



Isolation of *Trichophyton verrucosum* from Rabbit Infected with Dermatophytosis

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Authors' contributions

This work was carried out in collaboration between both authors. Author WGA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors WGA and HO managed the analyses of the study. Author HO managed the literature searches. Both authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Dermatophyte infection or ringworm is a superficial cutaneous infection with one or more of the fungal species of the keratinophilic genera *Microsporum*, *Trichophyton*, or *Epidermophyton* and is a zoonosis with a great impact on public health. Three skin scrapings were collected from suspected clinical cases of rabbits aged 6 months. Samples were directly examined in 20% KOH and cultured in Sabouraud's dextrose agar. The developed colonies were identified by conventional methods. The dermatophyte isolated was *Trichophyton verrucosum*.

Keywords: Dermatophytes; rabbit; *Trichophyton verrucosum*.

1. INTRODUCTION

Rabbits are calm by nature. They are extremely delicate animals and are prone to many bacterial, fungal or parasitic skin diseases if proper care is

not taken. Among them dermatophytosis is one of the most common diseases [1]. Dermatophytosis is a superficial cutaneous infection with one or more of the fungal species in the keratinophilic genera *Microsporum*,

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Trichophyton, or *Epidermophyton* [2,3]. Young or immune compromised rabbits are thought to be most susceptible [4].

T. mentagrophytes is the most common dermatophytes isolated from rabbits and some researchers consider rabbits as asymptomatic carriers of this organism [5]. Sporadic infections with *M. canis*, *M. gypseum*, *M. audouinii*, *T. verrucosum* and *T. schoenleinii* have been reported in rabbits [6]. Two dermatophytes species were isolated from infected female rabbits *Trichophyton mentagrophytes* var. *mentagrophytes*, urease positive, in one female and *Microsporium gypseum* in the 3 other females by [7].

Clinically, dermatophytes infect the epidermis and adhering structures, including hair follicles and shafts. Often results in localized lesions most commonly on the face usually on or around the head, and cause pruritus, patchy alopecia, erythema, and crusting [8].

This disease can also result in rabbit malnutrition, growth retardation, feed remuneration reduction and even death [9].

2. MATERIALS AND METHODS

2.1 Animal and Sampling

Samples were taken from three female rabbits (6 months) suspected to be infected with

dermatophytes. Previously, the sampling zone was disinfected with 70% alcohol. Samples (hair and scrapings) were collected with forceps or scalpel just behind the extending margin in the infected area. Hair was plucked with the root end. Samples were preserved at room temperature (25°C) in zipper bag for fungal isolation and identification.

2.2 Direct Examination and Culture

Hair and scrapings were mounted for direct examination in 20% KOH and examined under 400 X magnification for fungal structures.

Cultures were made onto duplicate sets of Sabouraud's dextrose agar plates supplemented with 0.05 mg/ml chloramphenicol and 0.5 mg/ml cycloheximide and incubated aerobically at 27 and 37°C. Cultures were observed daily for growth of dermatophytes for up to four weeks. Isolates were identified on the basis of their colonial and morphological characteristics including the growth rate, colony morphology; colour, shape, size and observe and reverse sides [10].

3. RESULTS

3.1 Clinical Observations

Infected rabbits showed skin lesions started as alopecia, severe incrustation, scaling, on the legs, face and chest as shown (Figs. 1, 2).



Fig. 1. Localized skin lesion of dermatophytes on leg

Direct examination of skin scrapings in 20% KOH revealed ectothrix invasion of hair with arthrospores as shown in Fig. 3.

Macroscopic the isolate showed creamy, velvety, heaped, raised centre, heaped up with non pigmented reverse side, suggestive of *T. verrucosum*. Microscopic feature showed chains of chlamyospores with antler hyphae (Fig. 4).

4. DISCUSSION

Dermatophytes are the most common infectious skin diseases detected in small animals in veterinary clinics. Diagnosis of the disease is

important for treatment, prevention and control, beside public health problem, as the rabbit's population has increased in the last years and these animals are more inserted in our life maintaining close contact to people, especially children. Characters that have been employed in identifying dermatophytes include colony pigmentation, texture, growth rate, and distinctive morphological features such as microconidia, macroconidia and nodular organs [11]. The macroscopic features observed were typical for *Trichophyton* spp. *T. verrucosum* colonies have been reported to be glabrous, folded, heaped, velvety, wrinkled and white, with an unpigmented reverse [12].



Fig. 2. Localized skin lesion of dermatophytes on chest



Fig. 3. Ectothrix arthrospores infection in hair



Fig. 4. Lactophenol cotton blue mount shows chains of chlamydospore of *Trichophyton verrucosum* culture incubated at 37°C

T. mentagrophytes, *Microsporum canis* are the most common cause of ringworm in rabbits [13,14] other author's added *M. gypseum* [12]. *Microsporum canis*, *Trichophyton mentagrophytes* and *Trichophyton verrucosum* are known as zoophilic dermatophytes [11]. This is the first isolation of *Trichophyton verrucosum* from rabbits but it has been isolated from cattle [15], donkeys [16], horses [17], camels [18], sheep [19], and goats [20].

5. CONCLUSION

Dermatophytosis is a zoonotic disease so it can be transmitted to human especially when people come in close contact. Rabbits are very prone to cutaneous form of fungal infections, so in this case owners must observe the skin of these animals periodically.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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