Pak. J. Bot., 39(2): 651-657, 2007.

HYMENOMYCETES FROM MULTAN DISTRICT

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Abstract

Twenty samples of mushroom and toadstools (Hymenomycetes) were collected from Multan district during July-October 2003. Twelve species belonging to 8 genera of class Basidiomycetes were recorded for the 1st time from Multan: *Albatrellus caeruleoporus* (Peck.) Pauzar, *Agaricus arvensis* Sch., *Agaricus semotus* Fr., *Agaricus silvaticus* Schaef., *Coprinus comatus* (Muell. ex. Fr.), S.F. Gray, *Hypholoma marginatum* (Pers.) Schroet., *Hypholoma radicosum* Lange., *Marasmiellus omphaloides* (Berk.) Singer, *Panaeolus fimicola* (Pers. ex. Fr.) Quel., *Psathyrella candolleana* (Fr.) Maire, *Psathyrella artemisiae* (Pass.) K. M. and *Podaxis pistilaris* (L. ex. Pers.) Fr. Seven of these species are edible or of medicinal value.

Introduction

Multan lies between north latitude 29'-22' and 30'-45' and east longitude 71'-4' and 72' 4'55. It is located in a bend created by five confluent rivers. It is about 215 meters (740 feet) above sea level. The mean rainfall of the area surveyed is 125mm in the Southwest and 150 mm in the Northeast. The hottest months are May and June with the mean temperature ranging from 107°F to 109°F, while mean temperature of Multan from July to October is 104°F. The mean rainfall from July to October is 18 mm. The soils are moderately calcareous with pH ranging from 8.2 to 8.4. The organic contents are low, usually less than 0.75 %. Texture ranges from sand to clay being the most common. The soils of this area are mostly grayish brown or olive brown in colour and generally mottled (Anon., 1969).

The dominant trees in Multan area are *Dalbergia sissoo* (sheesham); *Morus alba* (sufaid shahtoot), *M. nigra* (Kala shahtoot), *Prosopis specigyra* (jund) and *Tamarix articulata* (farash). The field crops are cotton, sugarcane, millets, wheat, mustards, maize, rice and pulses. The fruit orchards consist of mango, citrus, oranges, guava and in some places pomegranate are also grown.

Late Dr. Sultan Ahmad (1910 - 1983) worked extensively on various groups of fungi and published a monograph entitled "Fungi of Pakistan". He also published monographs on Gasteromycetes (1952); Basidiomycetes (1972) and Agaricales (1980) of Pakistan. Mirza & Quraishi (1978) compiled most of the published work on Fungi of Pakistan. Khan (1975) studied wild mushrooms of Pakistan. More recently the Japanese scientists Shibata (1992), Aoshima (1992) and Murakami (1993) studied the basidiomycetes of Pakistan. Iqbal *et al*., (1997) have recompiled the fungi of Pakistan. Sultan *et al*., (2001) published a paper on fleshy Hymenomycetes from Margalla Hills National Park, Islamabad. Sabir *et al*., (2002) studied 9 species of Agaricales of Changa Manga. Gardazi published two articles on distribution and habitat of 9 species of mushroom of Azad Jammu & Kashmir (2005, 2005a). The following books were also consulted for identification: Bon (1987), Peglar (1977) and Imazeki & Hongo (1988 & 1989).

Materials and Methods

The mushrooms were collected during rainy season from Botanical Garden of Bahauddin Zakariya University, and Chowk Kumharanwala, Multan. The samples were wrapped in old newspapers/card board boxes and brought to the laboratory. The measurements of various parts of mushrooms were recorded and morphological features were observed. Then the specimens were subjected to microscopic study by preparing slide in water or Amman`s medium. The drawings of spores were drawn with the help of Camera lucida on standard Zeiss microscope. Literature was consulted for identification. The studied material bearing their accession numbers was placed in Mycology section of Pakistan Museum of Natural History (PMNH), Islamabad.

Results and Discussion

Out of twelve wild mushrooms, 6 were found to be edible and used as vegetable while *Albatrellus caeruleoporus* is hard and used as herbal medicine in Central Asia.

Description of species

Aphyllophorales,
Scutigeraceae

Albatrellus caeruleoporus (Peck.) Pouzar
Fig. 1 Medicinal
= *Polyporus caeruleoporus* Peck.

Cap pale to buff, brown in the older region, apparently familiar to *Hydnum* sp., cap 11- 12 cm, the skin of cap often cracks with age, lower surface with angular pores, creamy yellowish, slightly, decurrent, flesh pale, yellowish. Stipe somewhat sturdy, eccentric, whitish yellowish to brown with reticulate summit, smells slight. Spores olive colour, 5.2–6 x 3.75 µm. It is hard and used as medicine in Central Asia. On the stem of broad leaved tree *Braussonetia papyrifera* in moist place, Basti Ameer, Chowk, Kumharanwala, Multan, 5. 8. 2003, PMNH. 10418.

Agaricales
Agaricaceae
Agaricus arvensis Sch.
Edible

Cap 7-10 cm in diameter, convex, white yellowing with age and eventually ochraceous to russet, smooth or with rounded scales at the margin. Lamellae pinkish gray to dingy brown in colour. Stipe 7-10 cm in length, bulbous at the base 1.3 cm in diam., comparatively light in color, ring prominent, flesh white to ochraceous, thick having good smell. Spores globose to clavate with truncate base, olive to dark brown 6.75-7.5 x 5-6 µm. On dung, Basti Ameer, Chowk Kumharanwala, Multan, 1.8.2003, PMNH.10435.

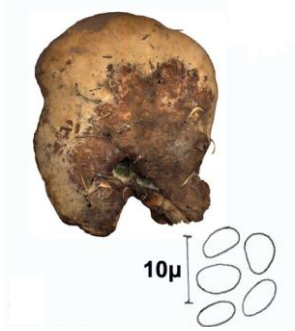

Fig. 1. Albatrellus caeruleoporus

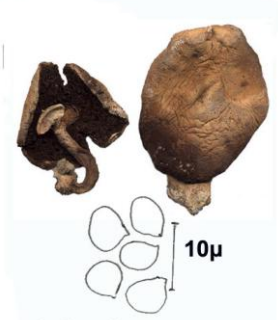

Fig. 2. Agaricus semotus

Fig. 3. Agaricus silvaticus

Fig. 4. Hypholoma marginatum

Fig. 5. Hypholoma radicosum

Fig. 6. Marasmiellus omphalodes

Fig. 7. Psathyrella artimisiae

Fig. 8. Psathyrella candoleana

Fig. 9. Podaxis pistilaris

Agaricus semotus Fr.
Fig. 2 Edible

Cap 3.5-5 cm, whitish, smooth slightly fibrillose at the center, ochraceous to vinaceous, yellowing at the margin, lamellae free. Stipe short, concolorous, bulbous at the base 1-2.5 cm thick, tapers upward. Annulus superior, fragile with smooth margin 4 mm broad. Flesh white to ochraceous, smell pleasant almond like. Spores 4-5 x 3-4.5 µm.

On fallen logs, Botanical Garden Bahaud-din-Zakaryia University, Multan, 10.8.2003, PMNH. 10430.

Agaricus silvaticus Sch.
Fig. 3 Edible

Cap 7-10 cm, convex, dark tawny, covered with russet squamulose on pale ochre ground. Lamellae free from the stipe and are in three lengths, light gray to brown finally chocolate, the pileus edges become rolled inward on drying. Stipe 5-10 cm, cylindrical with bulbous base 1.3 cm, tapering upward, superior ring (annulus) fragile and obscure, flesh white to pale, smell pleasant. Spores 6 x 4.5 µm., dark fuscous, thick walled, guttulate and truncate base. Edible and delicious. On fallen logs, Botanical Garden Bahauddin-Zakaryia University, Multan, 9.8.2003, PMNH. 10429.

Strophariaceae,
Hypholoma marginatum (Pers.) Schroet
Fig. 4

Cap convex, smooth slightly vicid, beige in color, 3-6 cm in diameter, lamellae touching to stipe at the top, cinnamon to brown, crowded. Stipe central, veil membranous cortinoid, annulate, thick, 9 x 5 cm in the middle, shaggy with brown scales, broad at the base and comparatively narrow at the tip. Spores chestnut brown, smooth, with apical germ pore 11-12 (15) x 5.25–6.75 µm. Fruiting singly. On wood of *Morus alba*, Bahauddin-Zakaryia University, Multan, 7. 8. 2003, PMNH. 10427.

Hypholoma radicosum Lange.
Fig. 5

Grows in tufts. Cap convex, smooth rather fleshy, marginal space covered with whitish silky veil, center somewhat orange. Lamellae 4-8.5 cm, whitish to grayish turning ochre with age. Stipe about 10 cm long. deeply rooted in the wood, bearing concolour scales and orange towards the base. Veil is broad, thick, membranous, cinnamon brown. Spores chestnut brown, smooth, with apical germ pore 11-12 (15) x 5.25–6.75 µm. On fallen logs in the Botanical Garden, Bahauddin Zakaryia University, Multan, 7.8.2003, PMNH. 10428.

Coprinaceae,
Coprinus comatus **(**Mull.) Pers.
Edible when young

Fruiting bodies elongated /egg-shaped in the beginning or broadly conical, frequently expanding and sometime with revolute margin, scaly and shaggy surface that is off white, soon becoming black from the margin and deliquescent at maturity, starting from the margin to upward 5-10 cm. It is more fleshy than other members of the genus. Stipe 10–13 cm long, central, veil or ring present, more towards the base. Spores 11–13 x 6–7 µm, deeply pigmented, ellipsoid, opaque, smooth with apical germ pore. On dung, Basti Ameer, Chowk Kumharanwala, Multan, 5.8.2003, PMNH. 10433.

Panaeolus fimicola (Pers.) Quel

Cap convex of light gray colour, finally striate at the margin, 2-3 cm in diameter; gills of two lengths, adnate, gray brown. Stipe cylindrical, hollow, without veil, 5 cm

long, light brown; flesh color is similar. Spores thick walled, chestnut brown or dark grayish-brown to black, opaque with apical germ pore, acute base, 15 x 9 μm. On dung, Basti Ameer, Chowk Kumharanwala, Multan, 1. 8. 2003, PMNH. 10420.

Psathyrella artemisiae (Pass.) K. M.
Fig. 7

Cap light brown, umbonate in the center, 3-4 cm, growing in clusters, stipe 8 x 6 cm long, cylindrical floccose in the lower half due to remnants of ring. Lamellae brown to golden brown, basidia clavate, cystidia bottle shaped. Spores light brown with apical germ pore 7-9 x 5.5–6 μm. In the flowering bed of Botanical Garden, Bahauddin Zakaryia University, 9.8.2003, PMNH. 10434.

Psathyrella candoleana (Fr.) R. Mre.
Fig. 8 Edible

Cap light brown, powdered, darker, golden in the center, 4 cm. Lamellae brown to dark brown. Stipe cylindrical below, becoming flat above and grooved in the center, 8 cm long. Annulus almost in the middle on the stipe, prominent, membranous of light cream color. Spores light brown with apical germ pore 5.25 – 6.75 x 3.75 – 5.25 μm. On fallen logs, in clusters in Botanical Garden, Bahauddin Zakaryia University, 9. 8. 2003, PMNH. 10419.

Tricholomataceae,
Marasmiellus omphalodes (Berk) Singer
Fig. 6

Cap 2-3 cm. convex, soon becoming applanate, subumbonate, finally drooping, white turning cream with age and darker towards center, radially striate towards margin, dry, glabrous. Lamellae adnaxed to adnate, arcuate, cream, drying to brown colour, 1.5 mm wide, moderately crowded with lamellae of four lengths. Stipe 2-4 cm long. 2 mm diameter, rounded below and slightly flattened above, uniformly wide. Spores hyaline, thin walled containing single large refractive guttule, 6-8.3 x 2-3 μm. On soil of Agricultural fields of Basti Ameer, Chowk Kumharanwala, Multan, 5.8.2003, PMNH. 10423.

Gasteromycetes
Lycoperdales
Tulostomataceae
Podaxis pistilaris (L. ex. Pers.) Fr.
Fig. 9 Edible when young

Fruit body ovate to oblong, with blunt apex 13-19 cm. Stipe cylindrical 10-12 x 5 cm. The upper layer of cells or exoperidium snow white breaking into large white appraised scales that give the plant a shaggy appearance in earlier stage. The endoperidium tough membranous persistent, cinnamon / buff, it is smooth in the ripe specimens but wrinkled in the dried herbarium material. Columella up to 5.3 cm thick

covered with scales, twisted, hollow, traversed by parallel hyphae, bulbous base borne under the sand / soil and form radiating and branched hyphae. Dehiscence by the endoperidium becoming free from the stipe at the base accompanied by longitudinal slits towards the apex up to various extents. Spores globose to subglobose or obovate, 7-9 µm in diameter, apically truncate with an apical germ pore and smooth. The sample no 10421 has comparatively short cap. On soil, Agriculture area, Basti Ameer, Chowk Kumharanwala, Multan, 5. 8. 2003, PMNH. 10421 and 10422.

Acknowledgement

We are indebted to Dr. Muqarrab Shah, Director General of Pakistan Museum of Natural History for providing the laboratory facilities for research work in the Botanical Sciences Division.

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(Received for publication 5 January 2007)