobosum*, *Hyphodontia caulicystidiata*, *H. dhingrae*, *Leptocorticium indicum*, *Leucogyrophana thimphina*, *Paullicorticium indicum*, *Peniophora hallenbergii*, *Phlebia crassisubiculata*, *P. interjacenoides*, *P. microspora*, *P. kamengii*, *P. singularis*, *P. thindii*, *Phlebiopsis darjeelingensis*, *P. himalayensis*, *P. mussooriensis*, *Radulodon indicus*, *R. acaciae*, *Radulomycetopsis cystidiata*, *Repetobasidiopsis grandisporus*, *Scytinostroma pulverulentum*, *S. renisporum*, *Sistotrema angustispora*, *Sistotremastrum roseum*, *Stereum peculiare*, *T. kalatopii*, *T. unicus*, *Trimitiella indica*, *V. longicystidiata*) and 8 varieties (*Amphinema byssoides* var. *macrospores*, *Botryobasidium subcoronatum* var. *crassispora*, *Ceraceomyces sublaevis* var. *grandisporus*, *Conohypha albocrema* var. *angustisporum*, *Hyphoderma roseocrema* var. *minutisporum*, *H. setigerum* var. *bicycystidium*, *Tomentella cladii* var. *grandii*, *Tubulicium vermifer* var. *hexasterigmatum*) published new taxa and 225 new reports for the Himalaya.

Keywords: *Agaricomycetes*, non-poroid fungi, *Auriculariales*, *Cantharellales*, *Corticiales*, *Gloeophyllales*, *Hymenochaetales*, *Polyporales*, *Russulales*, *Sebacinales*, *Thelephorales*, *Trechisporales*

INTRODUCTION

Resupinate, non-poroid agaricomycetous fungi are generally lignicolous with unilateral and gymnocarpic hymenium and belong to class *Agaricomycetes* (phylum *Basidiomycota*, subphylum *Agaricomycotina*). These fungi have been assigned to two subclasses *Agaricomycetidae* (orders *Agaricales*, *Atheliales*, *Boletales*) and *Agaricomycetes incertae sedis* (orders *Auriculariales*, *Cantharellales*, *Corticiales*, *Gloeophyllales*, *Hymenochaetales*, *Polyporales*, *Russulales*, *Sebacinales*, *Thelephorales* and *Trechisporales*). The diversity study of these fungi is an outcome of extensive work of almost three and a half decades in the Eastern and the North Western Himalaya and adjoining areas covering a distance of about 2500 km from West to East, with 100–400 km average width along the entire longitudinal extension and lot of variation in altitude gradients. Based on macroscopic and microscopic observations of more than 4150 collections, using standard techniques, more than 400 taxa have been identified, which belong to more than 105 genera of the different families and orders. Detailed descriptions supported by photographs and line diagrams have been given for the new taxa, distribution in the Himalaya with herbarium numbers within brackets for the new taxa already published and tabulated account for new records for the Himalaya.

MATERIALS AND METHODS

Fungi have been collected from the various localities of the Himalaya and adjoining areas from 1978 to 2014. Microscopic details related to hyphae, cystidia, basidia and basidiospores of the specimens and their arrangement were studied by

making crush mounts and hand cut sections in water, 3–5% KOH solutions and staining in Congo red, Phloxine, Cotton Blue, Melzer's Reagent and Sulphovanillin and line diagrams were made by using compound microscope and camera lucida. Color standards are as per Methuen's Handbook of colors by Cornerup and Wanschler [1]. Specimens are kept in herbarium of Department of Botany, Punjabi University, Patiala, India (PUN), Herbarium of Department of Botany, Panjab University, Chandigarh, India (PAN) and some duplicates in herbaria of University of Gothenburg, Gothenburg, Sweden (GH) and Biology Institute, University of Oslo, Blindern, Oslo, Norway (O). Nomenclature follows Blackwell *et al.* [2], James *et al.* [3], Hibbett *et al.* [4], Kirk *et al.* [5], Bernicchia and Gorjün [6] and www.mycobank.org (2014) as far as possible.

NEW TAXA

Genus new to science

Confertextum Priyanka & Dhingra gen. nov.

Mycobank MB810722

The new genus differs from *Phlebia* on the basis of dense texture due to the presence of microbinding hyphae along with generative hyphae and having different shape of basidia

Basidiocarps resupinate, effused, closely adnate; hymenial surface smooth to tuberculate, grayish white to orange white to pale yellow; margins thinning, paler concolorous to abrupt. Hyphal system dimitic. Generative hyphae branched, septate, clamped; basal hyphae parallel to the substrate, loosely arranged; sub hymenial hyphae vertical, densely packed. Microbinding hyphae thin, laxly branched, without septa and clamps. Cystidia fusiform to cylindrical, thin-walled, with or without oily contents, with basal clamp. Basidia clavate to subclavate, 4–sterigmate, with basal clamp. Basidiospores ellipsoid to subcylindrical, apiculate, thin-walled, smooth, inamyloid, acyanophilous.

Type species: *Confertextum microsporum*

Distribution in India: Himachal Pradesh

Remarks: This genus is close to *Phlebia* in having branched, septate, clamped generative hyphae, some kind of cystidia and ellipsoid to subcylindrical, acyanophilous, inamyloid basidiospores, but differs on the basis of dense texture due to the presence of microbinding hyphae along with generative hyphae and having different shape of basidia. The new genus is being described on the basis of two new species.

Species new to science

Byssocorticium microsporum Samita, Sanyal and Dhingra sp. nov.

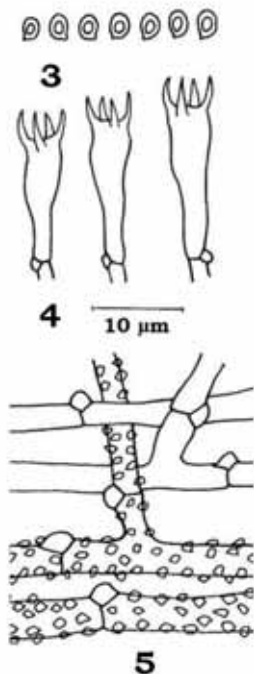
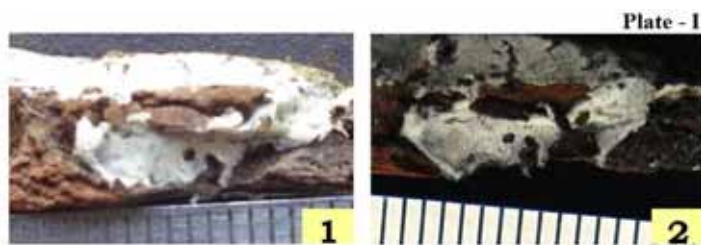
Mycobank 808608

The new species differs from *B. lutescens* in having clamped hyphae and small ellipsoid to subglobose basidiospores.

Type: India, Uttarakhand: Tehri Garhwal, Surkanda Devi, on log of *P. roxburghii*, Samita 6019 (PUN, holotype), September 02, 2012.

Etymology: The epithet refers to the smaller size of basidiospores.

Basidiocarp resupinate, effused, loosely adnate, up to 130 µm thick in section; hymenial surface hypochnoid to smooth, grayish yellow to pale yellow when fresh, not changing much on drying; margins thinning, fibrillose, concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae up to 4.5 µm wide, septate, clamped, thin-walled; basal hyphae parallel to the substrate, less branched, with crystalline encrustation which dissolves in 3% of KOH solution; subhymenial hyphae, vertical, more branched. **Cystidia** none. **Basidia** 12.0–18.0 × 3.0–4.5 µm, clavate, somewhat



FIGS 1-5. *Bysocortictum microsporum* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae

sinuous, 4-sterigmate, with basal clamp; sterigmata up to 3.0 µm long. **Basidiospores** 2.0–2.5 × 1.5–1.8 µm, ellipsoid to subglobose, thick-walled, smooth, generally uniguttulate, inamyloid, acyanophilous.

Remarks—This species differs from *B. lutescens* in having smaller basidiospores (2.0–2.5 × 1.5–1.8 µm as compared to 3.5–4.5 µm) and hyphae with clamps at all septa as compared to hyphae with scattered clamps (**Plate 1**).

***Confertextum macrosporum* Priyanka & Dhingra sp. nov.**

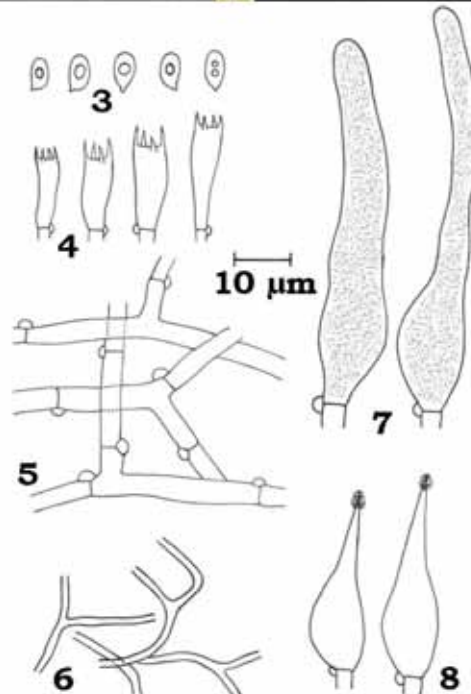
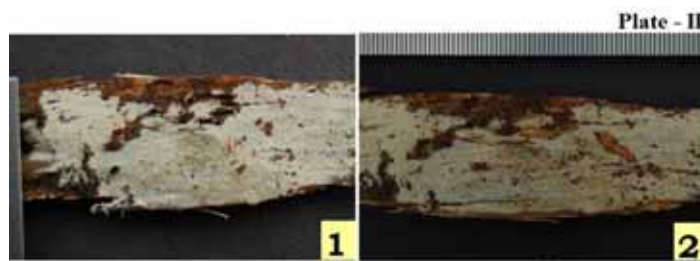
Mycobank MB810723

The new species is different from *C. microsporum* in having two types of cystidia and bigger basidiospores.

Type: India, Himachal Pradesh: Shimla, Kandiyali, on decaying wood of *C. deodara*, Priyanka 4620 (PUN, holotype), August 06, 2011.

Etymology: The epithet refers to the bigger size of basidiospores (**Plate 2**).

Basidiocarp resupinate, effused, closely adnate, up to 350 µm thick in section; hymenial surface smooth to tuberculate, creamish white to pale yellow when fresh, becoming pale orange to grayish orange on drying; margins thinning, paler orange to grayish orange to abrupt. **Hyphal system** dimitic. Generative hyphae up to 4.5 µm wide, thin-walled, branched, septate, clamped; basal hyphae parallel to the substrate; subhymenial hyphae vertical. Microbinding hyphae up to 1.9 µm wide, thin-walled, laxly branched. Texture dense due to the presence of microbinding hyphae along with generative hyphae. **Cystidial elements** of 2 kinds: **i) Leptocystidia** 66.0–74.0 × 5.0–8.8 µm, subcylindrical, with broad base, thin-walled, smooth, with basal clamp and oily contents. **ii)** 31.0–37.0 × 9.3–10.6 µm, bladder shaped with pointed apical region, thin-walled, resinous encrustation present on tip, with basal clamp. **Basidia** 12.5–18.5 × 3.7–6.3 µm, subclavate to clavate, 4-sterigmate, with basal clamp; sterigmata up to 3.8 µm long. **Basidiospores** 6.2–7.5 × 3.1–3.8 µm, ellipsoid to subcylindrical, apiculate, thin-walled, smooth, inamyloid, acyanophilous, with oily contents.



FIGS 1-8. *Confertextum macrosporum*

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry); 3. basidiospores;
4. basidia; 5. generative hyphae; 6. microbinding hyphae; 7. leptocystidia; 8. cystidia

Remarks—This species is similar to *C. microsporum* in having dense texture, dimitic hyphal system, presence of microbinding hyphae, but is different in having two types of cystidia and bigger basidiospores.

C. microsporum Priyanka & Dhingra **sp. nov.**

Mycobank MB810724

It is different from *C. macrosporum* in having smaller basidiospores

Type: India, Himachal Pradesh: Kangra, Nargala, on wood of *Ficus religiosa*, Priyanka 4618 (PUN), August 24, 2009.

Etymology: The epithet refers to the smaller size of spores

Basidiocarp resupinate, effused, closely adnate, up to 950 µm thick in section; hymenial surface smooth, orange white to yellowish white when fresh, brown on bruising, becoming pale orange to yellowish orange to golden yellow on drying; subiculum paler colored and visible through the cracks; margins thinning, paler concolorous to abrupt. **Hyphal system** dimitic. Generative hyphae up to 3.8 µm wide, thin-walled, branched, septate, clamped; basal hyphae parallel to the substrate; subhymenial hyphae vertical. Microbinding hyphae up to 2.0 µm wide, thin-walled, laxly branched. Texture dense due to the presence of microbinding hyphae along with generative hyphae. **Cystidia** 57.0–70.0 × 5.0–6.3 µm, subfusiform, thin-walled, with basal clamp and oily contents. **Basidia** 13.4–20.0 × 3.1–4.7 µm, clavate to subclavate, 4–sterigmate, with basal clamp; sterigmata up to 2.2 µm long. **Basidiospores** 4.3–5.3 × 2.8–3.1 µm, ellipsoid, apiculate, thin-walled, smooth, inamyloid, acyanophilous (**Plate 3**).



Remarks: The newly described species is marked by the presence of dense texture, cystidia with oily contents and smaller, ellipsoid basidiospores.

Corticium mussooriensis Samita, Sanyal & Dhingra **sp. nov.**

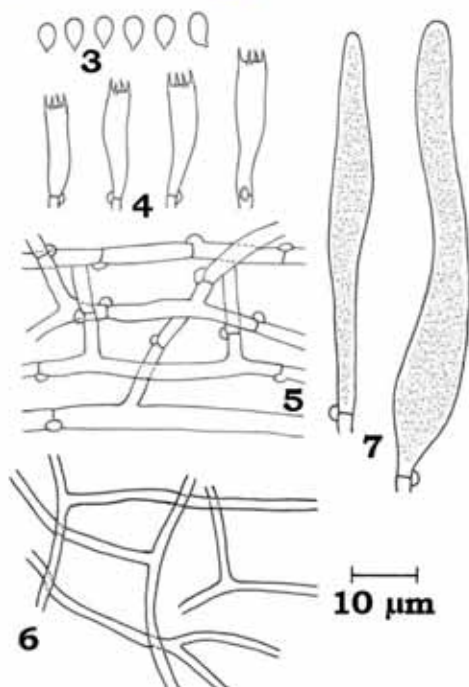
Mycobank 808613

This species differs from *Corticium albidocremeum* in having larger basidia and broadly ellipsoid basidiospores.

Type: India, Uttarakhand: Dehradun, Mussoorie, Mall road, on angiospermous log, Samita 6069 (PUN, holotype), August 20, 2010.

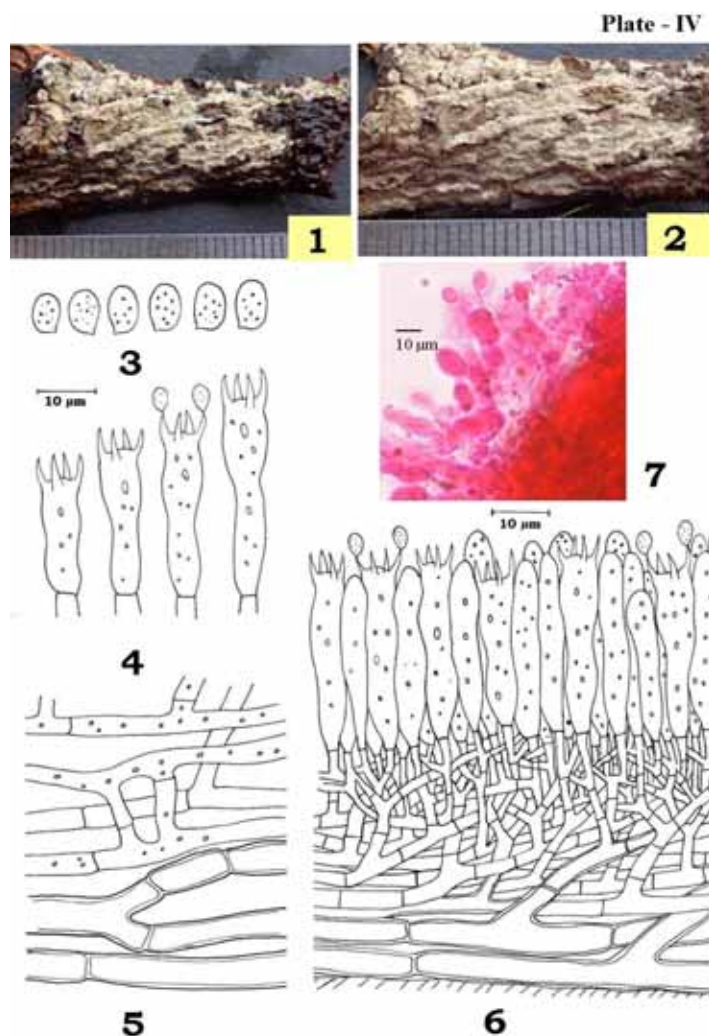
Etymology: The epithet refers to the locality of collection.

Basidiocarp resupinate, effused, adnate, up to 80 µm thick in section; hymenial surface porulose to smooth, grayish yellow when fresh, not changing much on drying; margins thinning, paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae up to 5.5 µm wide, septate, without clamps; basal hyphae parallel to substrate, thick-walled, less branched; subhymenial hyphae vertical, short celled, thin-walled, more branched. **Cystidia** absent. **Basidia** 20.0–34.0 × 5.8–7.5 µm, clavate to subclavate, somewhat sinuous, 4–sterigmate, without basal clamp, with oily contents; sterigmata up to 7.5 µm long. **Basidiospores** 6.0–8.3 × 4.0–5.5 µm, broadly ellipsoid, thin-walled, with oily contents, inamyloid, acyanophilous (**Plate 4**).



FIGS 1–7. *Confertextum microsporum*

1–2. Basidiocarp showing hymenial surface (1. fresh, 2. dry); 3. basidiospores; 4. basidia; 5. generative hyphae; 6. microbinding hyphae; 7. cystidia



FIGS 1-7. *Corticium mussooriensis* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae; 6. V.S of basidiocarp;
7. Microphotograph showing basidia and basidiospores

Remarks: This species differs from *Corticium albidocremeum* Rehill and Bakshiin having larger basidia ($20.0\text{--}34.0 \times 5.8\text{--}7.5\mu\text{m}$ as compared to $11.2\text{--}14.4 \times 4.8\text{--}6.4\mu\text{m}$) and broadly ellipsoid basidiospores in comparison to oval or pip-shaped.

Cylindrobasidium indicus Samita, Sanyal & Dhingra sp. nov.

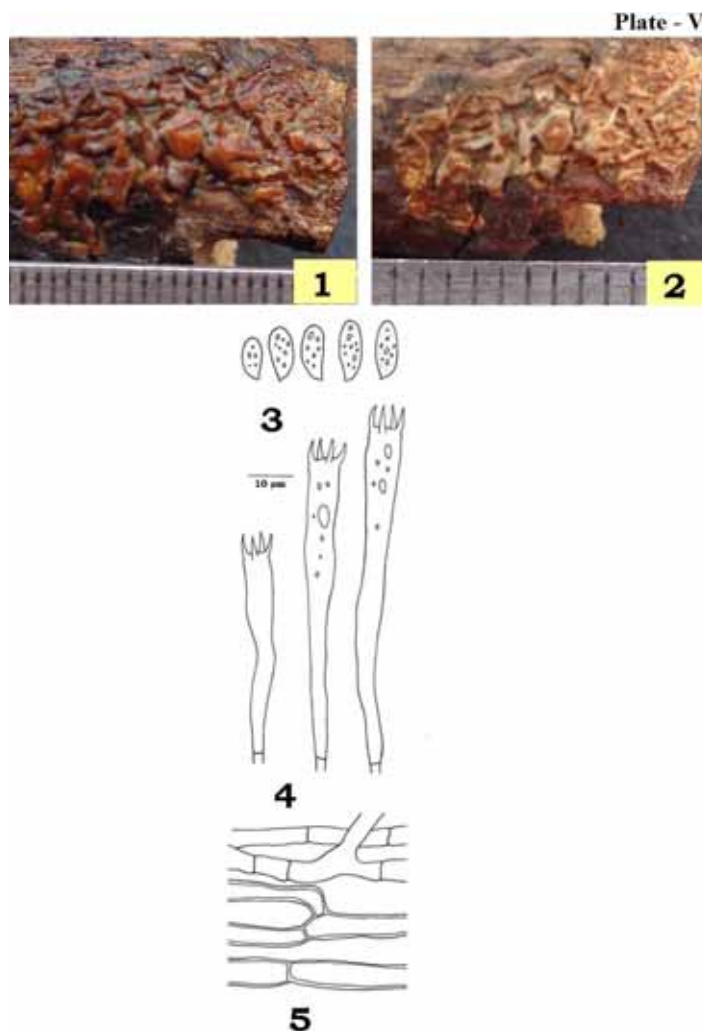
Mycobank 808607

This species differs from *C. evolvens* in having simple septate hyphae, absence of cystidia and larger basidiospores.

Type: India, Uttarakhand: Tehri Garhwal, Dhanaulti, on angiospermous stick, Samita 6006 (PUN, holotype), August 21, 2010.

Etymology: The epithet refers to the country of collection.

Basidiocarp resupinate, loosely adnate, effused, gelatinous, up to $450\mu\text{m}$ thick in section; hymenial surface smooth to cracked, brownish red to reddish brown when fresh, not changing much on drying; shrinking with cracks appearing prominent; margins thinning, paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae up to $5.0\mu\text{m}$ wide, septate, without clamps; basal hyphae parallel to the substrate, thin- to somewhat thick-walled compactly arranged, less branched; subhymenial hyphae vertical, loosely arranged, thin-walled, more branched. **Cystidia** absent. **Basidia** $48.0\text{--}80.0 \times 5.5\text{--}6.3\mu\text{m}$, narrowly clavate, somewhat sinuous, 4-sterigmate, with or without oily contents, without basal clamp; sterigmata up to $5.0\mu\text{m}$ long. **Basidiospores** $9.3\text{--}14.4 \times 4.5\text{--}5.5\mu\text{m}$, fusoid to lacrymoid, thin-walled, smooth, with oily contents, acyanophilous, inamyloid (**Plate 5**).



FIGS 1-5. *Cylindrobasidium indicus* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae

Remarks– This species differs from *C. evolvens* in having simple septate hyphae, absence of cystidia and larger basidiospores ($9.3\text{--}14.4 \times 4.5\text{--}5.5 \mu\text{m}$ as compared to $7.5\text{--}9.5 \times 4.3\text{--}5.0 \mu\text{m}$).

Leptosporomyces singularis Samita, Sanyal & Dhingra

Mycobank 808610

This species is peculiar in having membranaceous basidiocarps, grayish red to brownish red hymenial surface and simple septate hyphae.

Type: India, Uttarakhand: Dehradun, Mussoorie, Lal Tibba, on angiospermous stump, Samita 6022 (PUN, holotype), August 19, 2009.

Etymology: The epithet refers to the unique combination of characters.

Basidiocarps resupinate, adnate, effused, membranaceous, up to $250 \mu\text{m}$ thick in section; hymenial surface smooth, grayish red to brownish red when fresh, not changing much on drying; margins thinning, somewhat fibrillose, whitish to paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae up to $5.2 \mu\text{m}$ wide, septate, without clamps, with oily contents; basal hyphae parallel to the substrate, thin– to somewhat thick–walled, less branched, with or without oily contents; subhymenial hyphae up to $2.0 \mu\text{m}$ wide, vertical, thin–walled, more branched. **Cystidia** none. **Basidia** $19.4\text{--}30.0 \times 4.7\text{--}7.5 \mu\text{m}$, narrowly clavate, somewhat sinuous, 4–sterigmate, without basal clamp, with or without oily contents; sterigmata up to $4.3 \mu\text{m}$ long. **Basidiospores** $2.9\text{--}3.5 \times 1.7\text{--}2.3 \mu\text{m}$, ellipsoid, thin–walled, smooth, uniguttulate, inamyloid, acyanophilous (**Plate 6**).

Additional collection examined– India, Uttarakhand: Dehradun, Mussoorie, Lal Tibba, on angiospermous log, Dhingra 6023 (PUN), August 19, 2009.

Remarks: This species is peculiar in having membranaceous basidiocarps, grayish red to brownish red hymenial surface and simple septate hyphae. It does not match with any of the known species of the genus, hence described as a new taxon.

Tomentella garhwaliana Samita, Sanyal & Dhingra

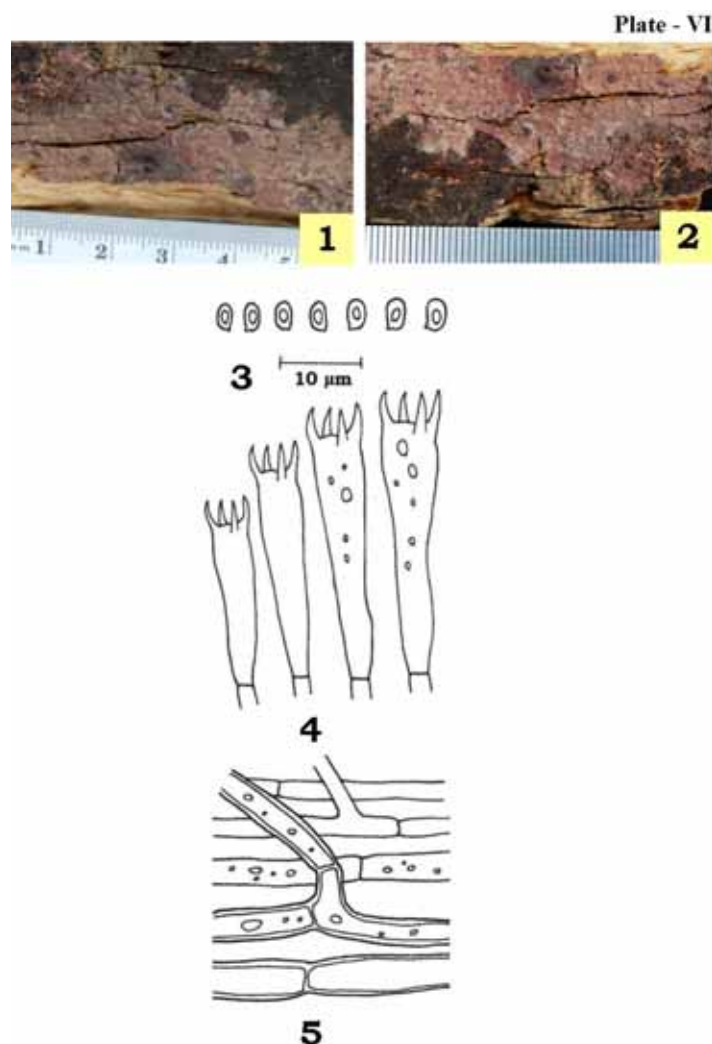
Mycobank 808625

Differs from rest of species of *Tomentella* in having deep violet to blackish basidiocarps and basidia with covering of greenish material.

Type: India, Uttarakhand: Tehri Garhwal, Dhanaulti, on angiospermous stump, Samita 6329 (PUN, holotype), September 02, 2012.

Etymology: The epithet refers to Garhwal region of the state of Uttarakhand.

Basidiocarp resupinate, effused, adnate; up to $300 \mu\text{m}$ thick in section; hymenial surface smooth, deep violet to blackish when fresh, not changing much on drying; margins thinning, paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae septate, without clamps; basal hyphae up to $7.7 \mu\text{m}$ wide, parallel to the substrate, thick–walled, distantly septate, less branched, dark brown, with rough to spinulose outer wall; subhymenial hyphae up to $5.6 \mu\text{m}$ wide, vertical, closely septate, thin– to somewhat thick–walled, more branched. **Hyphal cordons** up to $20.0 \mu\text{m}$



FIGS 1-5. *Leptosporomyces singularis* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);

3. basidiospores; 4. basidia; 5. generative hyphae

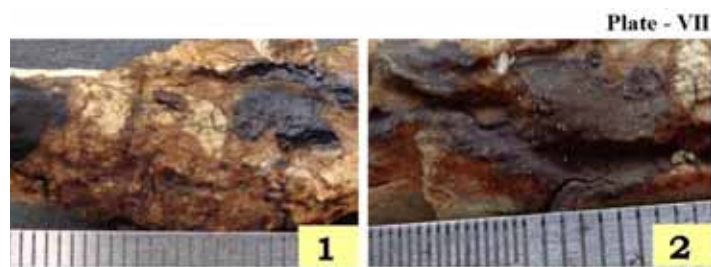
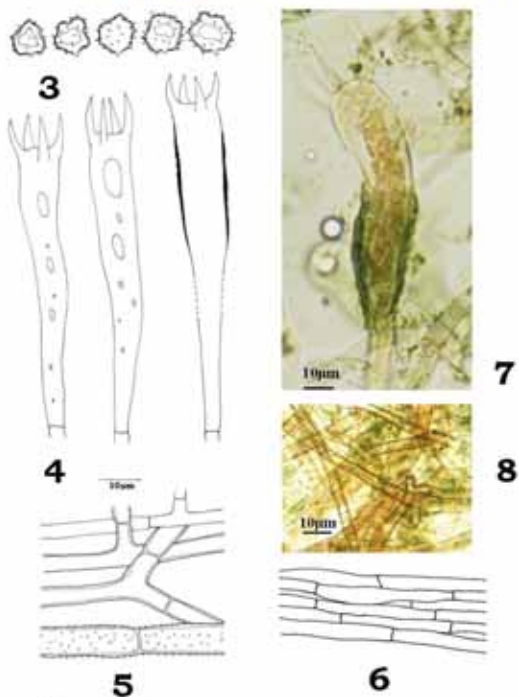


Plate - VII



FIGS 1-8. *Tomentella garhwaliana* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae; 6. portion of hyphal
cord; 7-8. Microphotographs (7. basidium; 8. hyphae)

wide, dull brown, individual hyphae up to 3.3 μm wide, septate, without clamps. **Cystidia** none. **Basidia** 70.0–88.0 \times 10.0–12.5 μm , narrowly clavate, somewhat sinuous, 4-sterigmate, thin- to thick-walled, covered by a thick, greenish material, without basal clamp, with or without oily contents; sterigmata up to 12.5 μm long. **Basidiospores** 8.0–10.6 μm across, irregular in outline to lobed, thick-walled, with oily contents, echinulate, yellowish brown (Plate 7).

Remarks– This species is peculiar in having smooth, deep violet to blackish basidiocarps, simple-septate hyphae, narrowly clavate basidia having a covering of greenish material and irregular to lobed basidiospores and does not match with any of the known species Larsen, Køljalg, Rattan, Dhingra, Dhingra and Rani, Harpreet *et al.* [7-10].

Vararia himalayana Samita, Sanyal & Dhingra

Mycobank 808623

This species differs from *V. gomezii* in having dendrohyphidia only in the subhymenium, very long gloecystidia and longer basidia.

Type: India, Uttarakhand: Tehri Garhwal, Surkanda Devi, on stump of *Q. leucotrichophora*, Dhingra 6263 (PUN, holotype), September 28, 2012.

Etymology: The epithet refers to the Himalayan region of collection.

Basidiocarps resupinate, adnate, effused, up to 410 μm thick in section; hymenial surface smooth to tuberculate, pale orange to grayish orange to brownish orange when fresh, not changing much on drying; margins thinning, fibrillose, paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae septate, without clamps, thin-walled; basal hyphae up to 6.3 μm wide, parallel to the substrate, less branched, heavily encrusted; subhymenial hyphae up to

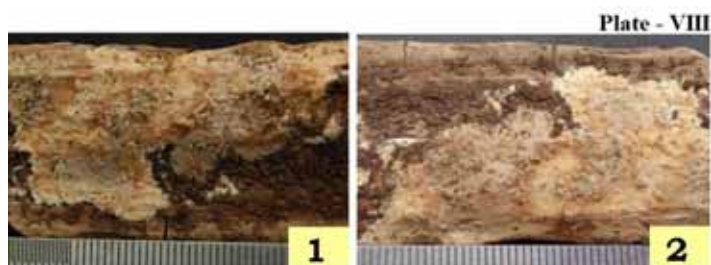
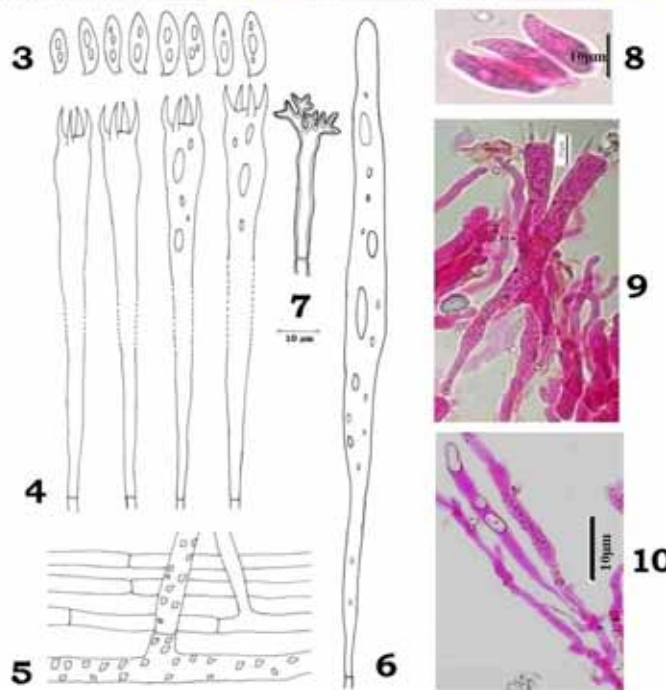


Plate - VIII



FIGS 1-10. *Vararia himalayana* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae; 6. gloecystidium;
7. dendrohyphidium; 8-10. Microphotographs (8. basidiospores;
9. basidia; 10. gloecystidia)

3.5 µm wide, vertical, more branched. **Dendrohyphidia** few, present only in the subhymenium, dichotomously to irregularly branched, branches thick-walled, with blunt to somewhat pointed endings, dextrinoid. **Gloeocystidia** 87.0–166.0 × 6.3–10.0 µm, tubular, smooth, thin-walled, without basal clamp, with oily contents negative to sulphovanillin, projecting up to 30 µm out of hymenium. **Basidia** 80.0–108.0 × 8.8–10.0 µm, narrowly clavate, sinuous, 4–sterigmate, with or without oily contents, without basal clamp; sterigmata up to 6.5 µm long. **Basidiospores** 11.1–15.5 × 4.4–5.5 µm, subfusiform to navicular, thin-walled, smooth, with oily contents, acyanophilous, inamyloid, sometimes in groups of two or three (**Plate 8**).

Remarks – This species differs from *V. gomezii* in having dendrohyphidia only in the subhymenium, very long, thin-walled gloeocystidia and longer basidia (80.0 – 108.0 × 8.8 – 10.0 µm in comparison to 34.0–45.0 × 7.0–8.0 µm).

Vararia indica Samita, Sanyal & Dhingra

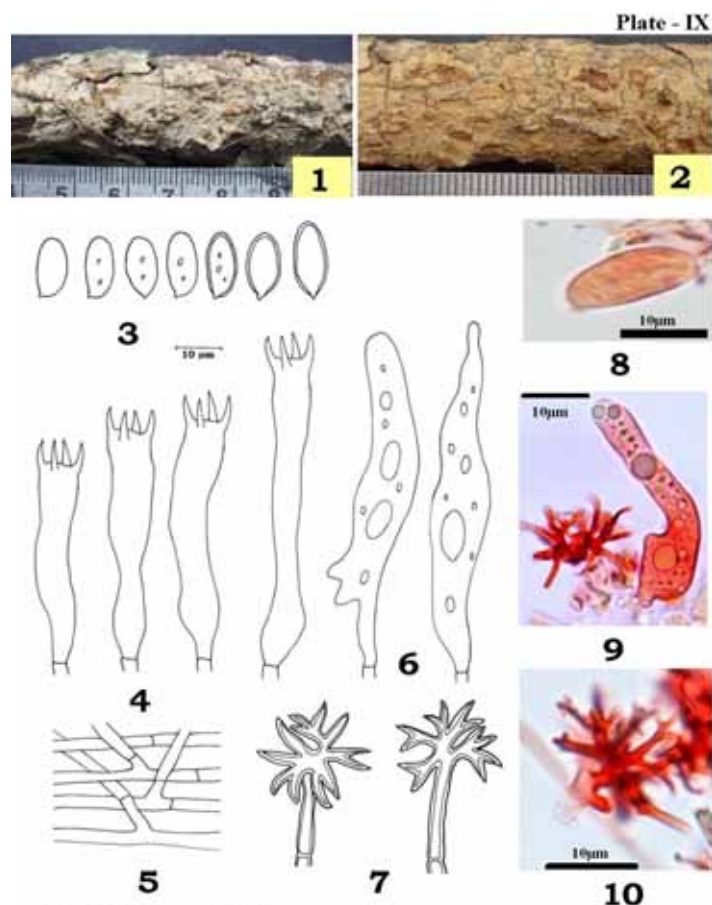
Mycobank 808624

Differs from *V. ellipsospora* in having bigger, ellipsoid to ovoid basidiospores.

Type: India, Uttarakhand: Pauri Garhwal, Adwani, on stump of *Q. leucotrichophora*, Dhingra 6265 (PUN, holotype), July 23, 2011.

Etymology: The epithet refers to the country of collection.

Basidiocarp resupinate, adnate, effused, up to 160 µm thick in section; hymenial surface smooth to somewhat tuberculate, grayish white to grayish yellow when fresh, pale yellow to grayish orange on drying, margins thinning, paler concolorous, to



FIGS 1-10. *Vararia indica* sp. nov.

1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
 3. basidiospores; 4. basidia; 5. generative hyphae; 6. gloeocystidia;
 7. dendrohyphidia; 8-10. Microphotographs (8. basidiospore;
 9. cystidium; 10. dendrohyphidia)

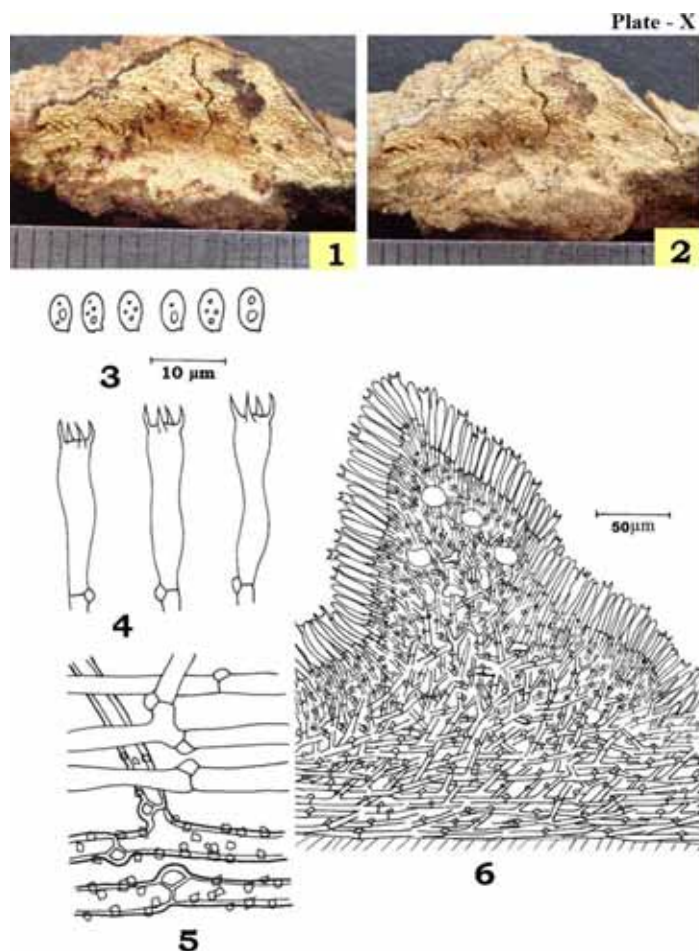
indeterminate. **Hyphal system** monomitic. Generative hyphae up to 3.0 µm wide, septate, without clamps; basal hyphae thin- to thick-walled, parallel to the substrate, less branched; subhymenial hyphae vertical, thin-walled, more branched. **Dendrohyphidia** abundant, present both in the hymenium and subhymenium, dichotomously to irregularly branched, branches thick-walled, with blunt to somewhat pointed endings. **Gloeocystidia** 70.0–75.0 × 10.0–11.8 µm, variable in shape, generally fusiform, tip pointed, moniliform to round, base narrow to swollen, smooth, thin-walled, with oily contents negative to sulphovanillin, without basal clamp, projecting up to 30 µm out of hymenium. **Basidia** 41.0–65.0 × 6.5–7.2 µm, clavate to subutriform, somewhat constricted, 4–sterigmate, without basal clamp; sterigmata up to 5.0 µm long. **Basidiospores** 12.7–17.3 × 5.4–7.2 µm, ellipsoid to ovoid, thin- to somewhat thick-walled, smooth, with or without oily contents, acyanophilous, amyloid (**Plate 9**).

Remarks – This species differs from *V. ellipsospora* in having bigger (12.7–17.3 × 5.4–7.2 µm in comparison 8.0–12.0 × 5.5–6.5 µm), ellipsoid to ovoid basidiospores.

Xylodon mussoriensis Samita, Sanyal & Dhingra

Mycobank 808620

The new species differs from *X. asperus* in lacking capitate hyphal ends in the aculei.



FIGS 1-6. *Xylodon mussoortensis* sp. nov.
1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae; 6. V.S. of basidiocarp

Type: India, Uttarakhand: Dehradun, Mussoorie, Mall Road, on angiospermous log, Samita 6207 (PUN, holotype), August 20, 2010.

Etymology: The epithet refers to the locality of collection.

Basidiocarp resupinate, effused, adnate, up to 320 µm thick in section; hymenial surface odontoid, aculei dense, conical, pale orange to grayish orange when fresh, not changing much on drying; margins thinning; paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative hyphae, branched, septate, clamped; basal hyphae up to 4.5 µm wide, parallel to the substrate, encrusted, thick-walled, loosely arranged; subhymenial hyphae up to 3.5 µm wide, vertical, thin-walled, compactly arranged. **Cystidia like hyphal ends** none. **Basidia** 21.0–24.0 × 4.1–5.2 µm, narrowly clavate, somewhat sinuous, 4–sterigmate, with basal clamp; sterigmata up to 4.0 µm long. **Basidiospores** 5.2–5.8 × 3.1–3.5 µm, ellipsoid to broadly ellipsoid, smooth, thin-walled, with oily contents, inamyloid, acyanophilous (**Plate 10**).

Remarks– This species is different from the closely related *X. asperus* in lacking capitate hyphal ends in the aculei and smaller basidiospores with oily contents.

Xylodon subglobosus Samita, Sanyal & Dhingra

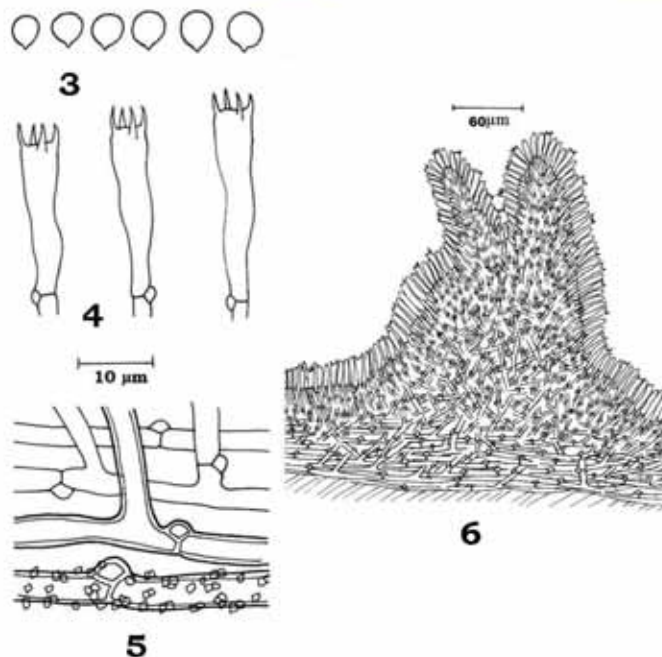
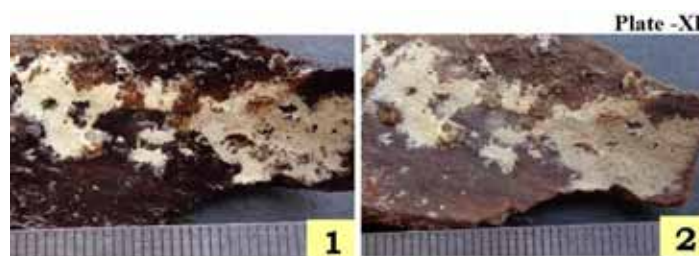
Mycobank 808621

This species is peculiar in having odontoid hymenial surface and small, subglobose basidiospores.

Type: India, Uttarakhand: Tehri Garhwal, Dhanaulti, on angiospermous stump, Samita 6208 (PUN, holotype), August 21, 2010.

Etymology: The epithet refers to the shape of basidiospores.

Basidiocarp resupinate, effused, adnate, up to 300 µm thick in section; hymenial surface odontoid, aculei dense, conical, pale orange when fresh, orange gray to grayish orange on drying; margins thinning, fibrillose, paler concolorous, to indeterminate. **Hyphal system** monomitic. Generative



FIGS 1-6. *Xylodon subglobosus* sp. nov.
1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. generative hyphae; 6. V.S. of basidiocarp

hyphae, branched, septate, clamped; basal hyphae up to 4.7 µm wide, parallel to the substrate, thick-walled, loosely arranged, encrusted; subhymenial hyphae up to 3.5 µm wide, vertical, thin-walled, compactly arranged. Prominent patches of encrustation in the aculei. **Cystidia like hyphal ends** none. **Basidia** 20.0–26.0 × 4.7–5.3 µm, clavate, somewhat sinuous, 4–sterigmate, with basal clamp; sterigmata up to 4.0 µm. **Basidiospores** 4.2–5.2 × 3.0–5.0 µm, subglobose, smooth, thin-walled, inamyloid, acyanophilous (**Plate 11**).

Remarks– This species differs from the closely related *X. pruni* in having smaller (4.2–5.2 × 3.0–5.0 µm), subglobose basidiospores as compared to bigger (5.5–7.0 × 3.5–4.5 µm), ellipsoid ones.

Scytinostroma phaeosarcum var. *angustispora* Samita, Sanyal & Dhingra var. nov.

Mycobank 808622

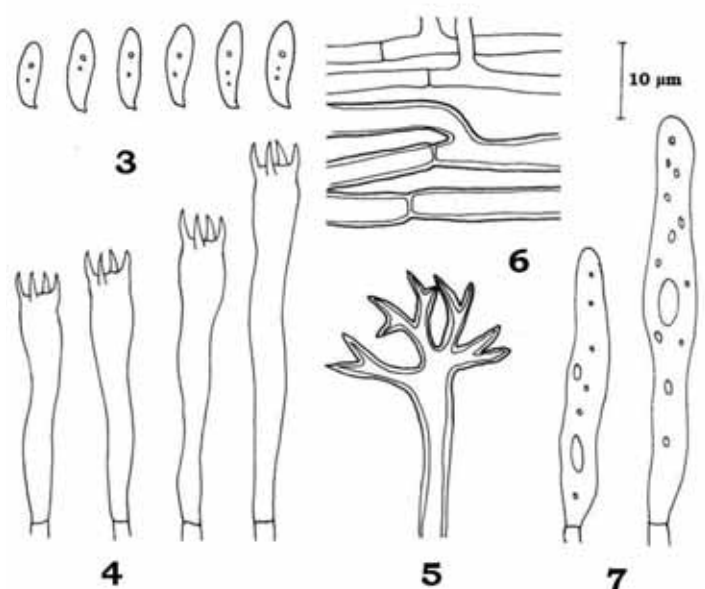
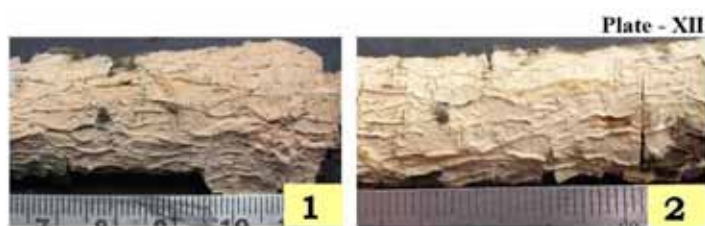
The new variety differs from *S. phaeosarcum* in having narrower, suballantoid to subfusiform basidiospores.

Type: India, Uttarakhand: Pauri Garhwal, Adwani, on burnt stump of *R. arboreum*, Samita 6256 (PUN, holotype), August 23, 2011.

Etymology: The epithet refers to the shape of basidiospores.

Basidiocarp resupinate, adnate, effused, up to 210 µm thick in section; hymenial surface smooth to tuberculate, pale orange to grayish orange when fresh, not changing much on drying; margins thinning, paler concolorous, to indeterminate.

Hyphal system dimitic. Generative hyphae up to 4.5 µm wide, branched, septate, thin-to thick-walled, without clamps.



Figs 1-7. *Scytinostroma phaeosarcum* var. *angustispora* var. nov.
1-2. Basidiocarp showing hymenial surface (1. fresh, 2. dry);
3. basidiospores; 4. basidia; 5. skeletal-binding hyphae; 6. generative hyphae; 7. gloeocystidia

Skeletal-binding hyphae up to 5.3 µm wide, dichotomously to irregularly branched, restricted to basal zone, aseptate, thick-walled, cyanophilous. **Gloeocystidia** 36.0–54.0 × 5.2–7.0 µm, subcylindrical, smooth, thin-walled, with oily contents positive to sulphovanillin, without basal clamp. **Basidia** 29.0–48.0 × 4.7–6.0 µm, clavate, somewhat sinuous, 4–sterigmate, without basal clamp; sterigmata up to 5.5 µm long. **Basidiospores** 8.0–11.2 × 2.9–3.5 µm, suballantoid to subfusiform, thin-walled, smooth, with oily contents, acyanophilous, inamyloid (**Plate 12**).

Remarks: The new variety differs from *Scytinostroma phaeosarcum* in having narrower (8.0–11.2 × 2.9–3.5 µm) in comparison to (7.5)–8.0–10.0–(11) × 4.5–5.0–(6) µm], suballantoid to subfusiform basidiospores in contrast to broadly ellipsoid ones.

New taxa already published

New genera

Cordochaetec Sanyal, Samita, Dhingra & Avneet P Singh, Mycotaxon 123: 103, 2013.

Distribution in the Himalaya – Uttarakhand

Dendrophlebia Dhingra & Priyanka, Mycotaxon 116: 157, 2011.

Distribution in the Himalaya – Arunachal Pradesh

Hallenbergia Dhingra & Priyanka, Mycotaxon 118: 289, 2011.

Distribution in the Himalaya – Bhutan

Radulomycetopsis Dhingra, Priyanka & J. Kaur., Mycotaxon 119: 133, 2012.

Distribution in the Himalaya – Bhutan

Repetobasidiopsis Dhingra & Avneet P. Singh, Mycotaxon 105: 421, 2008.

Distribution in the Himalaya - Arunachal Pradesh

Trimitiella Dhingra, Mycotaxon 97: 125, 2006.

Distribution in the Himalaya - Arunachal Pradesh

Distribution in the Himalaya - Manipur

New subgenera

Stereum subgen. ***Acanthostereum*** Boidin, Parmasto, Dhingra & Lanquetin, Persoonia 10: 320, 1979.

Distribution in the Himalaya - Manipur

Stereum subgen. ***Aculeatostereum*** Boidin, Parmasto, Dhingra & Lanquetin, Persoonia 10: 320, 1979

New species

Aleurodiscus himalaicus Maninder K, Avneet P. Singh, Dhingra & Ryvarde, Synopsis Fungorum 32: 5, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (5200, 5985, 5986)]

A. indicus Ryvarde, S.K. Sanyal & Dhingra, Synopsis Fungorum (Oslo) 30: 14, 2012.

Distribution in the Himalaya - Uttarakhand [PUN (4413, 6292)]

Athelopsis parvisporus Avneet P. Singh, Dhingra & J. Kaur, Mycotaxon 113: 327, 2010.

Distribution in the Himalaya - Himachal Pradesh [PUN (4860)]

Candelabrochaete himalayana Dhingra, Synopsis Fungorum 29: 26, 2011.

Distribution in the Himalaya - Bhutan [PAN (19430)]

Ceraceomyces bizonatus Dhingra & Avneet P. Singh, Mycotaxon 106: 399, 2009.

Distribution in the Himalaya - Himachal Pradesh [PUN (3612, 3613)]

Clavulicium hallenbergii Avneet P. Singh, J. Kaur & Dhingra, Mycotaxon 120: 353, 2012.

Distribution in the Himalaya - Himachal Pradesh [PUN (3683, 4898)]

Conohypha grandispora Dhingra, Synopsis Fungorum 29: 28, 2011.

Distribution in the Himalaya - West Bengal [PAN (19286, 19323)]

Cristinia tubulicystidiata J. Kaur, Dhingra & Hallenberg, Mycotaxon 127: 89, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (4763)]

Dendrophlebia crassispora Dhingra & Priyanka, Mycotaxon 116: 159, 2011.

Distribution in the Himalaya - Arunachal Pradesh [PAN (19726)]

Flavophlebia sphaerospora Man. Kaur, Avneet P. Singh & Dhingra, Mycotaxon 126: 231, 2013.

Distribution in the Himalaya - Himachal Pradesh [PUN (5166)]

Fibulomyces cystoideus Dhingra, Synopsis Fungorum 29: 30, 2011.

Distribution in the Himalaya - Bhutan [PAN (19365)]

Hallenbergia singularisa Dhingra & Priyanka, Mycotaxon 118: 289, 2011.

Distribution in the Himalaya - Bhutan [PAN (19548)]

Hyphoderma bicycidiatum Priyanka & Dhingra, Mycotaxon 119: 255, 2012.

Distribution in the Himalaya - Himachal Pradesh [PUN (4928)]

H. clarusproprietas Dhingra, Synopsis Fungorum 29: 32, 2011.

Distribution in the Himalaya - West Bengal [PAN (19239)]

H. densustextum Dhingra, Synopsis Fungorum 29: 33, 2011.

Distribution in the Himalaya - West Bengal [PAN (19229)]

H. hallenbergii Man. Kaur, Avneet P. Singh & Dhingra, Mycotaxon (in press).

Distribution in the Himalaya - Himachal Pradesh [PUN (6962)]

H. parvisporum Avneet P. Singh, Priyanka, Dhingra & Singla, Mycotaxon 111: 71, 2010.

- Distribution in the Himalaya - Himachal Pradesh [PUN (1623)]
H. sikkimia Dhingra, Synopsis Fungorum 29: 37, 2011.
- Distribution in the Himalaya - Sikkim [PAN (19349)]
H. sporulosum Dhingra, Synopsis Fungorum 29: 39, 2011.
- Distribution in the Himalaya - West Bengal [PAN (19526)]
H. subglobosum Priyanka & Dhingra, Mycotaxon 119: 257, 2012.
- Distribution in the Himalaya - Himachal Pradesh [PUN (4299)]
Hyphodontia caulicystidiata Dhingra, Synopsis Fungorum 29: 41, 2011.
- Distribution in the Himalaya - West Bengal [PAN (19262)]
H. dhingrae Samita & Sanyal, Mycotaxon (in press).
- Distribution in the Himalaya - Uttarakhand [PUN (5199)]
Leptocorticium indicum Samita, Sanyal & Dhingra, Mycotaxon (in press).
- Distribution in the Himalaya - Uttarakhand [PUN (6092)]
Leucogyrophana thimphina Dhingra, Synopsis Fungorum 29: 44, 2011.
- Distribution in the Himalaya - Bhutan [PAN (19566)]
Paullicorticium indicum Dhingra, Synopsis Fungorum 29: 46, 2011.
- Distribution in the Himalaya - West Bengal [PAN (19255)]
Peniophora hallenbergii Samita & Dhingra, Mycotaxon 126: 235, 2013.
- Distribution in the Himalaya - Uttarakhand [PUN (5167, 6285)]
Phlebia crassisubiculata Avneet. P. Singh, Priyanka, Dhingra & Singla, Mycotaxon 112: 21, 2010.
- Distribution in the Himalaya - Himachal Pradesh [PUN (1405)]
P. interjacenoides Dhingra, Synopsis Fungorum 29: 49, 2011.
- Distribution in the Himalaya - Bhutan [PAN (19628)]
P. microspora Dhingra, Synopsis Fungorum 29: 51, 2011.
- Distribution in the Himalaya - West Bengal [PAN (19203)]
P. kamengii Dhingra, Synopsis Fungorum 29: 51, 2011.
- Distribution in the Himalaya - Arunachal Pradesh [PAN (19690, 19693)]
P. singularisa Dhingra, Synopsis Fungorum 29: 54, 2011.
- Distribution in the Himalaya - Bhutan [PAN (19612)]
P. thindii Dhingra, Synopsis Fungorum 29: 57, 2011.
- Distribution in the Himalaya - West Bengal [PAN (19249, 19305)]
Phlebiopsis darjeelingensis Dhingra, Nova Hedwigia, 44: 222, 1987.
- Distribution in the Himalaya - West Bengal [PAN (19199)]
P. himalayensis Dhingra, Nova Hedwigia, 44: 222, 1987.
- Distribution in the Himalaya - Arunachal Pradesh [PAN (19862, 19888)], West Bengal [PAN (19202)]
P. mussooriensis Priyanka, Dhingra & N. Kaur, Mycotaxon 115: 255, 2011.
- Distribution in the Himalaya - Uttarakhand [PUN (3405)]
Radulodon indicus Jyoti & Dhingra, Synopsis Fungorum 32: 38, 2014.
- Distribution in the Himalaya - Jammu and Kashmir [PUN (5987)]
R. acaciae G. Kaur, Avneet P. Singh & Dhingra 127: 111, 2014.
- Distribution in the Himalaya - Chandigarh [PUN (5982, 5983, 5984)]
Redulomycetopsis cystidiata Dhingra, Mycotaxon 119: 135, 2012.
- Distribution in the Himalaya - Arunachal Pradesh [PAN (19767)]
Repetobasidiopsis grandisporus Dhingra & Avneet P. Singh, Mycotaxon 97: 116, 2006.
- Distribution in the Himalaya - Arunachal Pradesh [PAN (19706)]
Scytinostroma pulverulentum Boidin & Dhingra, In Boidin & Lanquetin, Le Genre *Scytinostroma* Donk. (*Basidiomycètes, Lachnocladiaceae*), Bibliotheca Mycologica 114: 94, 1987.
- Distribution in the Himalaya - Bhutan [PAN (19598)]

S. renisporum Boidin, Lanquetin & Gilles, In Boidin & Lanquetin, Le Genre *Scytinostroma* Donk. (*Basidiomycètes, Lachnocladiaceae*), Bibliotheca Mycologica 114: 97, 1987.

Distribution in the Himalaya - Meghalaya [PAN (19029)]

Sistotrema angustispora Dhingra, Synopsis Fungorum 29: 63, 2011.

Distribution in the Himalaya - West Bengal [PAN (19233)]

Sistotremastrum roseum Jaspreet and Dhingra, Synopsis Fungorum 32: 26, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (5057)]

Stereum peculiare Parm., Boidin & Dhingra, Persoonia 10: 311, 1979.

Distribution in the Himalaya - Manipur [PAN (19093, 19787, 19789, 19798, 19803, 19820, 19833, 19847, 19864, 19876)]

T. kalatopii Dhingra & Malka, Synopsis Fungorum 32: 30, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (1748)]

T. unicus Dhingra & Malka, Synopsis Fungorum 29: 32, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (1756)]

Trimitiella indica Dhingra, Mycotaxon 97: 126, 2006.

Distribution in the Himalaya - Arunachal Pradesh [PAN (19722)]

V. longicystidiata Samita, Sanyal, Dhingra & Singh, Mycotaxon 120: 357, 2012.

Distribution in the Himalaya - Uttarakhand [PUN (4413)]

New varieties

Amphinema byssoides var. *macrospores* Dhingra & Avneet P. Singh, Synopsis Fungorum 32:10, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (3528)]

Botryobasidium subcoronatum var. *crassispora* Dhingra, Synopsis Fungorum 29: 25, 2011.

Distribution in the Himalaya - Himachal Pradesh [PUN (4891)]

Ceraceomyces sublaevis var. *grandisporus* Dhingra & Avneet P. Singh, Synopsis Fungorum 32:13, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (3560)]

Conohypha albocrema var. *angustisporum* Priyanka & Dhingra, Synopsis Fungorum 32:14, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (4453)]

Hyphoderma roseocrema var. *minutisporum* Priyanka & Dhingra, Synopsis Fungorum 32:18, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (4470)]

H. setigerum var. *bicystidium* Dhingra & Singla, Synopsis Fungorum 32:18, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (1469)]

Tomentella cladii var. *grandii* Dhingra and Malka, Synopsis Fungorum 32:28, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (1749)]

Tubulicium vermiferum var. *hexasterigmatum* Jaspreet & Dhingra, Synopsis Fungorum 32: 33, 2014.

Distribution in the Himalaya - Himachal Pradesh [PUN (5069)]

New Records for the Himalaya

S. No.	Name of the taxon	Herbarium No.
1.	<i>Acanthophysallum lividocoeruleum</i> (Karst.) Parmasto	PUN (5007, 5008)
2.	<i>Aleurodiscus amorphous</i> (Pers.) Schröt.	PUN (5003)
3.	<i>Aleurodiscus cerussatus</i> (Bres.) Höhn. & Litsch.	PUN (6290, 6291)
4.	<i>Aleurodiscus lapponicus</i> Litsch.	PUN (5005, 5006)
5.	<i>Aleurodiscus oakesii</i> (Berk. & Curt.) Höhn. & Litsch.	PAN (19450)
6.	<i>Alutaceodontia alutacea</i> (Fr.) Hjortstam & Ryvarde	PUN (4924)
7.	<i>Amethicium luteoincrustedum</i> Hjortstam & Ryvarde	PUN (6951)
8.	<i>Amphinema byssoides</i> (Fr.) John Erikss.	PAN (19620)

9.	<i>Amyloathelia crassiuscula</i> Hjortstam & Ryvarde	PUN (4841)
10.	<i>Asterostroma boninense</i> Suhara & N. Maekawa	PUN (6214, 6215)
11.	<i>Asterostroma cervicolor</i> (Berk. & Curt.) Mass.	PAN (19253)
12.	<i>Athelia bombacina</i> Pers.	PUN (1851, 3415)
13.	<i>Athelia pyriformis</i> (Christ.) Jülich	PUN (6017)
14.	<i>Athelia salicum</i> Pers.	PUN (6016)
15.	<i>Athelia tenuispora</i> Jülich	PUN (6015)
16.	<i>Athelopsis lunata</i> (Romell ex Bourdot & Galzin) Parmasto	PUN (4859)
17.	<i>Athelopsis subinconspicua</i> (Litsch.) Jülich	PUN (4863)
18.	<i>Boidinia furfuracea</i> (Bres.) Stalpers & Hjortstam	PUN (4199, 5001)
19.	<i>Boidinia lacticolor</i> (Bres.) Hjortstam & Ryvarde	PUN (5000)
20.	<i>Botryobasidium botryosum</i> (Bres.) John Erikss.	PAN (19289)
21.	<i>Botryobasidium laeve</i> (J. Erikss.) Parmasto	PUN (6502)
22.	<i>Botryobasidium obtusisporum</i> J. Erikss.	PUN (3429, 4890)
23.	<i>Botryobasidium pruinaum</i> (Bres.) J. Erikss.	PUN (3603, 3604)
24.	<i>Botryobasidium subcoronatum</i> (Höhn. & Litsch.) Donk	PAN (19235)
25.	<i>Botryohypochnus isabellinus</i> (Fr.) J. Erikss.	PAN (19622)
26.	<i>Byssomerulius corium</i> (Fr.) Parm.	PAN (19633)
27.	<i>Ceraceomyces borealis</i> (Rom.) J. Erikss. & Ryv.	PAN (19533)
28.	<i>Ceraceomyces cystidiatus</i> (J. Erikss. & Hjortstam in Jülich) Hjortstam	PUN (4842)
29.	<i>Ceraceomyces sublaevis</i> (Bres.) Jülich	PUN (1849, 3416)
30.	<i>Ceratobasidium obscurum</i> D.P. Rogers	PUN (4542)
31.	<i>Clavulicium delectabile</i> (Jacks.) Hjortstam	PAN (19392)
32.	<i>Clavulicium macounii</i> (Burt) J. Erikss. & Boidin ex Parmasto,	PUN (6058, 6059)
33.	<i>Conferticium ochraceum</i> (Fr.) Hallenb.	PUN (5015, 5016)
34.	<i>Coniophora arida</i> (Fr.) Karst.	PAN (19420)
35.	<i>Coniophora betulae</i> Karst.	PAN (19575)
36.	<i>Coniophora cordensis</i> Rattan	PAN (19546)
37.	<i>Coniophora deflectens</i> (Bres. & Sydow) Parmasto	PUN (6025, 6026)
38.	<i>Coniophora fusispora</i> (Cooke & Ell.) Cooke	PAN (19427, 19583)
39.	<i>Coniophora olivacea</i> (Fr.) Karst.	PAN 19355, 19544
40.	<i>Conohypha terricola</i> (Burt) Jülich	PUN (4504)
41.	<i>Corticium roseum</i> Pers.	PUN (3419, 3579)
42.	<i>Cristinia helvetica</i> (Pers.) Parm.	PAN (19477)
43.	<i>Crustoderma corneum</i> (Bourdot and Galzin) Nakasone	PUN (4444, 4447)
44.	<i>Crustoderma dryinum</i> (Berk. & M.A. Curtis) Parmasto	PUN (3491, 4450)
45.	<i>Crustoderma testatum</i> (H.S. Jacks. and Dearden) Nakasone	PUN (3816, 4451)
46.	<i>Cylindrobasidium evolvens</i> (Fr. : Fr.) Jülich	PAN (19462)
47.	<i>Dacryobolus karstenii</i> (Bres.) Oberw.	PAN (19641)
48.	<i>Dendrothele alliacea</i> (Quél.) P.A. Lemke	PUN (4902)
49.	<i>Dendrothele Mexicana</i> (P.A. Lemke) P.A. Lemke	PUN (6088, 6089)
50.	<i>Dendrothele seriata</i> (Berk. & M.A. Curtis) P.A. Lemke	PUN (4906)
51.	<i>Dendrothele strumosa</i> (Fr.) P.A. Lemke	PUN (6090, 6091)
52.	<i>Deviodontia pilaecystidiata</i> (Parmasto) Hjortstam & Ryvarde	PUN (6103, 6104)
53.	<i>Dichostereum kenyense</i> Boidin & Lanq.	PUN (4971)
54.	<i>Dichostereum peniophoroides</i> (Burt) Boidin & Lanq.	PUN (5145)
55.	<i>Duportella Miranda</i> Boidin, Lanq. & Gilles	PUN (6266, 6267)
56.	<i>Fibriciellum silvae-ryae</i> J. Erikss. & Ryvarde	PUN (1408, 1834)
57.	<i>Fibricium rude</i> (Karst.) Jülich	PUN (1835, 1837)
58.	<i>Fibrodontia gossypina</i> Parm.	PAN (19669)

59.	<i>Fibulomyces cystoideus</i> Dhingra	PAN (19365)
60.	<i>Fibulomyces mutabilis</i> (Bres.) Jülich	PUN (1468, 3511)
61.	<i>Galzinia incrustans</i> (Höhn. & Litsch.) Parmasto	PUN (4907)
62.	<i>Gloeocystidiellum clavuligerum</i> (Höhn. & Litsch.) Nakasone	PUN (6209, 6210)
63.	<i>Gloeocystidiellum lactescens</i> (Berk.) Boidin	PAN (19502)
64.	<i>Hastodontia halonata</i> (J. Erikss. & Hjortstam) Hjortstam & Ryvarde	PUN (6105, 6106)
65.	<i>Hymenochaete luteobadia</i> (Fr.) Höhn. & Litsch.	PUN (3081, 3082)
66.	<i>Hymenochaete rhabarbarina</i> (Berk.) Cooke	PUN (6119, 6121)
67.	<i>Hymenochaete separate</i> G. Cunn.	PUN (3449)
68.	<i>Hyphoderma argillaceum</i> (Bres.) Donk	PAN (19221)
69.	<i>Hyphoderma cremeoalbum</i> (Höhn. & Litsch.) Jülich	PUN (4221)
70.	<i>Hyphoderma deviatum</i> (S. Lundell) Parmasto	PUN (3353, 3355)
71.	<i>Hyphoderma guttuliferum</i> (P. Karst.) Donk	PUN (4459, 4460)
72.	<i>Hyphoderma luridum</i> (Bourdot & Galzin) J. Erikss. & Hjortstam	PUN(5134)
73.	<i>Hyphoderma macedonicum</i> (Litsch.) Donk	PUN (4463, 4464)
74.	<i>Hyphoderma medeoburiense</i> (Burt) Donk	PUN (1883, 3752)
75.	<i>Hyphoderma obtusum</i> J. Erikss.	PUN (4465)
76.	<i>Hyphoderma occidentale</i> (D.P. Rogers) Boidin & Gilles	PUN (4051)
77.	<i>Hyphoderma orphanellum</i> (Bourdot & Galzin) Donk	PUN (4619)
78.	<i>Hyphoderma pallidum</i> (Bres.) Donk	PAN (19609)
79.	<i>Hyphoderma praetermissum</i> (Karst.) J. Erikss. & Strid	PAN (19501)
80.	<i>Hyphoderma puberum</i> (Fr.) Wallr.	PAN (19512)
81.	<i>Hyphoderma rude</i> (Bres.) Hjortstam and Ryvarde	PAN (19837)
82.	<i>Hyphoderma sambuci</i> (Pers.) Jülich	PAN (19753, 19871)
83.	<i>Hyphoderma setigerum</i> (Fr.) Donk	PAN (19534)
84.	<i>Hyphoderma sibiricum</i> (Parmasto) J. Erikss. & Å. Strid	PUN (4203, 4615)
85.	<i>Hyphoderma terricola</i> (Burt) K.J. Martin and Gilb.	PUN (4504)
86.	<i>Hyphoderma tsugae</i> (Burt) J. Erikss. and Å Strid	PAN (19106)
87.	<i>Hyphodontia abieticola</i> (Bourdot & Galzin) J. Erikss.	PUN (6184)
88.	<i>Hyphodontia alutacea</i> (Fr.) J. Erikss.	PAN (19625)
89.	<i>Hyphodontia aspera</i> (Fr.) J. Erikss.	PAN (19433)
90.	<i>Hyphodontia barbajovis</i> (Bull.) J. Erikss.	PUN (4948)
91.	<i>Hyphodontia hastata</i> (Litsch.) J. Erikss.	PUN (4950)
92.	<i>Hyphodontia juniperi</i> (Bourdot & Galzin) J. Erikss. & Hjortstam	PUN (4952)
93.	<i>Hyphodontia nespori</i> (Bres.) J. Erikss. & Hjortstam	PAN (19745)
94.	<i>Hyphodontia pallidula</i> (Bres.) J. Erikss.	PAN (19475)
95.	<i>Hyphodontia propinqua</i> Hjortstam	PAN (19267)
96.	<i>Hypochnicium caucasicum</i> Parm.	PAN (19011)
97.	<i>Hypochnicium cremicolor</i> (Bres.) H. Nilsson & Hallenb.	PUN (4516)
98.	<i>Hypochnicium erikssonii</i> Hallenb. & Hjortstam	PUN (4508)
99.	<i>Hypochnicium geogenium</i> (Bres.) J. Erikss.	PAN (19121), PUN (4509)
100.	<i>Hypochnicium punctulatum</i> (Cooke) J. Erikss.	PUN (3824, 4507)
101.	<i>Hypochnicium sphaerosporum</i> (Höhn. & Litsch.) J. Erikss.	PAN (19005)
102.	<i>Hypochnicium subrigescens</i> Boidin	PUN (4520)
103.	<i>Intextomyces contiguus</i> (Karst.) J. Erikss. & Ryvarde	PAN (19550)
104.	<i>Kneiffiella microspora</i> (J. Erikss. & Hjortstam)	PUN (6188, 6189)
105.	<i>Kneiffiella subalutacea</i> (P. Karst.) Julich and Stalpers	PUN (6190, 6191)
106.	<i>Lauriliasulcata</i> (Burt) Pouzar	PAN (19642)
107.	<i>Laxitextum incrustatum</i> Hjortstam & Ryvarde	PUN (4174, 4966)
108.	<i>Leptosporomyces galzinii</i> (Bourdot) Jülich	PUN (4864)

109.	<i>Leptosporomyces raunkiaerii</i> (Christ.) Jülich	PAN (19431)
110.	<i>Leptosporomyces roseus</i> Jülich	PAN (19557), PUN (4866)
111.	<i>Leptosporomyces septentrionalis</i> (J. Erikss.) Krieglst.	PUN (5088)
112.	<i>Licrostroma subgiganteum</i> (Berk.) Lemke	PAN (19520), PUN (4909)
113.	<i>Lopharia crassa</i> (Lev.) Boidin	PAN (19768)
114.	<i>Megalocystidium luridum</i> (Bres.) Jülich	PUN (3663, 3664)
115.	<i>Odonticium flavicans</i> (Bres.) Nakasone	PUN (6130, 6131)
116.	<i>Pachykytospora tuberculosa</i> (Fr.) Kotl. and Pouzar	PUN (4578, 4579)
117.	<i>Paullicorticium delicatissimum</i> (Jacks.) Liberta	PUN (4899)
118.	<i>Peniophora limitata</i> (Fr.) Cooke	PAN (19615)
119.	<i>Peniophora ovalispora</i> Boidin, Lanq. & Gilles	PUN (6279)
120.	<i>Peniophora pithya</i> (Pers.) J. Erikss.	PUN (3839)
121.	<i>Peniophora rufomarginata</i> (Pers.) Litsch.	PAN (19002)
122.	<i>Peniophorella clavigera</i> (Bres.) K.H. Larss.	PUN (4459, 4460)
123.	<i>Peniophorella echinocystis</i> (J. Erikss. & Å. Strid) K.H. Larss.	PUN (6162)
124.	<i>Peniophorella praetermissa</i> (P. Karst.) K.H. Larss.	PUN (1880, 3432)
125.	<i>Phanerochaete calotricha</i> (P. Karst.) J. Erikss. & Ryvardeen	PUN (4200)
126.	<i>Phanerochaete filamentosa</i> (Berk. & Curt.) Parm.	PAN (19414)
127.	<i>Phanerochaete galactites</i> (Bourdot and Galzin) J. Erikss. & Ryvardeen	PAN (19104)
128.	<i>Phanerochaete septocystidia</i> (Burt) J. Erikss. and Ryvardeen	PUN (4552)
129.	<i>Phanerochaete sordida</i> (Karst.) J. Erikss. & Ryvardeen	PAN (19464)
130.	<i>Phanerochaete tropica</i> (Sheng H. Wu) Hjortstam	PUN (4222)
131.	<i>Phanerochaete velutina</i> (DC. : Fr.) Karst.	PAN (19581)
132.	<i>Phlebia cornea</i> (Bourdot & Galzin) Parmasto	PUN (3445)
133.	<i>Phlebia deflectens</i> (P. Karst.) Ryvardeen	PUN (4548)
134.	<i>Phlebia expallens</i> (Bres.) Parmasto	PUN (4908)
135.	<i>Phlebia gaspesica</i>	PUN (4624)
136.	<i>Phlebia griseoflavescens</i> (Litsch.) J. Erikss. & Hjortstam	PUN (3682)
137.	<i>Phlebia livida</i> (Fr.) Bres.	PAN (19618)
138.	<i>Phlebia ochraceofulva</i> (Bourdot & Galzin) Donk	PUN (4529)
139.	<i>Phlebia rufa</i> (Pers. : Fr.) M.P. Christ.	PUN (4156)
140.	<i>Phlebia segregata</i> (Bourdot & Galzin) Parmasto	PUN (4531)
141.	<i>Phlebia singularisa</i> Dhingra	PAN (19612)
142.	<i>Phlebiella ardosiacae</i> (Bourdot and Galzin) K.H. Larss. and Hjortstam	PUN (4622)
143.	<i>Phlebiella allantospora</i> (Oberw.) Larss. & Hjortstam	PAN (19631)
144.	<i>Phlebiella grisella</i> (Bourd.) Larss. & Hjortstam	PAN (19263)
145.	<i>Phlebiella subflavido-grisea</i> (Litsch.) Oberw.	PAN (19245)
146.	<i>Phlebiella tulasnelloidea</i> (Höhn. & Litsch.) Oberw.	PAN (19713)
147.	<i>Phlebiopsis gigantea</i> (Fr.) Jülich	PAN (19410)
148.	<i>Pseudotomentella atrofusca</i> M.J. Larsen	PUN (1766)
149.	<i>Pseudotomentella tristis</i> (P. Karst.) M.J. Larsen	PUN (5037)
150.	<i>Punctularia atropurpurascens</i> (Berk. & Br.) Petch	PUN (6100)
151.	<i>Radulomyces confluens</i> (Fr.) M.P. Christ.	PUN (4362)
152.	<i>Resinicium friabile</i> Hjortstam & Melo	PUN (4922)
153.	<i>Scotoderma viride</i> (Sacc.) Jülich	PUN (3493)
154.	<i>Scytinostroma albocinctum</i> (Berk. & Broome) Boidin & Lanq.	PUN (4979)
155.	<i>Scytinostroma alutum</i> Lanq.	PUN (4980)
156.	<i>Scytinostroma galactinum</i> (Fr.) Donk	PUN (6257)
157.	<i>Scytinostroma hemidichophyticum</i> Pouzar	PUN (6259)
158.	<i>Scytinostroma ochroleucum</i> (Bres. & Torrend.) Donk	PAN (19147)

159.	<i>Scytinostromella heterogena</i> (Boud. & Galz.) Parm.	PAN (19442)
160.	<i>Serpula himantoides</i> (Fr.)Cunn.,	PAN (19688)
161.	<i>Sidera lunata</i> (Romell ex Bourd. & Galz.) Miettinen & K.H.Larss.	PUN (4859)
162.	<i>Sistotrema binucleosporum</i> Hallenb.	PUN (1404)
163.	<i>Sistotrema heteronemum</i> (J. Erikss.) Å. Strid	PUN (6062)
164.	<i>Sistotrema octosporum</i> (J. Schröt. ex Höhn. & Litsch.) Hallenb.	PUN (6064)
165.	<i>Sistotrema porulosum</i> Hallenb.	PUN (1406)
166.	<i>Sistotrema subtrigonospermum</i> D.P. Rogers	PUN (4900)
167.	<i>Sistotremastrum niveocremeum</i> (Höhn. & Litsch.) J. Erikss.	PAN (19542)
168.	<i>Sistotremastrum suecicum</i> Litsch. ex J. Erikss.	PUN (6352)
169.	<i>Stereuma canthophysatum</i> Rehill & Bakshi	PAN (19895)
170.	<i>Stereum australe</i> Lloyd	PUN (3453)
171.	<i>Stereum gausapatum</i> Fr. : Fr.	PAN (19132)
172.	<i>Stereum hirsutum</i> (Willd. : Fr.) Gray	PAN (19664)
173.	<i>Stereum ostrea</i> (Blume & Nees : Fr.) Fr.,	PAN (19804)
174.	<i>Stereum sanguinolentum</i> (Alb. & Schw.) Fr.	PAN (19071)
175.	<i>Stereum subtomentosum</i> Pouzar	PUN (5026)
176.	<i>Subulicystidium meridense</i> Oberw.	PAN (19857)
177.	<i>Suillosporium cystidiatum</i> (D.P. Rogers) Pouzar	PUN (1845)
178.	<i>Thelephora atra</i> Weinm.	PUN (1747, 3709)
179.	<i>Thenatophorus obscures</i> (D.P. Rogers) P. Roberts	PUN (4923)
180.	<i>Thenatophorus ochraceus</i> (Masse) P. Roberts	PUN (1840)
181.	<i>Tomentella asperula</i> (Karst.) Höhn. & Litsch.	PUN (1748)
182.	<i>Tomentella bicolor</i> (Atk. & Burt) Bourdot & Galzin	PUN (5040)
183.	<i>Tomentella brevispina</i> (Bourd. & Galz.) M.J. Larsen	PUN (5041)
184.	<i>Tomentella chlorina</i> (Mass.) Cunn.	PAN (19519)
185.	<i>Tomentella cinereoumbrina</i> (Bres.) Stalpers	PUN (6331)
186.	<i>Tomentella cladii</i> Wakef.	PUN (5048)
187.	<i>Tomentella clavigera</i> Litsch.	PUN (5042)
188.	<i>Tomentella fibrosa</i> (Berk. & M.A. Curtis) Køljalg	PUN (6332)
189.	<i>Tomentella galzinii</i> Bourdot	PUN (5043)
190.	<i>Tomentella griseoviolacea</i> Litsch.	PUN (5044)
191.	<i>Tomentella lapida</i> (Pers.) Stalpers	PUN (1741, 5045)
192.	<i>Tomentella muricata</i> (Ellis & Everh.) Wakef.	PUN (1737)
193.	<i>Tomentella nitellina</i> Bourdot & Galzin	PUN (3412)
194.	<i>Tomentella olivascens</i> (Berk. & M.A. Curtis) Bourdot & Galzin	PUN (1764, 1765)
195.	<i>Tomentella puberula</i> Bourdot & Galzin	PUN (1754)
196.	<i>Tomentella pyrolae</i> (Ellis & Halst.) M.J. Larsen	PUN (5046)
197.	<i>Tomentella radiosa</i> (P. Karst.) Rick	PUN (6338)
198.	<i>Tomentella scobinella</i> G. Cunn.	PUN (1757)
199.	<i>Tomentella stuposa</i> (Link) Stalpers	PUN (5050)
200.	<i>Tomentella subalpine</i> M. J. Larsen	PAN (19322)
201.	<i>Tomentella subclavigera</i> Litsch.	PUN (5051)
202.	<i>Tomentella subilacina</i> (Ellis & Holw.) Wakef.	PUN (5038)
203.	<i>Tomentella terrestris</i> (Berk. & Broome) M.J. Larsen	PUN (5052)
204.	<i>Tomentella testaceogilva</i> Bourdot & Galzin	PUN (5053)
205.	<i>Tomentella varicolor</i> Malençon	PUN (5054)
206.	<i>Tomentella viridula</i> Bourd. & Galz.	PUN (6350)
207.	<i>Trechispora praefocata</i> (Bourdot & Galzin) Liberta	PUN (5066)
208.	<i>Trechispora coharens</i> (Schw.) Jülich& Stalpers	PUN (1841, 3623)

209.	<i>Trechispora fastidiosa</i> (Pers.) Liberta	PUN (5064)
210.	<i>Trechispora microspora</i> (P. Karst.) Liberta	PUN (1472, 1842)
211.	<i>Trechispora mutabilis</i> (Pers.) Liberta	PUN (3112)
212.	<i>Tubulicrinis borealis</i> J. Erikss.	PUN (4604)
213.	<i>Tubulicrinis confusus</i> K.H. Larss. & Hjortstam	PUN (4607)
214.	<i>Tubulicrinis effugiens</i> (Bourd. & Galzin) Oberw.	PUN (4610)
215.	<i>Tubulicrinis orientalis</i> Parmasto	PUN (4612)
216.	<i>Tubulicrinis subulatum</i> (Bourd. & Galz.) Donk	PAN (19626)
217.	<i>Tubulirinis calothrix</i> (Pat.) Donk	PUN (4605)
218.	<i>Vararia ambigua</i> Boidin	PUN (6260)
219.	<i>Vararia minidichophysa</i> Boidin & Lanq.	PUN (4990)
220.	<i>Vararia rugosisporea</i> Boidin, Lanq. & Gilles	PUN (4991)
221.	<i>Varariasphaericosporea</i> Gilbertson	PUN (3637)
222.	<i>Vararia trinidadesis</i> Welden	PUN (6261)
223.	<i>Veluticeps abietina</i> (Pers.) Hjortstam & Tellería	PUN (4911)
224.	<i>Xylobolus frustulatus</i> (Pers. : Fr.) Boidin	PAN (19012)
225.	<i>Xylobolus subpileatus</i> (Berk. & Curt.) Boidin	PAN (19678)

ACKNOWLEDGEMENTS

Author thank the Departments of Botany, Punjabi University, Patiala and Panjab University, Chandigarh for providing laboratory facilities; Department of Science and Technology and UGC, New Delhi for financial assistance and team of research students (Dr. Kuldeep Lal Ji, Dr. Avneet Pal Singh, Dr. Priyanka, Dr. Jaspreet Kaur, Dr. Harpreet Kaur, Dr. Samita Devi, Mr. Sanjeev K. Sanyal, Mrs. Nishi, Mrs. Malika Rani, Miss Maninder, Miss Gurpreet Kaur, Miss Ritu Devi, Miss Jyoti, Mrs. Navneet Kaur, Miss Nina Jain for contributing and compiling of this work.

REFERENCES

- [1] Kornerup A and Wanscher JH. (1978). Metheun's Handbook of colours, IIIrd Ed. Metheun and Co. Ltd. London. 252 p.
- [2] Blackwell M *et al.* (2006). *Mycologia* 98(6): 829–837.
- [3] James TY *et al.* (2006). *Nature*. 443 (19): 818–822.
- [4] Hibbett DS *et al.* (2007). *Mycological Research*. 111: 509–547.
- [5] Kirk PM *et al.* (2008). Dictionary of the Fungi (10th ed.). Wallingford Oxon, UK. 771pp.
- [6] Bernicchia A and Gorjón SP. (2010). *Corticiaceae* s.l. Fungi Europaei 12. Edizioni Candusso. Alassio. Italia. 1008 p.
- [7] Larsen MJ. (1972). *Mycologia*. 64: 443–446.
- [8] Kõljalg U. (1996). *Tomentella* (*Basidiomycota*) and related genera in temperate. *Eurasia*. 9: 1–213.
- [9] Rattan SS. (1977). The resupinate *Aphylophorales* of the North Western Himalayas. *Bibliotheca Mycologica* 60, Cramer, Germany. 427 pp.
- [10] Dhingra GS. (1985). The genus *Tomentella* in the Eastern Himalayas. Res. Bull. (Sci.) Pan. Uni. 36: 367–371.
- [11] Dhingra GS and Rani M. (1994). In: Current Research in Plant Sciences (eds. Sarma, T.A., Saini, S.S., Trivedi, M.L. & Sharma, M.) Bishen Singh Mahendra Pal Singh, Dehradun: 43–56.
- [12] Kaur H *et al.* (2010). *J. Indian bot. Soc.* 89: 371-374.