جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة ديالى
كلية الطب البيطري

دراسة مظهرية وجينية لفطر الرشاشيات الدخناء المعزولة من الصيادين وكلاب الصيد في محافظة ديالى

رسالة مقدمة الى مجلس كلية الطب البيطري –جامعة ديالى
وهي جزء من متطلبات نيل شهادة الماجستير في الاحياء المجهرية البيطرية

قدمتها

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1.1.Introduction

Aspergillosis was considered as one of the most important diseases that associated with certain levels of morbidity and mortality in both developing and developed countries **(Brown *et al.*,2012, Pal, 2017)**. There was an increasing frequency of the aspergillus infections in both humans and animals worldwide **(Dave and Pal, 2015)**. It was reported that 27 species out of 600 known species of aspergillus were associated with infections in human and animals **(Pal *et al*., 2014)**.

Most aspergillus infections were associated with an opportunistic *Aspergillus fumigatus,*but other species like *A.restrictus,A.ochraceous*, *A.niger,A.nidulans,A.glaucus,A.flavus,A.deflectus,A.clvatus,A.chevallieri*, *A. candidus* and *A. amstelodami* **(Pal *et al.*,2014,Dave and Pal ,2015)**.The fungus aspergillus was present everywhere in the environment and easily can be recovered from different resources like substrates of plants, water, air, and soil **(Dave *et al.*, 2015).**

Long exposure to inhaled conidia from *A.fumigatus* may be associated or resulted in respiratory tract infections in human **(Richardson *et al.*, 2019).**

In immunecompromised individuals those were suffered from cancer,AIDS,chronic granuloma,skin graft, and those with transplantation of solid organs, *A.fumigatus* was considered as the main source of severe problems **(Murray *et al.*, 2019).**

Many reports mentioned that *Candida albicans* is the first cause of fungal infection in hospitalized patients, whereas *A.fumigatus* is the second cause **.**The ubiquitous distribution of *A.fumigatus* worldwide was attributed their ability to produce conidia as small spores of 23.5 µm. The tiny size of theses spores facilitate their remaining in the atmosphere for longtime **(Kwon-Chung and Sugui, 2013).**If these spores are inhaled by

individuals, they were not easily eliminated by immune system accordingly a considerable mortality of 30 to 90% in immunecompromised patients was attributed to a complicated infections with these fungi by inhaling of their conidia **(Roohani *et al.*, 2018).** Aspergilloma (fungus ball), invasive disease, and allergic bronchopulmonary aspergillosis are *A.fumigatus* fungal disease reported as pulmonary infections in patients with cystic fibrosis **(Bellmann-Weiler and Bellmann, 2019).**

A.fumigatus and other molds like *Penicillium* and *Trichoderma* are producing gliotoxin as a harmful secondary metabolite **(Paulussen *et al.*, 2017).** Gliotoxin was classified within the toxins of epidithiodioxopiperazine (ETP), that was characterized by its low molecular weight (326 Da) and piperazin ring crossed by disulfide bridges **(Hmood ,2017).** The host immune cells are highly affected by the oxidized form of this gliotoxin as it was interfered with their immunological response functions **(Hernández-Chávez *et al.*, 2017).**

1.2. Aims and Objectives of the study

The current study designed to fulfilled the following aims:

[1] Isolation of A.fumigatus that isolated from hunters and hunting dogs in Diyala province-Iraq and identification by phenotypic characterization and genotypic PCR based molecular technique.

[2] Real-time based detection of gliotoxin of

[3] *A.fumigatus* from human and dogs .

[4] Evaluation of relationship between *A.fumigatus* infection and possible risk factors in human and dogs.