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Isolation of *Microsporum canis* from dog and its therapeutic management

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Abstract
The present investigation was conducted to identify the causal agent of skin infection in the dog. Skin scrapings and plucked hair samples were collected from a skin lesion of affected dog and were subjected to direct microscopic examination and fungal culture. Direct microscopic examination revealed the presence of ectothrix spores and arthrospores in hair and skin scrapings, respectively. On Saboraud dextrose agar, cottony spreading colonies with yellowish pigmentation were observed which showed large thick walled macroconidia on lactophenol cotton blue staining. Microscopic examination and cultural characteristics were suggestive of *Microsporum canis*. Dog was recovered successfully after concurrent treatment with griseofulvin @250 mg orally for 10 days and topical application of clotrimazole-neomycin ointment.

Keywords: Dog, dermatophytosis, skin scrapings, *Microsporum canis*, griseofulvin

1. Introduction
Dermatophytosis is a highly infectious and economically important disease of animals and man. *Microsporum canis* is one of the most common dermatophyte species causing ring worm in dogs. In dogs, infection is usually characterized by multifocal alopecia, scaling and circular lesions [1]. However, clinical manifestation of *M. canis* infection is similar to those caused by other dermatophytes or seen in other skin diseases, therefore specific diagnosis is quintessential for appropriate and timely therapy. No one diagnostic test is identified as a gold standard for diagnosis of dermatophytosis, but direct microscopical examination and fungal culture are unequivocally important and have diagnostic significance [2, 3]. A wide range of antifungal drugs are available and used to cure severe fungal infections in man and animals with variable efficacy. Among this griseofulvin spectrum of antifungal activity is limited to that of dermatophytosis and is more effective than fluconazole [4]. Present report highlights presence of *M. canis* in dogs with dermatophytosis and its successful remedy through antifungal therapy.

2. Material and Methods
An adult male Doberman dog with a clinical picture suggestive of dermatophytosis *i.e*. red papular lesion, circular alopecia and constant itching on skin, was brought to Teaching Veterinary Clinical Complex, Veterinary College, Anjora, Durg. Skin scrapings and plucked hair samples were collected aseptically from the affected region of dog in sterile petridish after cleaning the site with methanol and processed further as per protocol of Pal [5] with little modifications. Portion of sample was treated with 10% KOH and observed microscopically by direct examination in wet mount. Further, presumptive identification of fungus was done by lactophenol cotton blue (LPCB) staining of skin scrapings and hair. Thereafter, samples were inoculated on Sabouraud's dextrose agar (SDA) and incubated at 25°C and observed for a period of 2 weeks. Fungal culture was then subjected to LPCB staining to study the detailed morphology of the fungus.
Therapeutic regimen included griseofulvin @ 250mg (Grisovin) for 10 days orally, cephalexin @300mg (cephavet) for 7 days orally and cetrizine hydrochloride @10mg (ceterid) for 7 days orally. Topical application of antifungal ointment surfaz SN (Betamethasone, Clotrimazole, Neomycin) was continued for 2 weeks.

3. Results and Discussion

Direct microscopic examination of skin scrapings showed the presence of arthrospores (Fig. 1) and ectothrix infection (Fig.2 and 3) in hair shaft suggestive of *M. canis*. Fungal growth was observed following the 6th day of incubation on SDA. The growth appeared as cottony spreading colony with hairy texture and yellowish pigmentation (Fig. 4). Hyaline hyphae and large thick walled spindle shaped macroconidia were detected by LPCB staining of culture. Mycological findings observed during the present study were quite suggestive of *M. canis* and were also in accordance with the findings of Pal [5] and Pasquetti [6]. Earlier reports also described *Microsporum canis* as an emerging pathogen of global significance and public health importance [7].

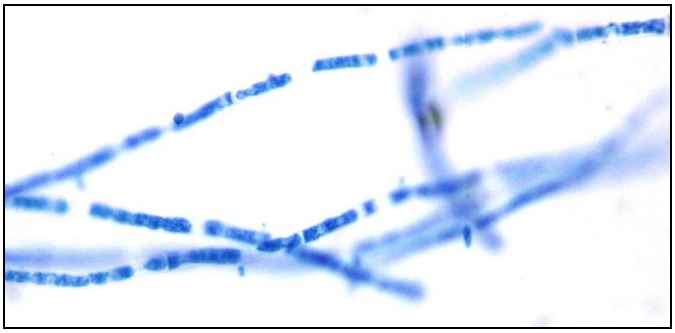

Fig 1: Direct microscopic examination of skin scrapping showing arthrospores by LPCB stain

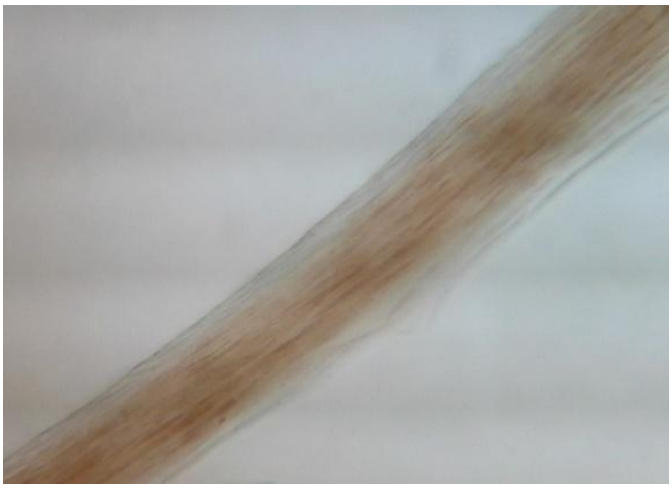

Fig 2: KOH wet mount of hair showing ectothrix hair infection

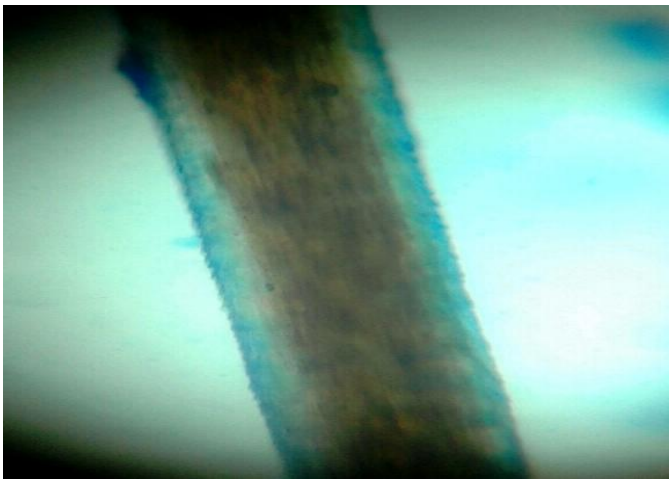

Fig 3: Hair shaft showing ectothrix spores by LPCB staining

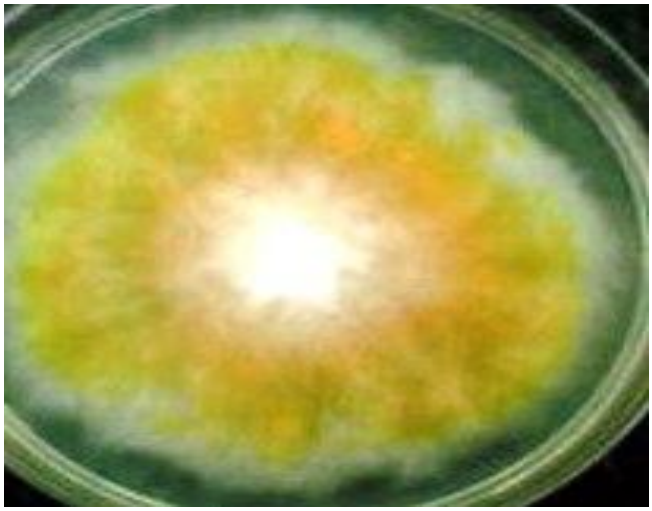

Fig 4: Cottony spreading colony with yellowish pigmentation on SDA

During present investigation, dog was recovered successfully after concurrent use of both systemic oral antifungals (griseofulvin) and topical disinfection of hair coat with surfaz SN. Likewise present study, Dubey [8] reported griseofulvin as effective drug in control of dermatophytosis. Present finding is similar to those of Sparkes [9] who also observed successful recovery after use of systemic oral and topical antifungal.

4. Conclusion

The present study confirmed the presence of *M.canis* as causative agent of dermatophytosis in dog. Wide range of antifungal drugs can be used to cure dermatophytosis but the combination of both systemic oral and topical antifungal successfully recovers the animals. Present finding reported successful therapy of dermatophytosis by concurrent use of griseofulvin oral tablet and topical application of clotrimazole and neomycin.

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