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COLLECTION, MORPHOLOGICAL CHARACTERIZATION, MOLECULAR DIAGNOSIS AND ENZYMATIC ACTIVITY OF SOME WILD MUSHROOM IN AD DIWANYA PROVINCE, IRAQ

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ABSTRACT : AL Qadisiyah (Ad Diwaniyah) province has a rich diversity of wild mushrooms, where no previous study was conducted on their characterization. The current study goal was to characterized some wild mushrooms collected from the Sumer region in the Eastern north of Ad Diwaniyah from 2017 to 2019. Twelve samples were collected from a different area of Sumer district, AL Qadisiyah province of Iraq and identified eleven different species. The characterization of Indigenous was performed in the field, according to the key features (shape, color and Capsize); while the different key references, manuals, monographs, and databases were implemented for conventional characterization was done using. Our wild mushrooms samples were: *Pleurotus eryngii*, *Pleurotus ostreatus*, *Pleurotus floridanus*, *Panaeolus papilionaceus*, *Podaxis rugospora*, *Psathyrella cacao*, *Agaricus arizonicus*, *Agaricus bisporus*, *Agaricus bisporus* (brown), *Agaricus augustus*, *Agaricus bitorquis* and *Amylosporus succulentu*. They are to be edible based on indigenous information. Taxonomic studies of fungi samples according to DNA molecular diagnosis have been shown that the 11 species were belonging to 6 genera, 5 families, and 2 orders, which considers as an essential role for perfect wild mushrooms classification, therefore avoiding human deaths from the consumption of poisonous ones. The highest enzymatic efficacy at fungi mycelium on this study was to Cellulase enzyme from *P. floridanus*, *A. augustus* and *A. bitorquis*, while was not any efficacy to xylanase enzyme and was noted weak efficacy to L-Asparaginase enzyme.

Key words : Ad Diwaniyah mushroom, wild collection, identification, sumer mushroom, wild mushroom.

INTRODUCTION

Fungi are the threads that keep ecosystems together, which affect the lives of humans in several and various ways. Most fungi are microscopic, but some (macrofungi) intermittently produce fruiting bodies (sporocarps) that are highly visible. These are commonly called mushrooms or toadstools (Webster and Weber, 2007). Mushrooms are well known as the main food resource and in achieving nutritional security (Chelela *et al*, 2014; Tibuhwa, 2012; Ekhlas *et al*, 2018 and Ekhlas *et al*, 2020). They represent a vital part of the links in the food web, besides their significant roles in the ecosystem as pathogens and decomposers and are imperative in forest and grassland ecosystems alike. Accordingly, countless are exceptional scavengers in environment, decomposition dead animal and vegetable material into minimal compounds that turn out to be available to other members of the ecosystem (Webster and Weber, 2007; Rukaibaa *et al*, 2017 and Marthad *et al*, 2019). The mushrooms number species on Earth's surface are estimated at 140,000, where only 1,400 species, or approximately 10%, are known (Hawksworth, 2004). Furthermore, the growth of mushrooms in fields and woodlands is very noticeable in damp environments, which is consistent with the fact that the high water potential (0 to -1 MPa), provides conditions for most fungi to grow better. Anyhow, few fungi are able to grow at actual low water potentials.

AL Qadisiyah governorate varied ecological conditions like altitude, temperature, edaphic factors, etc. Thus, the vegetation of Ad Diwaniyah is greatly diversified from its districts. These wide arrays of geomorphology, climatic variations, and vegetation structure make conducive for the luxuriant growth of macrofungi. The lack of taxonomic studies on the species of wild mushroom restricted their additional exploitation (Feeney *et al*, 2014) pointed out that the wild mushroom includes symbiotic, edible mycorrhizal and poisonous that just collected from the wild. In general, macro-morphological characteristics present further dependable taxonomic information toward delineating the utmost of the species in the genus than