



***Conocybe apala* (Fr.: Fr.) Arnolds, *Helvella solitaria* P. Karst. and *Hygrocybe miniata* (Fr.) P. Kumm.; three new mushrooms from India**

Kumar M*, Harsh NSK and Prasad R

Forest Pathology Division; Forest Research Institute (FRI) Dehradun, Uttarakhand, India – 248006. Email: mnoj23@gmail.com, harshnsk@icfre.org, rajenpd@gmail.com.

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Abstract

This paper deals with the three new mushroom records from India. *Conocybe apala* and *Hygrocybe miniata* were found in New Forest Campus of Forest Research Institute Dehradun, while *Helvella solitaria* was found in Deovan Chakrata, district Dehradun; which are being described with macro and microscopic features.

Key words – asci – ascospores – basidia – basidiospore – new mushroom – paraphyses – taxonomic description

Introduction

During the course of study of higher fungi three mushrooms which are being described on the basis of the field observations and microscopic studies. *Conocybe apala* was found singly scattered in a closed-cropped grass of lawn and *Hygrocybe miniata* as gregarious on soil with moss. The first one was found near *Cupressus cashmeriana* while latter one was in the vicinity of false Ashok tree (*Polyalthia longifolia*) in New Forest Campus of Forest Research Institute, Dehradun. *Helvella solitaria* was collected from Deovan Chakrata under the oak tree (*Quercus lucotricofora*) in grass with leaf litter as solitary in a mixed forest.

Materials and Methods

Identification was done with the help of standard monographs and description available (Hesler & Smith 1963, Watling 1982, Abott & Currah 1997, Boertman 2010). The sporocarps of the mushroom were examined in the field for their habit and habitat and photographs were taken. The specimens were collected in paper bags and brought to the laboratory for detailed study. The microscopic routine used in the study follow Hesler & Smith 1963, Singer 1977, Miller 1979, Abott & Currah 1997. The colour identification was done with the help of Ridgway colour chart (1912). The following reagents were used: Melzer's reagent, 5 % potassium hydroxide and Cotton Blue. The descriptions are given below.

Taxonomic description

***Conocybe apala* (Fr.: Fr.) Arnolds**

Persoonia 18 (2): 225 (2003)

Pileus small conical bell shaped up to 1.5 cm, cream to light ochraceous buff (fig. 1A), with snow white hairs present on the cap, radially striate, centre of the cap is relatively darker, margin tan, cap very soft and fragile, does not survive long, collapses in few minutes after plucking. Gills not attached to the stem (free), crowded, 10 per cm, light tan to concolorous with the cap, tanned edges. At later stages gills become relatively darker. Stipe up to 7.5 cm long, fragile, white, shiny, thin, raised hair like structures on the stem, base somewhat swollen due to mycelial mass that protrude into the soil.

Spore print rust brown. Spores light brown, thick walled, ellipsoidal to oval, with germ slit (piped), filled with granular matter, relatively thicker in centre (fig. 1C), size $9\text{--}12 \times 6\text{--}7 \mu\text{m}$, basidia clavate (fig. 1B), $10\text{--}12 \times 20\text{--}25 \mu\text{m}$.

Habit – Saprobic, singly scattered in closed-cropped grass of lawn near *Cupressus cashmeriana* tree, New Forest, FRI Dehradun (N30° 20'36.8"; E077 ° 59'47.3"; 668 mt.); collection date: 04/10/2013

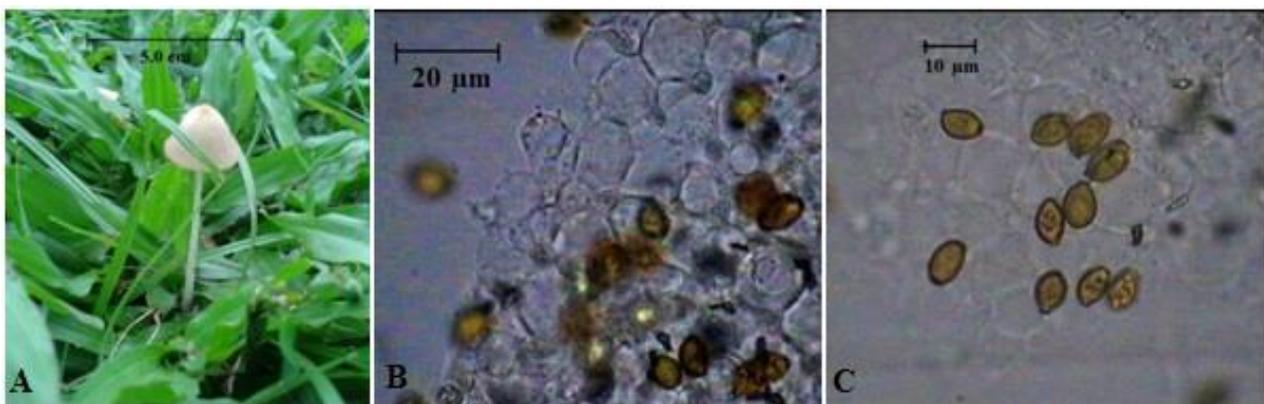


Fig. 1– *Conocybe apala*. A, Sporocarp growing in natural habitat. B, Basidia. C, Basidiospores

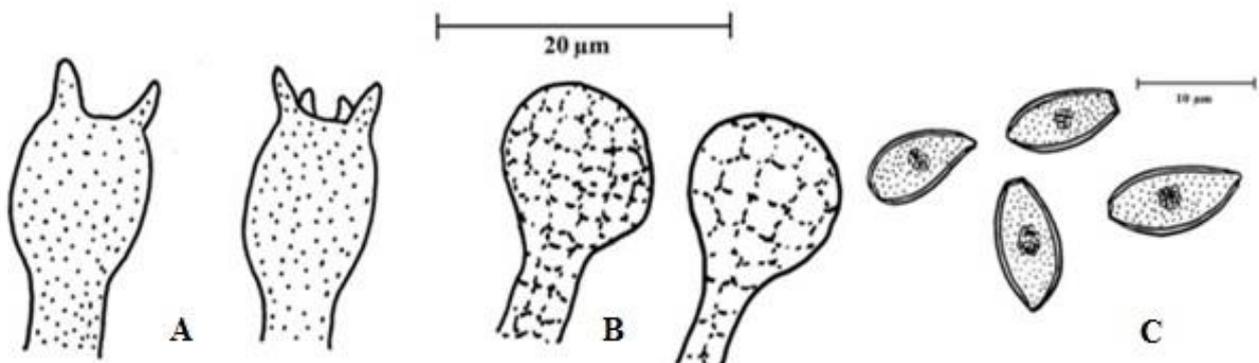


Fig. 2 – *Conocybe apala*. A, Basidia. B, Contextual hyphal element. C, Basidiospores

Helvella solitaria P. Karst.

Bidrag till Kännedom av Finlands Natur och Folk 19: 37 (1871)

Pileus upto 2.5 cm broad, folded inwards along a central axis; cup like or saucer like at maturity (fig. 3A,B), cup is deep heliotrope gray, smooth, bald, outer surface of the cup is purplish gray brown, slightly wrinkled, beneath this pale grayish brown region where stipe is attached, fine hairs present on undersurface, flesh thin, brittle. **Stipe** up to 6.2 cm long, 1.5 cm thick, deeply ribbed with round edged ribs that terminate at the apex of the stem whitish or pale brown.

Asci 248–296 × 13–18 μm, **Ascospores** 17–20 × 11.0–12.5 μm, broadly ellipsoidal to egg shaped, smooth, with one central oil droplet (fig. 3D). **Paraphyses** filiform with rounded apices that become clavate at maturity, up to 12 μm wide (fig. 3C).

Habit – Singly present in grass and leaf litter under the oak tree (*Quercus leucotricofora*) Deovan Chakrata, Dehradun (N30° 44'36.13"; E077 ° 52'17.76"; 2638 mt.) collection date: 07/09/2013.



Fig. 3 – *Helvella solitaria*. A, Sporocarp (Apothecium). B, Apothecium in natural habitat. C, Paraphyses and Asci. D, Ascospores.

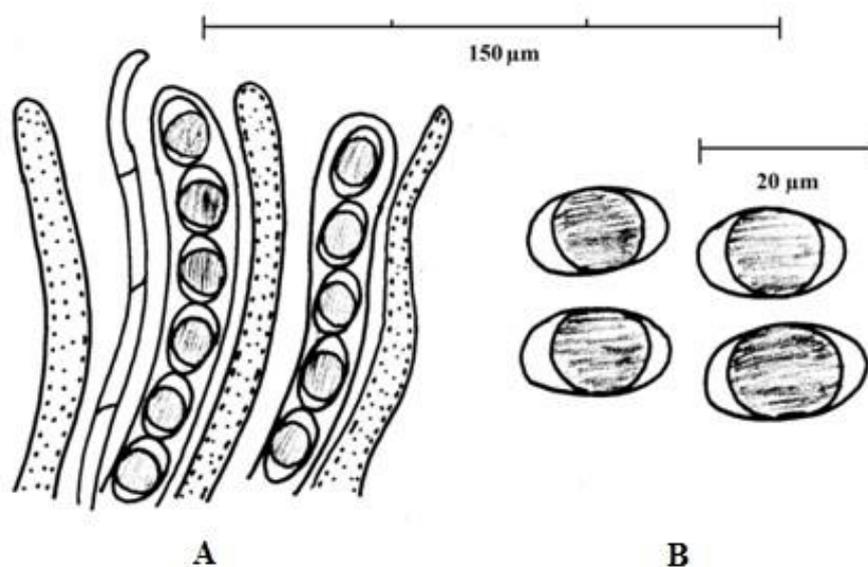


Fig. 4 – *Helvella solitaria*. A, Paraphyses and Asci. B, Ascospore

Hygrocybe miniata (Fr.) P. Kumm.

Der Führer in die Pilzkunde: 112 (1871)

Pileus 1.5–4 cm broad, convex, margin incurved when young (fig. 5A,B); broadly convex to nearly flat at later stages; dry; minute hair like structures present; orange-red colour when young and fresh, at later stages fades to orange or remains unchanged; the margin somewhat orange yellow, thinly lined. **Gills** run down to the stipe, relatively close (subdecurrent), concolorous to the cap or paler. **Stipe** 2.5–5 cm long; 3–4 mm thick; slender, of equal width; dry; smooth; concolorous to the pileus. Flesh concolorous to the cap (pileus) or paler; thin, waxy.

Spore print white, **spores** 6–8 × 4–5 μm; smooth; elliptical (fig. 5E,F), basidia 10–14 × 34–48 μm long (fig.5D). Pleurocystidia and Cheilocystidia not clearly distinct. Gill tissue nearly parallel, composed of long hyphae 7–19 μm wide with broad or clavate end.

Habit – On soil with moss; under the vicinity of false Ashok tree (*Polyalthia longifolia*); (N30° 21'39.67"; E077 ° 59'59.09"; 672 mt.) collection date: 14/08/2013

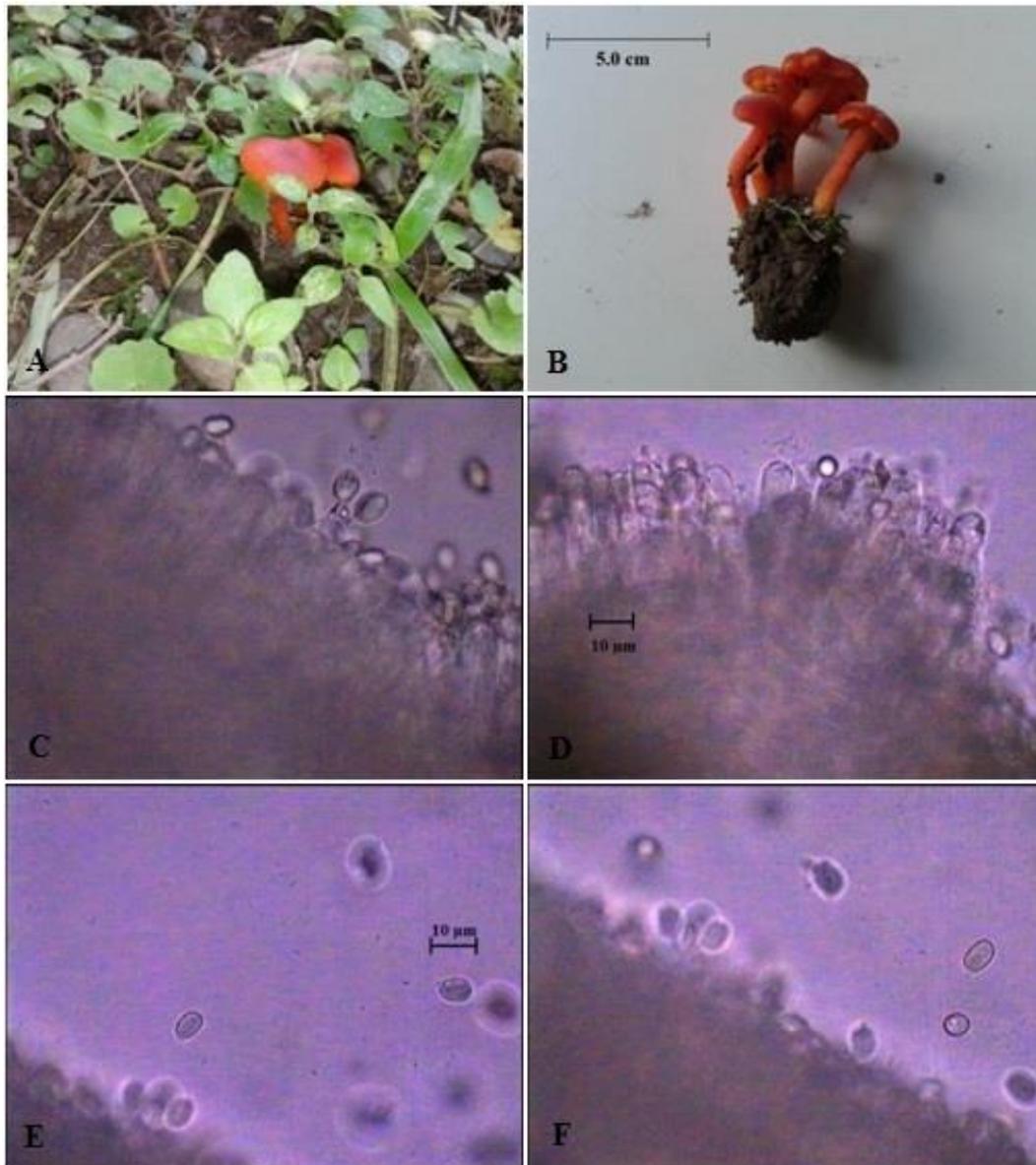


Fig. 5 – *Hygrocybe miniata*. A, Sporocarp growing in its natural habitat. B, Sporocarp lateral view. C, Basidia with basidiospores. D, Typical hymenial structure with hyphae, basidia and basidiospores. E–F Basidiospores

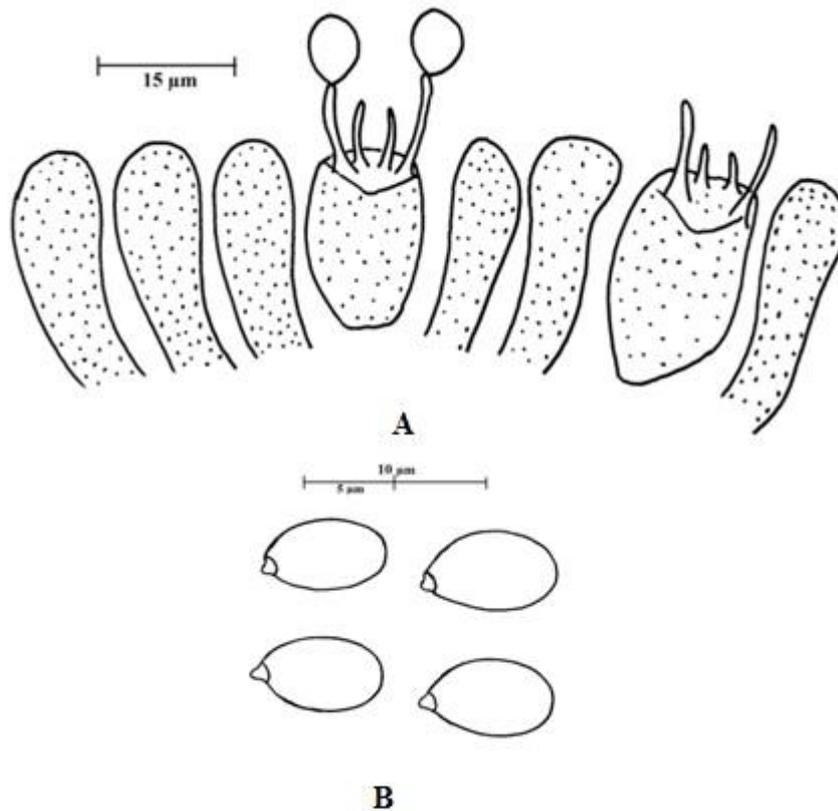


Fig. 6 – *Hygrocybe miniata*. A, Basidia & Hyphae. B, Basidiospores

Remarks

Macro and microscopic details given are in conformity with the description given for *Conocybe apala* by Watling 1982; *Helvella solitaria* by Abott and Currah 1997 and *Hygrocybe miniata* by Hesler & Smith 1963. *Conocybe apala* is very commonly found in Europe and North America (Watling 1982, Noordeloos et al. 2005). *Helvella solitaria* is reported from the North America and found under the oaks (Abott & Currah 1997). It is also widely distributed in Europe (Landeros & Guzman 2012). *Hygrocybe miniata* is reported from the North America under hardwoods (Hesler & Smith 1963) and in Europe (Boertman 2010).

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