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Short Communication

Recording novel mushrooms in Heet district, Iraq

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Abstract

Objective of this study is the identification of a rare mushroom genus, *Marasmius* sp. (edible), for the first time in Iraq. Others, *Clitocybe* sp. (avoid), for the first time in the studying area, and *Agaricus* spp. (edible), were also recorded in Heet city. All genera were collected from different locations (three gardens) in the center of Heet district during January 2014. This work added new data to the biodiversity of macrofungi in Iraq, especially in the arid area on sides of Euphrates River.

Keywords: biodiversity, collection, identification, wild mushroom

1. Introduction

Mushrooms play a very important role through recycling cellulosic wastes in the ecosystem, hence reducing risks and influences of pollutants (Carlile *et al.*, 2001). As they were found in suitable habitats, scientists concentrated on the edible mushroom that can be grown in the Iraqi environment naturally to encourage mushroom producers in this country (Owaid *et al.*, 2014). In autumn, as the color of tree leaves change, leaves fall off, dew rises, and mists descend, mushrooms begin to emerge above the ground on plant logs, plant stumps, and fallen branches (Hall *et al.*, 2003).

The desert of Anbar province is rich in desert truffles (Owaid, 2016). In Iraqi Kurdistan Region Governorate (KRG), about 23 genera of basidiomycetes were recorded in mountain areas of Sulsaimani and Erbil of up to 3,000 meters above sea level (Aziz & Toma, 2012). Forty-four species of mushrooms are belonging to 29 genera from different localities in Erbil Governorate of KRG (Toma *et al.*, 2013). About nine genera were recorded at the first time in Heet city, Anbar province, which appeared from November to February from each year (Owaid *et al.*, 2014). Genus *Polyporus* sp. was also isolated in Fallujah city in Anbar province (Muslat & Owaid, 2015).

Heet city lies at 33.64° North and 42.83° East and at 66 meters above the sea level (Owaid *et al.*, 2014). The climate of this city is dry to semi-dry with high evaporation and low rainfall rates (Ministry of Environment [MOE], 2012). As a result, it can be very difficult to distinguish between a country's native fungi and those that have been introduced or have newly arrived from other places (Hall *et al.*, 2003). This article aimed to record new data in biodiversity through identification of collected wild mushrooms as new genera, which grow in different gardens of Heet district, Anbar province, Iraq.

2. Materials and Methods

Some genera of mushrooms were collected from different locations (three gardens) in the center of Heet district during January 2014. Standard methods of collection and identification were followed as mentioned in references, which were used for identification of mushroom depending on their taxonomic keys, Conte and Laessoe (2008), Huffman *et al.* (2008), Polese (2005), and Stephenson (2010).

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3. Results and Discussion

This study represents the findings on wild mushroom, which were collected and identified in Heet city, Iraq. Wild mushrooms grow naturally in various gardens in Heet city, thus were collected from some gardens and places in the center city in January 2014. Euphrates River enters this city, therefore; different gardens placed on sides the river (Figure 1). Collected mushrooms appeared in January 2014 in the winter season due to the climate of this district. Generally, rainfall occurs from December to February. during the winter season in most parts of Iraq with temperature 16 ℃ as an average day while it's dropping to 2 °C at night with a possibility of frost (Jaradat, 2002).

Figure 1. Map and site of Heet city in Iraq.

Marasmius sp. (Edible)

This genus *Marasmius* sp. (Figure 2, A1, A2, A3) appeared in Heet district, which is the first time recording in Iraq. It grows as saprotrophs on garden floor litter. Species of *Marasmius* are the most common members of the Marasmiaceae family. Their fruiting bodies are typically small and rather tough with flattened caps and widely spaced gills (Stephenson, 2010). This is one of three species that commonly grow in fairy rings in grasslands such as lawns, golf greens, and pastures. Cap 1-5 cm broad, rounded, maturing to bell-shaped to flat, often with prominent blunt knob; cream to reddish tan, margin sometimes striate at maturity. Gills adnexed to nearly free, well separated; paler than the cap, creamy white to buff. Stalk 2-7 cm long, 2-4.5 mm thick, equal; buff at the top, darker brown at the bottom, with dense white hairs at base; tough (Huffman *et al.*, 2008).

Agaricus spp. (Edible)

Agaricus spp. (Figure 2, B1, B2) was collected from the soil of Basaar gardens and classified to genus level. It is called white button mushroom. Its cap convex, soon flattening, and smooth or fibrillose, white or pale gray, splashed with ocher and often soiled with particles of earth. It grows on packed earth, even breaking through asphalt, in parks, gardens, footpaths, around trees in cities (Polese, 2005). A familiar edible mushroom with flesh that faintly reddens when bruised. With age, its white, slightly scaly cap turns pink-gray and its pink gills turn brown. It lacks the distinctive almond smell found in some of its relatives. The ring is small, single, and has no scales on the underside. The size of mushroom's cap is 4-10 cm, up to 12 cm wide; stem is 3-7 cm high and 0.8-1.5 cm wide. Spore print is chocolate brown, related to *Agaricus campestris* (Conte & Laessoe, 2008).

Clitocybe sp. (Avoid)

Clitocybe sp. (Figure 2, C) may be poisonous fungus and has properties as mentioned by Huffman *et al.* (2008). A species *Clitocybe odora* also with a convex cap has a gray-brown color, darker at the center, cap 3-6 cm, gill many, stems short 1-4 cm long. They found in pastures among trees in the early spring season, edible fungi (Aziz & Toma, 2012). *Clitocybe dealbata*, a poisonous species, may be found in the same area with *M. oreades* (Huffman *et al.*, 2008). While, *garicus campestris* and *Marasmius oreades* are highly recommended edible species, however, *Clitocybe molybdites* is poisonous (Huffman *et al.*, 2008).

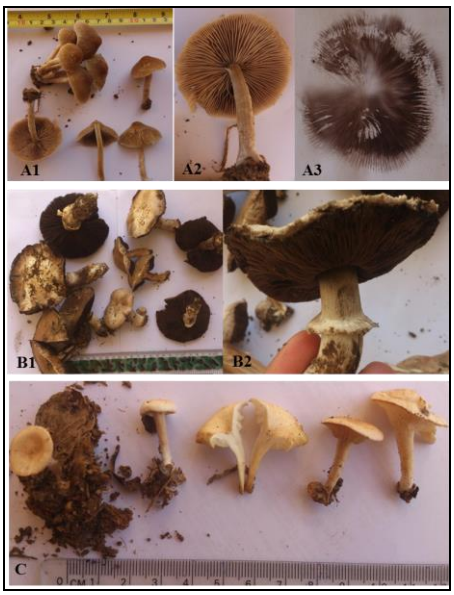

Figure 2. Wild mushrooms were collected from Heet district, Iraq; A= *Marasmius* sp., A1 & A2 =fruiting body, A3 = spore print; B1 & B2 = *Agaricus* spp.; C=*Clitocybe* sp.

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