



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



## عزل وتشخيص جزيئي للشعروية التؤلولية في الأشخاص والحملات المصابة بالفطار الجلدي في محافظة ديالى

رسالة

مقدمة إلى مجلس كلية الطب البيطري / جامعة ديالى وهي جزء من متطلبات نيل  
درجة الماجستير في الطب البيطري / الاحياء المجهرية البيطرية

من قبل

شهد عبدالمجيد اسود

بإشراف

أ.م.د. احسان نصيف جاسم

أ.غسان حمدان جميل

1443 هـ

2022 م



**College of Veterinary Medicine**

**Republic of Iraq  
Ministry of Higher Education & Scientific  
Research  
University of Diyala**



**Isolation and molecular identification of  
*Trichophyton verrucosum* in human & lambs  
infected by dermatophytosis in Diyala  
province**

A Thesis

Submitted to the Council of The Veterinary M.cine College at The  
University of Diyala in Partial Fulfillment of the Requirements for The  
Degree of Master of Science in Veterinary Microbiology.

**By**

**Shahad Abul-Majeed Aswad**

**Supervised by**

Professor

**Ghasan Hamdan Jameel**

Assist.Prof.

**Ehsan N.Jasim Al-Obaidy**

**2022 A.D.**

**1443A.H.**

**1. Introduction:**

Ringworm is a highly infectious skin condition that affects sheep all around the globe. It is an infection of man's and animals' skin and hair's surface, keratinized components. Dermatophytes (keratinophilic filamentous fungus) of the genera *Trichophyton*, *Microsporum*, and *Epidermophyton* cause the condition. (Łagowski *et al.*, 2020). *Trichophyton verrucosum* is the most prevalent cause of dermatophytosis in sheep, and it is also the world's most common infection. As a result, it has been estimated that a fungal skin infection costs at least half a billion dollars to treat (Hameed *et al.*, 2017).

Data by (Hassanzadeh *et al.*, 2018) According to estimates, 20-25 percent of the world's population has mycosis, which manifests as recurring illness with or without consequences. Dermatophytes cause a surface infection, however immunocompromised persons might develop astringent symptoms and become a source of disease propagation. (Baranová *et al.*, 2018). Death is uncommon in such circumstances, although it is connected with painful and chronic sickness.

Dermatophyte sp. are divided into three types; anthropophilic, zoophilic and geophilic which are human-related skin fungi, animal-related skin fungi and soil-relieving skin fungi respectively. These fungi were formerly common in soil and were responsible for the breakdown that led to human infection, while anthropophilic fungus infected sheep. (Bredahl & Gyllensvaan, 2000). Due to their proficiency in infiltrating keratinous tissues, dermatophyte fungus seems to be one of the most efficient human parasites (Zarrin *et al.*, 2011).

Many nations have been interested in researching the frequency of fungal skin diseases in recent years (Nenoff *et al.*, 2007; Neji *et al.*, 2011; Jameel, 2012).

Dermatophytosis was identified as a highly infectious illness in Iraq and was declared a public health emergency (Ndako *et al.*, 2012). Dermatophytosis instances have recently surged in Iraq, particularly in the Diyala governorate.

Dermatophytosis has a huge economic loss in the form of reduction of weight gain and downgrading of hide and skin that affects marketing show, premature culling and treatment costs with dramatically increase the infection in the last few years all over the world (Schmid & Grigoriu, 1971;Naseri *et al.*, 2013). In addition to easy transmission from animals to human (Aboueisha & El-Mahallawy, 2013). British leather confederation evaluated losses due to downgrading of the leather of about 35 million dollars annually, of which 5% due to dermatophytosis (Hameed, *et al.*, 2017) .

### **1.1 Aims of study**

1. Isolation and identification of *T. verrucosum* from human and lambs.
2. Study the microscopically and macroscopically appearance of *T. verrucosum*.
3. Molecular identification by PCR technique and sequences of positive cases of PCR and compare to related species.

## Summary

Dermatophytosis causes superficial fungal infection that poses public health problems to sheep and economically significant causes of numerous dermatoses that have been observed in sheep and human and an economically significant source of several dermatoses. The aims of this study were to isolate and identify the causative agent of skin lesions in human and lambs by conventional and molecular methods in the Diyala province of, Iraq.

The total number of skin scraping(wool) collected from lambs were 95 in different sex and age (1-5 months) during the period from first of January to last July 2021. While 100 skin scraping collected from human indifferent sex and age (10-60years). Out of 95 lamb skin scraping only 10 (10.5%) were positive to *T.verrucosum* and 10/100(10%) were positive to *T.verrucosum* from human skin scraping .

The results showed that the main isolates are *Trichophyton verrucosum* diagnosed with direct microscopic examination, culturing and accentuate by molecular identification and sequences. This study is the first research in Diyala province to detect and sequence *T. Verrucosum* and registered under the accession number MZ574565.1 in Gen Bank .