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NEW RECORD OF AMANITACEAE AND STROPHARIACEAE FROM PAKISTAN

^aAbdul Razaq*, ^bSaleem Shahzad

^a Department of Biological Science, Karakoram International University, Gilgit, Pakistan.

^b Department of Agriculture & Agribusiness Management, University of Karachi, Karachi, Pakistan.

ABSTRACT

Amanita ovoidea and *A. rubescens* belonging to family Amanitaceae (Fungi: Basidiomycota), and *Agrocybe praececox* and *A. dura* belonging to family Strophariaceae were collected from Gilgit-Baltistan, Province. Of these, *A. ovoidea*, *A. praececox* and *A. dura* appeared to be new records from Pakistan not hitherto reported.

Keywords: Amanitaceae, New records, Strophariaceae, Gilgit-Baltistan, Pakistan.

INTRODUCTION

Several members of Basidiomycota are well known plant pathogens, whereas others are important for their food value or because of scents, tastes, colours, and toxic properties of a wide variety of secondary products (Gallois *et al.*, 1990). More than 22,000 species of Basidiomycetes have been reported from different parts of the world (Mirza, and Qureshi. 1978). In contrast, about 630 species have been reported from Pakistan (Ahmad *et al.*, 1997; Sultana *et al.*, 2011). Despite the suitability of climate for favorable growth of members of Basidiomycota, the Gilgit-Baltistan appears to be generally ignored by previous researchers. The present report describes four species belonging to the Amanitaceae and Strophariaceae families among them three species are new records from Pakistan.

MATERIALS AND METHODS

Samples of basidiomycetous fungi collected from different areas of Gilgit-Baltistan photographed in their natural habitat and the macroscopic details were recorded. The geographical position including altitude and latitude of the collecting spots were recorded with help of GPS. The samples were brought to Department of Biological Sciences, Karakoram International University, Gilgit, and identified up to species level using reference taxonomic keys of Demoulin & Mirriott (1981), Surcek (1988), Buczacki (1989), Shibata (1992), Swann and Taylor (1993),

* Corresponding Author:

Email: dr.razaq@kiu.edu.pk

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Murakami (1993), Ahmad *et al.* (1997), Leelavathy and Ganesh (2000), and Sultana *et al.* (2011). Synonymy of the species was checked at www.speciesfungorum.org. The specimens were dried at room temperature to make a herbarium for future reference.

RESULTS AND DISCUSSION

During the present work, four species *viz.*, *Amanita ovoidea*, *A. rubescens*, *Agrocybe praececox* and *A. dura* were recorded. These species have been first time reported from Gilgit-Baltistan, Pakistan both species appeared to be new records from Pakistan not hitherto reported.

Amanita ovoidea (Bull.) Link,

Synonymy:

Agaricus ovoideus Bull., *Herb. Fr.* 8: tab. 364 (1788).

Amidella ovoidea (Bull.) E.-J. Gilbert, in Bresadola, *Iconogr. Mycol.* 27 (Suppl. 1): 77 (1941).

Distinguishing characters: Cap 5-10 cm, at first finely floury, then discoloring to straw yellow and smooth. Stem 5-12 cm long and 2-5 mm thick, stout, tapering slightly upward with superior ring and volva. Gills, at first, are white then whitish brown, crowded, free. Smell indistinct. Flesh whitish. Spores ellipsoid, smooth, 10-11 x 6-7 μm in size (Fig.1 A-C).

Season: June -July.

Occurrence: Mushkin forest (Dashkin), District Astore, alt 2712 m, N=35°29', E=74°47'.

Ethnic uses/Importance: Edible but too easily confused with deadly poisonous species.

Habit/Habitat: Solitary or in small groups. On soil in broad leaved or mixed woods.

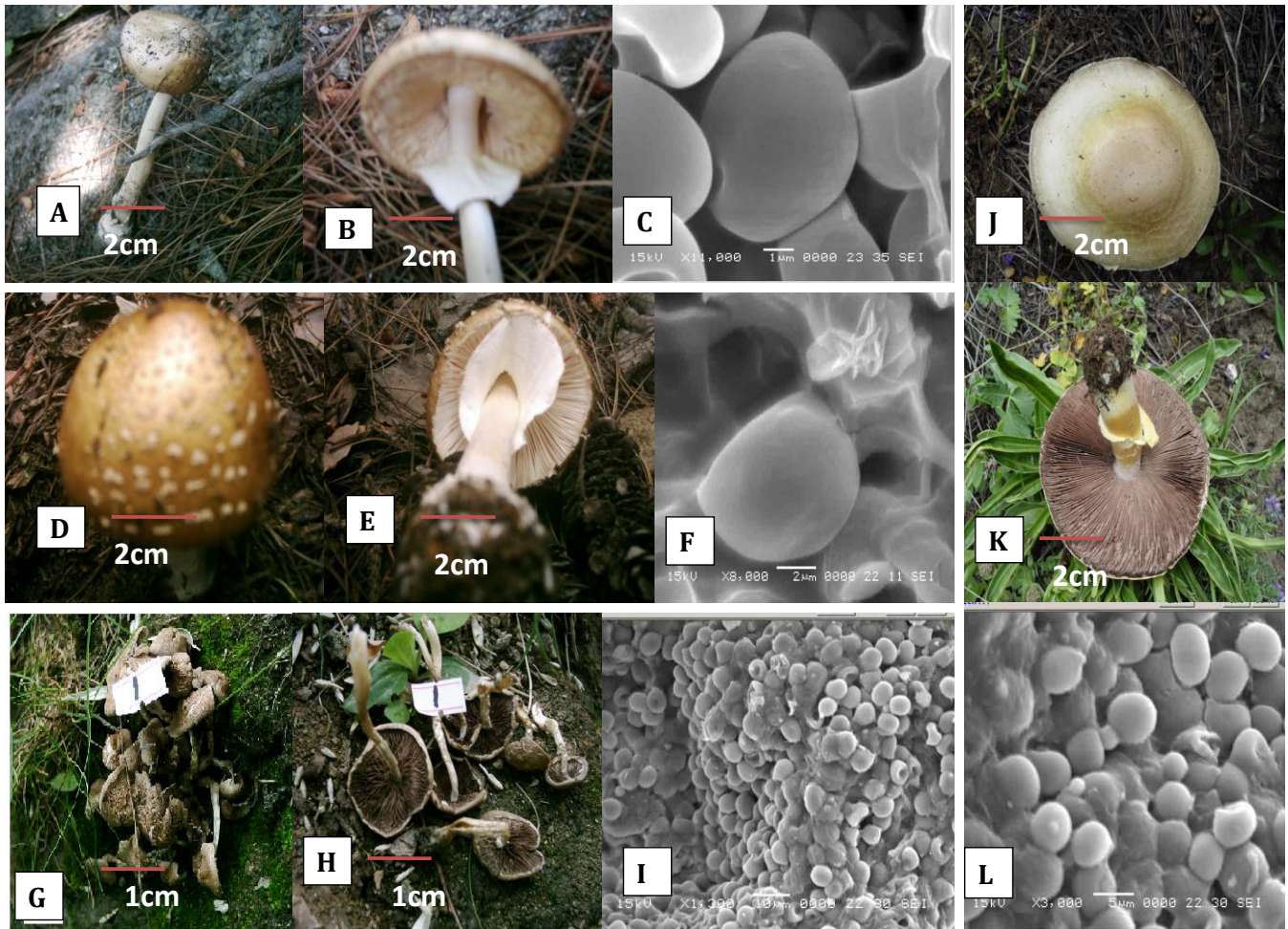


Figure 1. *Amanita ovoidea* (A-cap, B-gills & C-spores), *Amanita rubescens* (D-Cap, E-Gills & F-Spore), *Agrocybe praececox* (G-cap, H-gills & I-spores), *Agrocybe dura* (J-cap, K-gills & L-spores).

Amanita rubescens Pers., *Tent. disp. meth. fung.* (Lipsiae): 71 (1797).

Synonymy:

Agaricus rubescens (Pers.) Fr., *Syst. mycol.* (Lundae) 1: 18 (1821).

Limacium rubescens (Pers.) J. Schrot., in Cohn, *Krypt.-Fl. Schlesien* (Breslau) 3.1(33-40): 531 (1889).

Amplariella rubescens (Pers.) E.-J. Gilbert, in Bresadola, *Iconogr. Mycol.* 27 (Suppl. 1): 79 (1941).

Distinguishing characters: Cap brown with whitish to brownish warts, 5-12 cm in width. Stipe 5-10 cm long and 1-2 cm thick, with volva at the base. Spores 8-9 x 7 μ m in size, broadly ellipsoid, smooth, colourless.

Season: July- August.

Occurrence: Mushkin forest, under the conifers, District Astore, alt. 2510 m, N = 35°28, E = 74°46

Ethnic uses/Importance: Edible, tastes best in soups.

Habit/Habitat: It occurs when the weather is dry. Grows solitary in soil.

Previous Report from Pakistan: Under conifers from Khanspur (Khalid and Iqbal, 1996).

Agrocybe dura (Bolton) Singer, *Beih. bot. Cbl., Abt. B* 56: 165 (1936).

Synonymy:

Agaricus durus Bolton, *Hist. fung. Halifax* (Huddersfield) 2: 67, tab. 67 (1788).

Pholiota dura (Bolton) P. Kumm., *Führ. Pilzk.* (Zerbst): 84 (1871).

Hylophila dura (Bolton) Quél., *Fl. mycol. France* (Paris): 97 (1888).

Togaria dura (Bolton) W.G. Sm., *Syn. Brit. Basidiomyc.*: 123 (1908).

Distinguishing characters: *A. dura* has tough fruit bodies and brownish cap, at maturity cracking into irregular patches. Gills brown, crowded. Stipe initially bears small ring but soon reveal smooth, equal, slender, 5 cm long and 1cm thick. Flesh without mealy smell, faintly bitter. Spores large, 5-6 x 8 μ m in size, ellipsoid,

brown, smooth (Fig_1D-F).

Season: July- August.

Occurrence: It was collected from Sultan Abad (Hunza), District Gilgit, alt 1822m, N= 36°15, E=74°20.

Ethnic uses/Importance: Inedible.

Habit/Habitat: In small groups in cultivated fields and gardens.

Agrocybe praecox (Pers.) Fayod, *Annls Sci. Nat., Bot.*, sér. 7 9: 358 (1889).

Synonymy

Agaricus praecox Pers., *Comm. Schaeff. Icon. Pict.*, 89 (1800).

Pholiota praecox (Pers.) P. Kumm., *Führ. Pilzk.* (Zerbst): 85 (1871).

Togaria praecox (Pers.) W.G. Sm., *Syn. Brit. Basidiomyc.*: 124 (1908).

Distinguishing characters: Cap 2-5cm, at first convex then flattened, slightly umbonate, slightly cracked. Stem 4-9 cm long and 2-3 cm thick, equal, swollen at base, fairly slender, fibrous-lined. Gills at first whitish buff, then brown, crowded, adnate. Spore print brown. Smell pleasant. Flesh whitish in cap, buff in stem. Spores ellipsoid, smooth 8-10x5-6µm in size (Fig .1G-I). On the basis of microscopic examination the specimen were identified as *Agrocybe praecox* with reference to Ahmad *et al.*, 1997. Buczacki, S. 1989, Surcek, M. 1988, Demoulin & Merriott. 1981.

Season: May- June.

Occurrence: Specimens were collected from Sultan abad (Hunza), District Gilgit, alt 1734 m, N-36°19, E-74°40.

Ethnic uses/Importance: Edible.

Habit/Habitat: Usually in groups, on soil among the grasses in fields.

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