

Short Communication: A new variety of *Pholiota microspora* (Berk.) Sacc. (Agaricales) from Nepal

MAHESH K. ADHIKARI¹, KAZUO WATANABE², G. P. PARAJULI³

¹Adhikari Niwas, Alka Basti, Lainchour, GPO Box No. 21758, Kathmandu, Nepal. Tel. +977-01- 5542899, email: mkg_adh@wlink.com.np

²JICA Nepal Office. Hariharbhavan, Lalitpur, P.O.Box 450, Kathmandu, Nepal

³Nepal Agricultural Research Council (NARC), Lalitpur, PO Box 5459, Kathmandu, Nepal

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ABSTRACT

Adhikari MK, Watanabe K, Parajuli GP. 2014. A new variety of *Pholiota microspora* (Berk.) Sacc. (Agaricales) from Nepal. *Biodiversitas* 15: 101-103. In the fall of late rainy season 2011, a new *Pholiota* (Fr.) P. Kumm. (Agaricales, Strophariaceae) was collected in the *Quercus* forest of Phulchowki (Kathmandu valley) along the trial line, on the dead log at an altitude of 2600m. The specimen gathered was quite small. It was brought to laboratory and cultivated in NARC, Pathology laboratory, Lalitpur, Kathmandu, Nepal. The mushroom has been identified as *Pholiota microspora* (Berk.) Sacc. var. *himalensis* var. nov..

Key words: Agaricales, *Pholiota microspora*, new variety, Nepal

INTRODUCTION

Pholiota (Fr.) P. Kumm., the mushroom, falls in the family Strophariaceae of Agaricales. Saccardo (1887) records 93 species. Arora (1986) and Lincoff (GL) (1980) records 25 species from America. Smith and Hesler (1968) reported 216 species of *Pholiota* from North America. Courtecuisse and Duhem (1994), Courtecuisse (2000) and Eyssartier and Roux (ER) (2011) record 19 species from France and Europe. Zhuang (2005) records 12 species. Phillips (P) (2006) records 11 species. Kirk et al. (2004) states about 150 species of *Pholiota* to prevail in the world, while Neda (2008) states to be 362 species of *Pholiota* in the world. Ikeda (2005) and Imazeki et al. (1988, revised 2012) record 12 species from Japan. Chehey (2013) enlists 78 species.

The Nepalese literatures (Adhikari 1996, 2000, 2009, 2012) record six species of *Pholiota* viz. : *Pholiota limonella* (Pers.) Sacc. [= *Pholiota adiposa* (Batch.:Fr.) Kumm., *Pholiota aurivella* (Batsch:Fr) Kummer, treated as synonym in Eyssartier & Roux (2011)], *Pholiota gummosa* (Lasch.) Singer, *Pholiota microspora* (Berk.) Sacc. [= *Pholiota nameko* (T.Ito) S.Ito & S.Imai], *Pholiota squarrosa* (Weigel:Fr.) Kumm., *Pholiota squarrosoides* (Peck) Sacc. and *Pholiota terrestris* Smith.

Description of the fungus

Pholiota microspora (Berk.) Sacc. var. *himalensis* Adhikari & Watanabe var. nov. (Figures 1-3) (MB 808362)

Basidiocarp growing in cluster; in natural environment pileus orange brown to bright deep orange brown, darker in the centre, fading towards margin, scattered; stipe creamy

white. The cultivated mushrooms have very light dull pale yellow to yellow brown pileus and white to creamy stipe.

Pileus 2-3.5 cm broad, fleshy, at first light yellow to yellow brown, orange brown at maturity, dark orange brown at the centre; margin fading to yellow brown, in full grown light brown, to fugacious brown, to bright deep orange brown, fading to dull yellow in age, margin wavy, not in rolled, smooth; at first convex, umbellate-hemispherical, slightly umbonate, becoming plane, viscid, glutinous; sometimes with remnants of veil; scales orange brown, very few, scattered, yellow to yellowish brown, which fall off, later becoming smooth. Pellicle thin, yellowish to yellowish brown, separable. Pileocystidia not found. Flesh white to slightly creamy. Stipe 5-6 cm long, 0.5 cm broad, stuffed hollow, slender, dry to slightly viscid, creamy white to yellowish, scaly with orange brown scales, fibrillose, composed of thin walled hyaline to brownish mycelium, up to 2 μ m broad, Caulocystidia absent. Annulus cobwebby at first and later disappearing leaving black scar on the stipe. Lamellae mostly adnate to adnato-decurrent, white to creamy at first, becoming yellowish then brownish with age, crowded. Basidia 12-20x10-12 μ m, clavate, hyaline, thin walled, 2 sterigmate. Sterigmata up to 1 μ m long, conical short. Pleurocystidia 18-22x10-12 μ m, clavate to lageniform, thin walled, hyaline, smooth, in the hymenia surface or protruding slightly beyond hymenial surface. Cheilocystidia absent. Chrysocystidia not found. Basidiospores 3.5-5 (6)x3-4 μ m, dull brown in print, mostly ovoid, ovoid-ellipsoid, one guttulate, at first hyaline then rusty brown, thick walled, smooth, without germ pore, inamyloid. Edibility unknown previously, but edible and has very faint aroma. Taste none to mild.



Figure 1. *Pholiota microspora*. var. *himalensis* var. nov. A. Basidiocarps (young) on *Quercus* log in natural habitat, B. Basidiocarps (full grown)

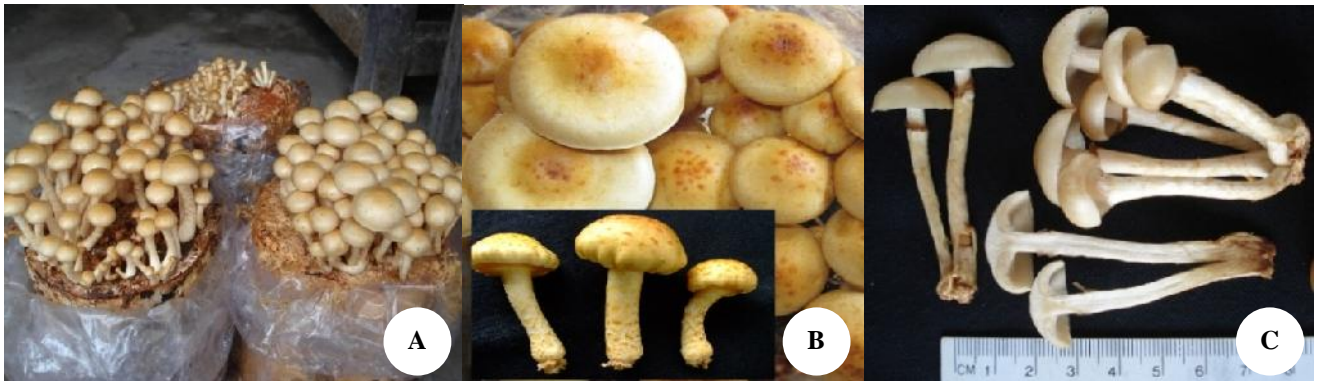


Figure 2. A. Showing cultivation of the species, B.C. Size of the cultivated Fruit body

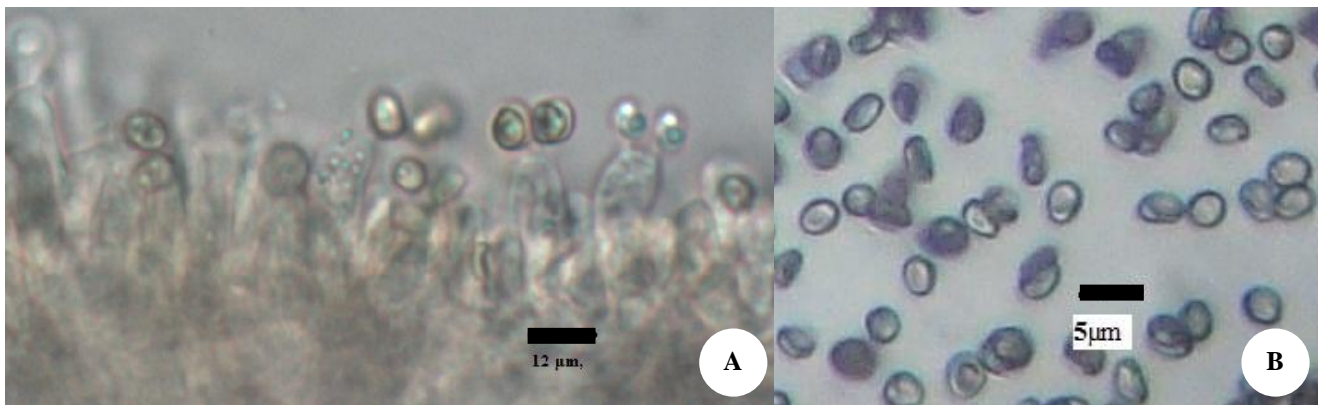


Figure 3. A. Cystidia and basidia, B. Basidiospores

Specimen examined

Nepal. Growing on *Quercus* dead wood log in natural condition, caespitose or gregarious, Phulchowki forest, 2068.6.13 (2011. Sept. 30), 2600 m, voucher deposited no. 552 Holotype (KATH, NARC & Kyushu University, Japan), Adhikari, Watanabe & Parajuli, and cultivated at Nepal Agricultural Research Council (NARC), Khumaltar, Lalitpur, Nepal.

Comments

The closely related species, which differ from the present species, are as follows. The thick walled spores are present in *Pholiota limonella*, *Pholiota flammans* (Batsch) P. Kumm., *Pholiota lubrica* (Pers.) Singer and *Pholiota alnicola* (Fr.: Fr.) Singer, but they differ in various characters.

The lignicolous *Pholiota* species are *Pholiota microspora* (Berk.) Sacc. [Syn. *Pholiota nameko* (T.Ito) S.Ito & S.Imai], *P. micromeres* Berk. & Br., *P. astragalina* (Fr.: Fr.) Singer, *P. limonella* (Peck) Sacc., *P. alnicola* (Fr.: Fr.)

Singer [= *Pholiota malicola*], *Pholiota flammans* (Batsch: Fr.) Kummer, and *Pholiota scamba* (Fr.: Fr.) Moser.

Pholiota micromeres differs from the present specimen in having glabrous, larger sized cap and stipe and adnate gills with 6 µm long spores. *Pholiota astragalina* (Fr.:Fr.) Singer differ from the present taxon in having larger saffron red cap (bitter in taste-Lincoff, edible –IOH), larger spores (6-7x3.5-4.5 µm), presence of pleurocystidia, cheilocystidia (18-52x6-13 µm) and chrysocystidia and growth on coniferous woods. *Pholiota limonella* is inedible having larger cap oblong spores (5-10x3.5-6 µm) with pore at tip, presence of pleurocystidia (23-37x10-13 µm) and cheilocystidia (42-62x7-13 µm) and growth both on coniferous and broad leaved trunks. *Pholiota alnicola* [edible-IOH; non edible-Arora, GL, ER; Poisonous-Nagasawa (2003)] has fibrillose, longer, rusty stipe. In *P. alnicola* both cap and stipe are without scales, spores are larger (7-10x4-5 µm), pleurocystidia are present, chrysocystidia are absent, taste is bitter and growth mostly on *Alnus* woods. *Pholiota flammans*, the edible one, has large umbonate scaly caps with brownish scales on stipe, presence of cheilocystidia (25-40x7-10 µm) and chrysocystidia in the gills, spores of 3.5-7x2.5-3 µm in size, radish like odor and growth on conifers. The presently described taxon also resembles with *P. scamba* in having similar size of cap and absence of cheilocystidia and chrysocystidia but differs in larger ovoid spores and growth in conifers. *Pholiota flavida* (Schaeff.) Singer has smaller spores and the fruit body is slightly aromatic. *Pholiota subochracea* (Smith) Smith & Hesler has viscid pale yellow cap with 5 cm long stipe and 5-6 µm spores.

Pholiota microspora (Berk.) Sacc. var. *himalensis* var. nov. differs from all the above species in its pileus colour and size, nature of stipe and scales, hymenium, cystidia and spores.

Pholiota microspora closely resembles with the presently described taxon at first sight but differs in possessing umber-brown pileus which is glutinous, smooth, larger and without scales; stipe is longer, solid, covered with mucus and without scales; cheilocystidia (36-43x10-11 µm) are present in the adnate-decurrent lamellae; spore is thick walled, ellipsoid-oval, 4-6x2.5-3µm; the taste and odor pleasant, edible (Neda 2008). But the present species grows on broad leaved forest composed of *Quercus* species, in isolated clusters; has small bright yellow to orange brown, orange brown scaly and sticky cap; creamy white stipe which is stuffed hollow with orange brown scattered scales; annulus cobwebby at first, later leaving black scar around the stipe; lamellae creamy to light brown, adnate to slightly adnate-decurrent, pleurocystidia present; and spores dull brown in print, smooth, ovoid, ovoid-ellipsoid, thick walled, 1guttulate. On the above basis, the present specimen is described as a new variety of *Pholiota microspora* (Berk.) Sacc., and the epithet is kept after its Himalayan habitat.

Latin diagnose

Pholiota microspora (Berk.) Sacc. var. *himalensis* Adhikari & Watanabe var. nov. (Figures 1-3)

Pileus 2-3.5 cm latus, carnosus, laete flavus, orantioflavus ad umbone, flavus ad marginem, farcto convexus, hemisphaericus, leviter umbonatus, plane posta,

viscidus, glutinosus, vestigium velum interdum, paucus squamosus, orantioflavus, quorum lapsus promptus, posta becomascens laevis,

Margo undulates, nullo involutus, laevis. Stipite 5-6 cm longo, 0.5 cm latus, solido ad subcavus, tenuis, deccica ad subviscid, cremeus-albino ad lutescente, brunneo squammae, fibrillosus, totum tenuis perietis hyalinus ad brunneus hyphae, usque ad 2 µm latae, Caulocystidia nullo. Annuus arachnoideus e postea evanescens cicatricibus circum in stipitis. Lamellis vulgo mostly adnatus ad adnato decurrentibus, albino ad cremeus ad fulvus brunneus, congestus, densus. Basidia 12-20x10-12 µm, clavata, hyalino, tenuis perietis, 2 sterigmatibus, usque 1µm longa. Pleurocystidia 18-22x10-12 µm, clavata ad lageniforme, hyalino. Cheilocystidia non visus. Chrysocystidia non visus. Basidiosporae 3.5-5 (6)x3-4 µm, vulgo ovalis ad ovalis-ellipsoideis, 1guttulatae, hyaline ad ferrugineo-brunneus, crassus perietis, laevis, obsque germ poris.

Habitat in arborum truncatis *Quercus*, caespitose, Phulchowki, 2600 m, Kathmandu vallis, Nepalia, 2011. Sept. 30, Holotypus no. 552, Adhikari, Watanabe & Parajuli.

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