

Genus *Hyphodontia* J. Erikss. in district Shimla (Himachal Pradesh)

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ABSTRACT

An account of seven species of genus *Hyphodontia* J. Erikss. has been given, with 3 (*H. abieticola*, *H. alutacea* and *H. barbojovis*) new records for India and *H. pruni* as first report from the study area.

Key words: *Basidiomycota*, *Agaricomycetes*, *Schizoporaceae*, *Hymenochaetales*, North Western Himalaya.

INTRODUCTION

Genus *Hyphodontia* J. Erikss. (*Schizoporaceae*, *Hymenochaetales*) is characterized by resupinate, adnate, effused, smooth to tuberculate or odontoid basidiocarps; clamped generative hyphae; presence of cystidia/cystidioles; clavate to subclavate to subcylindrical, more or less constricted basidia and allantoid to subellipsoid to ellipsoid to subglobose, apiculate, smooth, thin-walled, inamyloid, acyanophilous basidiospores. It is a wide spread genus with 139 known taxa the world over (www.mycobank.org). Earlier, only 6 species (*H. altaica*, *H. alutaria*, *H. arguta*, *H. pallidula*, *H. spathulata*, *H. subdetrítica*) of this genus have been reported from the study area by different workers (Thind and Rattan, 1976; Rattan, 1977; Singh, 2007; Dhingra *et al.*, 2014). In this paper three species, namely *H. abieticola*, *H. alutacea* and *H. barbojovis* are being described for the first time from India. Besides these, *H. pruni*, which is new to the district Shimla has also been described. Key to their identification and taxonomic descriptions along with the diagrams have been given only for the new reports. The material of all the specimens has been deposited at the Herbarium, Botany Department, Punjabi University, Patiala (PUN). The color standards used are as per Methuen's Handbook of Colors by Kornerup and Wanscher (1978).

Key to the species

1. Lagenocystidia present.....2
1. Lagenocystidia absent..... 3
2. Hymenial surface smooth..... *H. alutaria*
2. Hymenial surface odontoid.....*H. arguta*
3. Basidiospores allantoid..... *H. alutacea*
3. Basidiospores ellipsoid.....4
4. Cystidia septate, clamped, cylindrical, or tubular..... 5
4. Cystidia absent but cystidioles present..... *H. pruni*
5. Cystidia hyphoid, septate, clamped *H. pallidula*
5. Cystidia cylindrical/tubular without septa and clamps.. 6
6. Basidiospores up to 5 µm long..... *H. barbojovis*
6. Basidiospores more than 5 µm long..... *H. abieticola*

Taxonomic Descriptions

1. *Hyphodontia alutaria* (Burt) J. Erikss., *Symb. Bot. Upsal.* 16(1): 104, 1958. - *Peniophora alutaria* Burt, *Ann. Mo. bot. Gdn.* 12: 231, 1926.

Collection examined Himachal Pradesh: Shimla, Narkanda, on way to Hattu peak, on decaying stump of *Cedrus deodara*, Dhingra 4375 (PUN), August 25, 2010.

Remarks: It was earlier reported by Rattan (1977) from Narkanda area in district Shimla (H.P.) followed by Dhingra (2005) from the Eastern Himalaya. Later, Singh (2007) reported it from district Kullu (H.P.).

2. *Hyphodontia arguta* (Fr.) J. Erikss., *Symb. Bot. Upsal.* 16(1): 104, 1958. - *Hydnum argutum* Fr., *Syst. mycol.* 1: 424, 1821.

Collection examined Himachal Pradesh: Shimla, Narkanda, Hattu Peak, on decaying stump of *Cedrus deodara*, Dhingra 4372 (PUN), August 25, 2010.

Remarks: Rattan (1977) reported this species from districts Shimla, Kullu and Chamba (H.P.), Dehradun (Uttarakhand) and Gulmarg (J&K), followed by Singh (2007) from Shimla, Kullu and Chamba (H.P.).

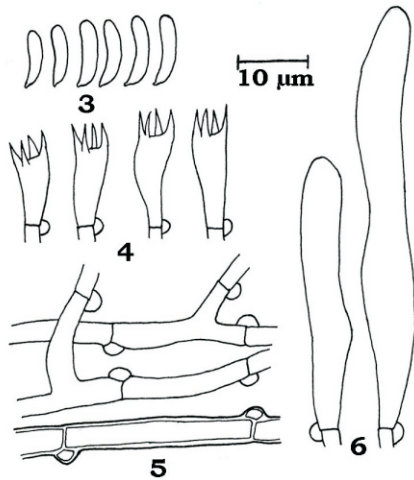
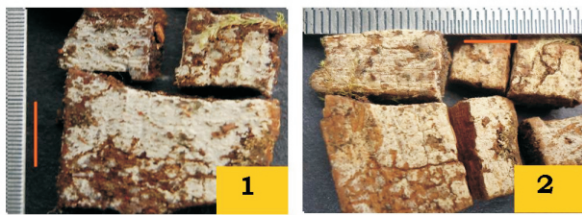
3. *Hyphodontia alutacea* (Fr.) J. Erikss., *Symb. Bot. Upsal.* 16(1): 104, 1958. - *Hydnum alutaceum* Fr., *Syst. mycol.* 1: 417, 1821.

Figs. 1-6

Basidiocarps resupinate, effused, adnate, up to 160 µm thick in section; hymenial surface smooth to somewhat odontoid, yellowish white to pale yellow; margins thinning, paler concolorous, to indeterminate. Hyphal system monomitic. Generative hyphae branched, septate, clamped; basal hyphae up to 3.9 µm wide, thick-walled, loosely interwoven; subhymenial hyphae up to 2.7 µm wide, thin-walled, dense. Cystidia 49-61 × 5.8-7.4 µm, subcylindrical to cylindrical, sometimes sinuous, obtuse, thin-walled, with basal clamp, enclosed to somewhat projecting. Basidia 10.0-13.2 × 4.0-4.8 µm, subclavate, 4 sterigmate, with basal clamp; sterigmata up to 3.3 µm long. Basidiospores 8.0-10.0 × 1.7-2.0 µm, allantoid, apiculate, smooth, thin-walled, inamyloid, acyanophilous.

Collections examined: Himachal Pradesh, Shimla, Narkanda, Kandiyali, on decaying stick of *Cedrus deodara*, Maninder 4369 (PUN), August 6, 2011; about 8 km from Narkanda towards Rampur, on decaying stump of *C. deodara*, Dhingra 4371 (PUN), August 11, 2011.

Remarks: Chief features of this species are smooth to somewhat odontoid hymenial surface, subcylindrical to cylindrical, somewhat sinuous cystidia and allantoid basidiospores. It was first reported by Fries (1821) as *Hydnum alutaceum*. Eriksson (1958) shifted it to *Hyphodontia*. Later, it was reported from many parts of



Figs. 1-6. *Hyphodontia alutacea* 1-2. Basidiocarp showing hymenial surface (1. Fresh, 2. Dry); 3. basidiospores; 4. basidia; 5. generative hyphae; 6. cystidia

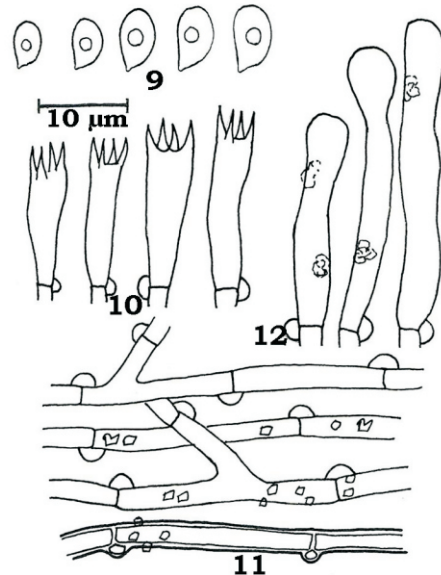
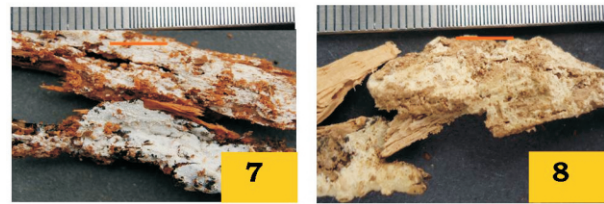
Europe, North America, Canada, Asia and W. Soviet Union by different workers (vide Mycobank). Dhingra (2005) reported it from Bhutan. However, it is the first report of this species from India.

4. *Hyphodontia pruni* (Lasch.) Svrček. *Česká Mykol.* 27(4): 204, 1973. - *Odontia pruni* Lasch. in *Rabenhorst, Klotzschii Herb. Viv. Mycol.*: 1915 (1851). **Figs. 7-12**

Basidiocarp resupinate, effused, adnate, up to 400 µm thick in section; hymenial surface smooth to odontoid, aculei small, narrow, conical, white to grayish white when fresh, pale yellow on drying; margins thinning, paler concolorous, to indeterminate. Hyphal system monomitic. Generative hyphae up to 3.0 µm wide, branched, septate, clamped, thin-walled; hyphae in the aculei mostly tapering, covered with numerous irregularly shaped crystals. Cystidioles 25-38 × 4.3-5.7 µm, hyphoid, capitate, thin-walled, covered with resinous matter. Basidia 13.0-17.0 × 3.0-5.0 µm, subclavate to clavate, 4 sterigmate, with basal clamp; sterigmata up to 3.3 µm long. Basidiospores 4.3-7.0 × 3.0-4.3 µm, ellipsoid, apiculate, smooth, thin-walled, inamyloid, acyanophilous, uniguttulate.

Collection examined: Himachal Pradesh, Shimla, Narkanda, on way to Hattu Peak, on decaying stump of *Quercus leucotrichophora*, Maninder 4378 (PUN), August 25, 2010.

Remarks: *Hyphodontia pruni* is characterized by odontoid basidiocarp, capitate hyphal ends present in the aculei and ellipsoid basidiospores. Singh (2007) reported this species for the first time from India on the basis of



Figs. 7-12. *Hyphodontia pruni* 7-8. Basidiocarp showing hymenial surface (7. fresh, 8. dry); 9. basidiospores; 10. basidia; 11. generative hyphae; 12. Cystidioles

collections made from different localities in district Kullu (H.P.). Here, it is being reported as a new record for district Shimla.

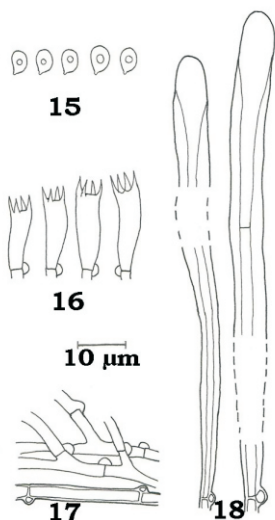
5. *Hyphodontia pallidula* (Bres.) J. Erikss., *Symb. Bot. Upsal.* 16(1): 104, 1958. - *Gonatobotrys pallidula* Bres., *Anns mycol.* 1(2): 127, 1903.

Collections examined: Himachal Pradesh, Shimla, Narkanda, Kandiyali, on decaying stump of *Cedrus deodara*, Maninder 4376 (PUN), August 6, 2011; about 8 km from Narkanda towards Rampur, on decaying stick of *C. deodara*, Dhingra 4377 (PUN), August 11, 2011.

Remarks: Thind and Rattan (1976) reported it for the first time in India from districts Chamba, Kullu (H.P.), Uttarakhand and Jammu and Kashmir. Dhingra (2005) described it from the Eastern Himalaya. Later, Singh (2007) reported it from districts Shimla, Kullu and Sirmaur of Himachal Pradesh in North Western Himalaya.

6. *Hyphodontia barba-jovis* (Bull.) J. Erikss., *Symb. Bot. Upsal.* 16(1): 104, 1958. - *Hydnum barba-jovis* Bull., *Herbier de la Fance* 10: t. 481: 2, 1790. **Figs. 13-18**

Basidiocarps resupinate, effused, adnate, up to 320 µm thick in section; hymenial surface smooth to odontoid, creamish white when fresh, becoming yellowish white to pale yellow on drying; margins thinning, fibrillose, paler concolorous, to indeterminate. Hyphal system monomitic. Generative hyphae up to 3.3 µm wide, branched, septate, clamped; basal hyphae loosely interwoven, parallel to



Figs. 13-18. *Hyphodontia barbajovis* 13-14. Basidiocarp showing hymenial surface (13. fresh, 14. dry); 15. basidiospores; 16. basidia; 17. generative hyphae; 18. cystidia

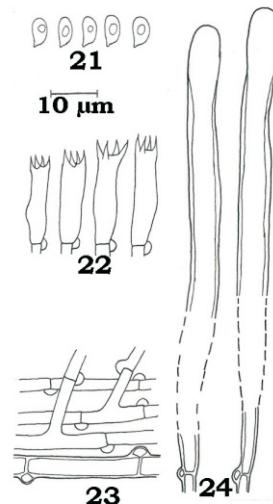
substrate, somewhat thick-walled; subhymenial hyphae thin-walled, forming a dense texture. Cystidia 120-200 × 6.0-7.0 µm, cylindrical, thick-walled except in the apical part, secondary septa present, with basal clamp. Basidia 13.0-17.0 × 4.0-5.0 µm, subclavate, 4 sterigmate, with basal clamp; sterigmata up to 3.3 µm long. Basidiospores 4.3-5.0 × 3.3-4.3 µm, broadly ellipsoid, apiculate, smooth, thin-walled, inamyloid, acyanophilous, usually uniguttulate.

Collections examined: Himachal Pradesh, Shimla, Narkanda, Kandiyali, on decaying stick of *Cedrus deodara*, Maninder 4373 (PUN), 6 August, 2011; about 5 km from Narkanda towards Rampur, on decaying stump of *C. deodara*, Dhingra 4374 (PUN), August 11, 2011.

Remarks: This species is characteristic in having smooth to odontoid hymenial surface, cylindrical, thick-walled (except in the apical region) cystidia, and broadly ellipsoid basidiospores. It has earlier been reported from Africa, Asia, Australia, Europe, North and South America (vide mycobank). Presently it is being reported as a new record for India.

7. *Hyphodontia abieticola* (Bourdot & Galzin) J. Erikss., *Symb. Bot. Upsal.* **16** (1): 84, 1958. - *Odontia barba-jovis* subsp. *abieticola* Bourdot & Galzin, *Hyménomyc. de France*: 426, 1928.

Basidiocarp resupinate, effused, adnate, up to 370 µm thick in section; hymenial surface smooth to odontoid, aculei dense, conical, creamish white to pale ochraceous when fresh, becoming pale yellow to grayish yellow to



Figs. 19-24. *Hyphodontia abieticola* 19-20. Basidiocarp showing hymenial surface (19. fresh, 20. Dry); 21. basidiospores; 22. basidia; 23. generative hyphae; 24. Cystidia

brownish gray on drying; margins thinning, paler concolorous, to indeterminate. Hyphal system monomitic. Generative hyphae branched, septate, clamped; basal hyphae up to 4.5 µm wide, thick-walled, running parallel to the substratum, loosely arranged; subhymenial hyphae up to 3.0 µm wide, thin-walled, vertical, compactly arranged. Cystidia 120-196 × 5.0-6.6 µm, tubular, thick-walled except in the apical part, with basal clamp, projecting up to 82 µm out of the hymenium. Basidia 17-20 × 3.0-5.0 µm, subclavate to subcylindrical, somewhat constricted, 4sterigmate, with basal clamp; sterigmata up to 3.3 µm wide. Basidiospores 5.3-6.0 × 2.7-3.7 µm, ellipsoid, apiculate, smooth, thin-walled, inamyloid, acyanophilous, usually uniguttulate.

Collection examined: Himachal Pradesh, Shimla, Narkanda, on way to Hattu peak, on decaying stump of *Cedrus deodara*, Dhingra 4370 (PUN), 25 August, 2010.

Remarks: *Hyphodontia abieticola* is characterized by smooth to odontoid basidiocarp, tubular cystidia and ellipsoid basidiospores. Bourdot and Galzin (1928) described this species as *Odontia barba-jovis* ssp. *abieticola* from France. Eriksson (1958) shifted it to the genus *Hyphodontia*. It is earlier reported from many parts of Central and North Europe and North America, but is being reported for the first time from India.

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