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***Podaxis pistillaris* (L. ex Pers.) Fr. recorded from Al Mekwah City, Albaha, Saudi Arabia**

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ABSTRACT

Podaxis pistillaris, a basidiomycetic fungus was collected, described and illustrated from Al Mekwah, Saudi Arabia. The fruiting bodies and spores showed variations however, match with the description of that fungus. This is first report of this fungus from Al-Baha County.

Key words: Comatus, agaricaceae, lycoperdaceae, food, medicinal

INTRODUCTION

Podaxis is a gastroid mushroom within the family Agaricaceae (Basidiomycota) which is morphologically identical to stalked-puffballs and widely distributed in desert soils of arid and semi-arid over the world (Morse, 1933; Dring, 1973). Taxonomically, about 50 species have been described within this genus; nonetheless, many of them may represent morphotypes of *Podaxis pistillaris* (Morse, 1933). This fungus was initially identified as *Coprinus comatus* (O.F. Mull.) Pers. Later it was identified as *Podaxis pistillaris* (L. Pers.) Morse. This fungus is commonly known as False Shaggy Mane due to its resemblance with *C. comatus*. *Podaxis pistillaris* earlier has been reported from various parts of world and India (Bilgrami *et al.*, 1979; Jamaluddin *et al.*, 2004). But it has not been recorded from Madhya Pradesh in India (Khatri *et al.*, 2009).

Podaxis pistillaris gained its importance from its medicinal properties that has well been documented for the treatment of inflammation (Mao, 2000), skin diseases (Gupta and Singh, 1991) and as antimicrobial agents (Panwar and Purohit, 2002). Although the edibility and nutritive values of this mushroom have been tested (Gupta and Singh, 1991), yet not commercialized as a food supplement due to hard nature of the fruiting body. This is the first report listing both the occurrence and description of that fungus in Al Mekwah city and in Saudi Arabia, although it has been collected from Riyadh region without any detailed morphological study by Hashem and Al-Rahmah (1993).

MATERIALS AND METHODS

Morphological characters of the fruiting bodies like size, shape, color and surface were noted on the field. Longitudinal as well as transverse sections of fruiting bodies were taken and the internal characters were recorded. A piece of gleba of different stages of development was put on separate microscopic slides, dissected with the help of dissection needles and mounted in water.

Simultaneously duplicates were stained in cotton blue, mounted in Lactophenol and sealed with feviquick. Microscopic characters of fungi were carefully observed and photographs were taken

by digital camera attached to microscope eye piece. The species was identified after careful perusal of literature (Morse, 1993; Keirle *et al.*, 2004). Specimen and slides have been deposited in Biology Department, Faculty of Science, Al Baha University, Saudi Arabia.

RESULTS

The morphological characteristics of that fungus is listing below.

Basidiomata (Gasterocarps): It is up to 15 cm in height, 0.8-1.6 cm in diam., whitish at early stages becoming yellowish to rusty-brown in color at maturity, covered with scales when young. Pileus is cylindrical to ellipsoidal, 5-9 cm in length, 1-2 cm in diam., white becoming yellowish-brown in color. It is fragile, leathery, woody at maturity, stipitate and pileate, odorless (Fig. 1a-c).

Peridium: Peridium is non-dehiscent and remaining fused with the stipe (secotioid), cracking or splitting when dried to release spores. STIPE 3-14 cm long, 0.8-1.3 cm diam, white to yellow-brown, straight, bulbous at the base, possessing a fibrous to woody texture, hollow in the centre when mature. Gleba pink in color when young becoming reddish to brown at maturity. Basidiospores 10-14×9-13 μm , globose to subglobose, smooth, thickwalled, purple when young becoming reddish to dark brown at maturity, with a germ pore (Fig. 2).

The hymenium layer is borne on irregular lamellate tramal plates which breakdown following the development of the capilitium. Basidiospores mass is embedded in capilitium. Hymenophore tissues is composing of interwoven, hyaline, thin walled generative and skeletal like hyphae. Gills replaced by gleba which at first is white, changing from white to pallid, pallid to yellow, yellow to



Fig. 1(a-c): Fruiting bodies of *Podaxis pistillaris* (L. Pers.) at different stages of development; (a) Young, (b) At maturity and (c) After rupture of the outer membranous layer of peridium

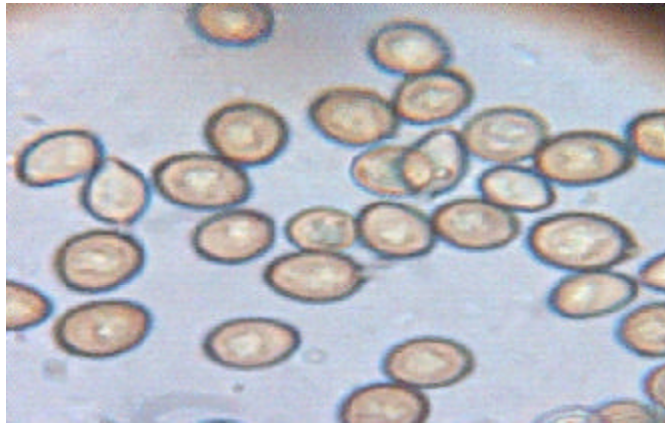


Fig. 2: Mature spores of *Podaxis pistillaris* (X40)

brown ultimately blackish; maturation starts from base progressively towards apex. Clamp connections not observed; Basidiospore: Elliptic, oval, spherical, 7-12×11-16 μm , hyaline when young turning to pale-yellow to olivaceous ultimately brown, blackish in mass, smooth with a prominent germ spore, rarely papillate, cell wall two layered, produced 4 or more in number per basidiole. The gleba is traversed by a slender, gradually tapering, permanent columella otherwise it is homogenous at maturity.

Stipe: Stipe length of *P. pistillaris* fruiting bodies are ranged from 4-10 cm and in some cases it might reach 17 cm long. The thickness of the stipes are ranged between 10-12 mm at the base just above ground level which gradually tapers to 4-5 mm at the apex, continuous with the columella, slender, tough with a bulbous base, dry, woody, fibrous, striate, white sometimes covered with membranous scales, hollow throughout the length, tunnel or siphon 2-2.5 mm in diameter. Stipe mycelium is thin and thick which are mixed, swollen here and there in a position parallel to the long axis, which blackish near to ground level.

DISCUSSION

It has been noted that fungus fruiting bodies produced in the month of July were larger while those produced in the month of October were comparatively smaller. There was a variation in fruiting bodies color, shape and size to the extent that fruiting bodies belong to entirely different species but the collected specimens were referred to the same species *Podaxis pistillaris*, following Morse (1933) comment that this species has great variations in fruiting bodies and spores characters. The site from where this fungus was collected has been covered by rocks and cement concrete level to make scooter/cycle stand in 2013. Actually, Hashem and Al-Rahmah (1993) collected that fungus from Riyadh region in Saudi Arabia, but they did not mention its morphological characteristics, but they used its vegetative mycelia and grown at different concentrations of Cadmium and lead. The dried material has also been preserved for further reference in microbiological laboratory, Biology Department Faculty of Science, Al-Baha University. Mycelium from the fruiting body was observed, when fungus spores are produced by budding of the basidioles in fruiting bodies collected from the field.

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