



Original Research Article

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## Evaluation of cats (*Felis catus*) as possible asymptomatic carriers of dermatophytes in extreme south of Brazil

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### ABSTRACT

**Objective:** To investigate the presence of *Microsporum canis* in pelage of asymptomatic cats for dermatophytosis, in south region of Rio Grande do Sul, Brazil, and evaluate its importance in epidemiology of dermatophytosis in the study area.

**Methods:** A total of 60 domestic cats were evaluated for the presence of *Microsporum canis*. The animals were divided into three groups of 20 felines. Each group consisted of exclusively domiciled, semi-domiciled and rural animals. Samples were collected following the carpet-square technique. The microorganisms were cultivated under laminar flow in mycosel agar and grown in a greenhouse.

**Results:** All the cats of the three groups analysed had negative cultures for dermatophytes. In 85% of the dishes, there was a growth of environmental saprophytic fungi such as *Aspergillus* sp., *Fusarium* sp. and *Penicillium* sp.

**Conclusions:** Thus, asymptomatic cats for dermatophytes did not show importance in the transmission and maintenance of the disease in southern of Rio Grande do Sul, Brazil.

## 1. Introduction

Dermatophytosis is a contagious skin disease with worldwide distribution caused by a group of pathogenic fungi called dermatophytes[1]. *Epidermophyton* spp. are among the etiological agents most involved with human dermatophytosis, but the agents of infections in animals are *Microsporum* spp. and *Trichophyton* spp. The horizontal transmission is direct or indirectly between animals and from animals to humans[2].

A high percentage of rigid carrier animals can act as reservoir of this fungi, which highlights its importance on dermatophytosis spread[3,4]. Felines are considered as the main asymptomatic carriers of dermatophytes arthrospores. *Microsporum canis* (*M. canis*) can, inclusive, be considered as belonged to the normal microbiota of the skin and pelage of domestic cats[5,6].

However, other studies support that asymptomatic cats for dermatophytes have little epidemiological importance, since only

rarely the fungi are isolated from this host[2,7]. In view of this, the present study aimed to investigate the presence of *M. canis* in pelage of asymptomatic cats for dermatophytosis, on south region of Rio Grande do Sul, Brazil, and evaluate its importance in epidemiology of dermatophytosis in the study area.

## 2. Materials and methods

A total of 60 domestic cats were evaluated for the presence of *M. canis*. The animals were divided into three groups of 20 felines. The groups consisted of exclusively domiciled, semi-domiciled and rural animals. The animals were segregated within each group according to sex, age and racial pattern. The samples were made following the technique of square carpet. The regions for microorganism collection in each animal was the ventral neck and the lumbosacral regions.

The domiciled cats group consisted of felines totally restricted to the internal environment of human dwellings (houses or apartments) without access to the street. The semi-domiciled cats group included animals of houses or apartments with street access. These two groups of animals were obtained in the urban area of Pelotas, Rio Grande do Sul, Brasil (31°46'19" S, 52°20'34" W). The rural cats group contained animal inhabitants of rural zone with free access

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to forest environments, having only occasional access to human residences. Two cats of this group were residents of a property located in Pelotas; eight were residents of the Morro Redondo (31°35'16" S, 52°37'58" W) and 10 cats were inhabitants of the interior zone of the municipal district of Capão do Leão (31°45'46" S, 52°29'02" W). The three cities are neighboring.

The microorganisms collected with the carpet were cultured in Petri dishes containing mycosel agar (Becton & Dickinson®) and cultivated at a temperature of 25 °C for 21 days.

### 3. Results

All the cats of the three groups analysed had negative cultures for dermatophytes. In 85% of the dishes, there was a growth of environmental saprophytic fungi such as *Aspergillus* sp., *Fusarium* sp. and *Penicillium* sp. Among the dishes in which there was no growth of fungi (15% of total), only one was from semi-domiciled cats sample, all others were from domiciled cats samples. All collections of rural felines resulted in growth of environmental fungi of the supracited genus. Table 1 shows the quantity of analyzed animals discriminated by sex, age and racial pattern.

**Table 1**

Groups of cats discriminated by sex, age and racial pattern.

Groups	Domiciled (n = 20)	Semi-domiciled (n = 20)	Rural (n = 20)	Total
Sex				
Males	9	10	12	31
Females	11	10	8	29
Age				
1 year	5	2	6	13
> 1 year	15	18	14	47
Breed				
No breed	17	14	18	49
Persian	2	4	2	8
Siamese	1	2	0	3

### 4. Discussion

Cats stand out as the main asymptomatic carrier species of dermatophytes in indices ranging from 8% to 88% of the cases[5]. This variation occurs due to the epidemiological factors that interfere directly in the frequency of positivity in cats.

Gambale *et al.*[8] and Mignon and Losson[9] claimed that contacts with other cats that have greater access to the street and environments inhabited by humans were proportional to the presence of dermatophytosis. However, all groups, matching with these situations, surveyed in this study were negative for dermatophytes.

In study of López *et al.*, the percentage of felines with no breed affected was 15.1%, in contrast with 8.3% of felines with breed[10]. Brillhante *et al.* found greater propensity of dermatophytosis in cats with breed and medium to long coat, as persian cat[11]. However, 13.33% of the cats used in this study were persians, 5% were siameses and 81.66% were without defined breed, and there was no prevalence of a group in proportion to others.

López *et al.* described higher incidence of dermatophytosis in young animals[10]. Nevertheless, cats of different age groups were analyzed, being 21.66% with age inferior to one year and 78.33% with age superior to one year and this factor was not relevant to isolation of dermatophyte fungi.

It is possible to perceive that domiciled cats had lower concentrations of saprophytic fungi in pelage, since eight of nine dishes without growth of fungi contained samples of this group of felines. On the other hand, the rural cats were positive for

saprophytic fungi in fur, in all collections. Given the standardization of methods and the correct handling of the materials used, this data reveals that in more controlled environments, with less pathogenic pressure and higher hygiene, the presence of fungi will be less, while at locations less controlled, as the rural environment, this presence will be increased. As Silva *et al.* affirm if the methodology used for cultivation is aimed at environmental saprophytic fungi, possibly a greater diversity of fungi would be identified[12]. Thus, asymptomatic cats for dermatophytes did not show importance in the transmission and maintenance of the disease in Southern Rio Grande do Sul, Brazil.

### Conflict of interest statement

We declare that we have no conflict of interest.

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