DERMATOPHYTES IN ANIMALS AND THEIR ZOONOTIC IMPORTANCE IN SUEZ CANAL AREA
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ABSTRACT

In a survey on dermatophytes among farm and pet animals in Suez Canal Area. T. verrucosum was the main aetiological agent isolated from clinically diagnosed cattle, buffaloes, sheep, goats and horses with ringworm lesions at rates of 75%, 50%, 71.4%, 65% and 25%, respectively. While, M. canis was the only dermatophyte species isolated from clinically affected dogs and cats at a rate of 41.7% and 56.7%, respectively. Dermatophyte infections among the examined animals reached its peak obviously during autumn and winter months and the lowest rates were in summer and spring months. Young aged animals are more susceptible for dermatophytic infection than older ones. On the other hand, out of 142 apparently healthy animals examined, dermatophytes were isolated from only 10 (7.04%) animals. The isolated dermatophytes of the apparently healthy animals were T. mentagrophytes var. mentagrophytes that was isolated from cattle, sheep and goat (4% of each animal species), T. verrucosum from cattle (8%) and M. gypseum (15%) and M. canis (10%) of the examined cats. While, the apparently healthy buffaloes, horses, donkeys and dogs were culturally negative for dermatophytes. These findings reassured that these animals act as an important source and reservoir of human infections with dermatophytes and reflecting the danger of contact with these animals because these agents are more inflammatory and causing sever disease than the anthropophilic one.

INTRODUCTION

Distribution of dermatophytes is an important target of many studies in Egypt and different countries due to their economic and public health importance. Dermatophytes are cited among the most frequent causes of dermatological problems in domestic animals (Francisco, 2000). Economic importance of animal ringworm relies on its contagiousness among animal communities, high cost of treatment, difficulty of control measures, and its public health consequences because the majority of dermatophytes isolated from animals are zoonotic (Chermette et al., 2008). These zoophilic dermatophytes
produce clinical lesions in human that are more inflammatory than those caused by the typical anthropophilic fungi normally transmitted from person to person (Radentz, 1991).

Nowadays animal dermatophytosis is an important issue not only for veterinary doctors but also for dermatologists (Takahashi, 2003). On the other hand, many domestic animals could carry dermatophytes spores on their coats without showing any signs of disease (El-Bahay and Refai, 1973).

Therefore, the goal of this study was to determine the occurrence of dermatophytes among various animal species either clinically showing ringworm lesions or the apparently healthy ones with throwing the light on its zoonotic importance.

MATERIAL AND METHODS

1- Animals:

In the period from April, 2007 to March, 2008; a total of 317 animals of different species; 175 animals clinically showing ringworm lesions (72 cattle, 2 buffaloes, 35 sheep, 20 goats, 4 horses, 12 dogs and 30 cats), and 142 apparently healthy animals (25 cattle, 25 buffaloes, 25 sheep, 25 goats, 5 horses, 2 donkeys, 15 dogs and 20 cats), were selected from different farms and veterinary clinics in Suez Canal Area for mycological examination.

2- Sampling:

2.1. Hair, wool, scales and skin scraping samples were collected from animals clinically showing ringworm lesions. The affected skin areas of the animal body were cleaned with 70% alcohol and skin scraping were taken from the edge of the lesion, using blunt scalpel blade until blood was just drawn. The second most useful specimen was plucking of hairs or wool that were pulled out using sterile epilator forceps from the lesion and any damaged-looking hairs were collected (Quinn et al, 1994). On the other hand, hair, wool and scale specimens were collected form apparently healthy animals using Mackenzie's hairbrush technique (Mackenzie, 1963). The withdrawn scales and hairs or wool were collected in clean labeled envelops or in clean sterile labeled Petri dishes. All collected animal specimens were accompanied by data involving species, sex, and age of the animal, in addition to date of sample collection. The specimens were transferred immediately to the laboratory of Zoonoses in the department of Hygiene, Zoonoses and Animal Ethology, faculty of veterinary medicine, Suez Canal University for processing and mycological examination.

3. Mycological examination

3.1. Direct microscopical examination

The hair, wool, scale and skin scraping specimens from animals were examined microscopically as described by Quinn et al. (1994), using KOH wet preparation method.
3.2. Isolation

3.2.1 Isolation of dermatophytes from clinically affected animals

Specimens from clinically affected animals were cultured, irrespective of the negative or positive direct microscopical examination result as described by Rebell and Taplin (1974) and Quinn et al. (1994), using duplicate Petri dishes or test tubes; the first one containing Sabouraud Dextrose Agar supplemented with chloramphenicol and cycloheximide, the second containing SDA with chloramphenicol, cycloheximide and thiamine. The Petri dishes or test tubes were labeled with the specimen number and date of inoculation. A light inoculum of each hairs, wool, skin scrapings or scale specimen was picked up with sterile teasing needle or forceps and scattered over the surface of the medium and gently pressed down into the agar.

The inoculated plates were incubated at 28-30°C, while the plates containing SDA with chloramphenicol, cycloheximide and thiamine were incubated at 37°C to enhance growth of *T. verrucosum* and observed daily for any evidence of growth for three to four weeks before being considered as negative. The negative specimens were repeatedly inoculated until a definite finding was established. After the establishment of dermatophyte growth, a subculture was made on SDA without cycloheximide for further identification of unidentified cultures or for preservation of the obtained colonies.

3.2.2 Isolation of dermatophytes from apparently healthy animals.

Specimens of apparently healthy animals were cultured as described by Vanbreuseghem (1952) using the laboratory "hair-bait technique" in which sterile labeled Petri dishes were half filled with sterile soil which is thoroughly moistened with sufficient amount of sterile distilled water.

Thereafter, hairs, scales and after brushing material were distributed over the surface of the moisten soil and incubated at room temperature (20-25°C). The incubated plates were examined weekly for a period of three months and the pieces of hairs, which were covered with mycelium, were further examined by culture on SDA containing chloramphenicol and cycloheximide and incubated at room temperature for 4 weeks. Fungal growth, which appears, was submitted for identification of isolates.

3.3. Identification of the isolates:

The isolated colonies were identified by macroscopical character, morphology and microscopical examination using Lactophenol cotton blue (LPCB) wet mount (Clayton and Midgley, 1985 and Carter and John, 1990), to demonstrate the presence of hyphae, macroconidia, chlamydospores and other fungal structure.
RESULTS & DISCUSSION

The dermatophyte infection rates among the examined clinically affected animals in Suez Canal area, using the direct microscopy and cultural examinations respectively (Table, 1), were 83.3% and 75% in cattle, 100% and 50% in buffaloes, 71.4% and 71.4% in sheep, 80% and 65% in goats, 75% and 25% in horses, 50% and 41.7% in dogs and 63.3% and 56.7% in cats with overall dermatophyte infection rates of 74.9% and 66.3% among the all examined animals. These results were nearly similar to dermatophyte cultural examination results reported in Egypt by Nasser, 1969 (63.46% of different farm animals); El-Assi, 1977 (69.23% of sheep and goats) and Abou-Eisha and El-Attar, 1994 (69.2% of cattle). Lower results were recorded in Egypt by Kamel et al., 1977 (7.5% of different animal species); El-Sayed, 1980 (38.9% of different animal species); El-Sherif, 1990 (4.12% of cattle and 16.67% of buffaloes); El-Attar, 1992 (38.7% of different animal species); Awad, 1995 (4.15% of horses, 10.43% of cattle and 6.14% of sheep); Maysa, 2002 (26.7% of different animal species) and Nermeen, 2006 (15% of cattle).

While, higher results were obtained in Egypt by Abdelsamad, 1989 (87.2% of dogs and 92.06% of cats).

There were slight variations in the results of micoscopical and cultural examinations among the examined animals between Ismailia, Port Said and Suez provinces (Fig., 1).

Moreover, the occurrence of dermatophyte infections varies in frequency percentage with those reported in the available literature noted above. This may be attributed to the type, age and number of the examined animals, location and the environmental conditions (Afaf, 1980; Sabah, 1984; Awad, 1995 and Nassif and Osman, 2003).

Distribution of animal dermatophytosis with regard to age among the examined animals clinically showing ringworm lesions, in this study, revealed that most cases of bovine, ovine, caprine and pet dermatophytosis were observed in young animals specially those aged less than one year (Abdelsamad, 1989; Nassif and Osman, 2003; Silva et al., 2003 and Cafarchia et al., 2004). However, in horses, all cases were recorded in horses aged more than 6 years old in the present study. This finding disagreed with Mahmoud (1995) and Awad (1995) who found that most cases of equine ringworm were recorded in young horses, most commonly those aged 2-3 years old.

From the mentioned above, it was concluded that young aged animals are more susceptible for dermatophytic infection than older ones. This higher susceptibility of young animals may be related to lack of prior expo-
sure to infection and thus no immunity to protect those animals (Nassif and Osman, 2003 and Cafarchia et al., 2004).

Regarding the dermatophyte isolates, in the present study, T. verrucosum was the main isolate of culturally positive cases of cattle (54, 75%), buffaloes (1, 50%), sheep (25, 71.4%), goats (13, 65%) and horses (1, 25%). These findings were in accordance with those reported by Abou-Eisha and El-Attar (1994), Seddek et al. (1994), Al-Ani et al. (2002), Maysa (2002), Hanaa (2003) and Nermeen (2006).

On the other hand, it is evident from the present results that M. canis was the only dermatophyte species isolated from 5 (41.7%) and 17 (56.7%) out of the examined 12 dogs and 30 cats, respectively. These findings were in agreement with those reported by Nasser (1969); Abdelsamad (1989), Abou-Eisha and El-Attar (1994), Cabanes et al. (1997), Maysa (2002), Hanaa (2003) and Nermeen (2006), who reported that pets especially cats are important reservoir for M. canis and this species is the main causative agent for pet's dermatophytosis.

In the present study, ringworm lesions in cattle infected with T. verrucosum are characterized by presence of circular lesions covered with grayish white crusts on the head, neck and anterior part of the body (Fig., 2). In some calves the lesions were found around the eyes or the lesions coalesced with each others giving wide irregular areas of the lesion. These findings coincided with those reported by Mourad (1983), Sabah (1984), El-Sherif (1990) and El-Attar (1992). Ringworm lesions in sheep infected with T. verrucosum are characterized by circumscribed lesions of alopecia, scaling and crusting around eyes (Fig., 3). In some cases the lesions were present on ears, legs and the inner side of the fatty tail. These findings were the same as those reported by El-Allawy et al. (1980), El-Attar (1992) and Awad (1995).

Ringworm lesion in a cat infected with M. canis, in this study, was characterized by presence of erythematous area of alopecia on the leg (Fig., 4). In other cases, lesions were mostly distributed in the head, around eyes, ears, muzzle and legs due to scratching of lesions in other parts of the body. This finding coincided with Abdelsamad (1989) and Nermeen (2006) who found that the most commonly affected areas with ringworm lesions in pets are the head and extremities.

In cultural examination of animal specimens for dermatophytes, in the present study, microscopy of T. verrucosum isolated from culturally positive cases showing typical chains of chlamydoconidia "chains of pearls" (Fig., 5). This coincided with Fisher and Cook (1998).

On the other hand, microscopy of M. canis isolated from culturally positive cases showing typical spindle
shaped long smooth thick-walled macroconidia (Fig., 6). These findings were the same as those described previously by Carter and John (1990) and Fisher and Cook (1998).

Concerning the seasonal variation, the distribution of dermatophyte culturally positive cases among the examined animal species, as shown in Table (2) and Fig. (7) in this study, revealed that dermatophyte infections reached its peak obviously during autumn and winter months for cattle (40.7% and 37%), sheep (20% and 72%), goats (30.8% and 69.2%), dogs (40% and 40%) and cats (58.8% and 29.4%) respectively. These results were in accordance with Afaf (1980), Sabah (1984) and Awad (1995). On the other hand, our findings disagreed with El-Assi (1977) and Nassif and Osman (2003) who noted that ringworm infection in sheep and goats increased in the beginning of summer season. The only culturally positive case of dermatophytes in buffaloes or horses, in the present study, was recorded in winter months. This was in keeping with Awad (1995) who reported higher frequency of equine dermatophytosis during January and February.

From the mentioned above, it could be concluded that this higher frequency distribution of dermatophyte infection during autumn and winter months may be due to huddling of animals together during winter months. Moreover, close confinement of animals considered as an important factor in the spread of the disease (Al-Ani et al. 2002 and Nassif and Osman, 2003).

Table (3) and Fig. (8) show the distribution of dermatophyte culturally positive cases among the examined animal species in relation to sex. The dermatophyte infection rates were higher in males (75.9%, 100%, 76%, 61.5% and 100%) than females (24.1%, 0.0%, 24%, 38.5% and 0.0%) in cattle, buffaloes, sheep, goats and horses, respectively. This result was in accordance with that reported by Sabah (1984). While, El-Assi (1977) mentioned that although female sheep and goats showed higher incidence of infection (59.1%), both sexes were equally susceptible to infection. On the other hand, in this study, the dermatophyte infection rates were higher in females (60% and 70.6%) than males (40% and 29.4%) in dogs and cats, respectively. This result varied with Cafarchia et al. (2004) who found that male dogs were more affected with dermatophytes, while no differences were noticed between sexes in cats, in Southern Italy.

This higher incidence of ringworm in male farm animals could be explained by the fact that most of the examined bovine, ovine and caprine ringworm cases were males from intensive beef fattening farms and large
collections of sheep and goats used for fattening. It seems that overpopulation and confinement of these animals may play a role in the spread of the disease among fattened males. Moreover, this may be due to difference in composition of sebum in males when compared with females (Cafarchia et al., 2004).

Many domestic animals could carry dermatophyte spores on their coats without showing any signs of disease (El-Bahay and Refai, 1973). In this study, the overall dermatophyte culturally positive rate among the examined apparently healthy animals was 10 (7.04%) out of 142 with positive rates of 12% in cattle, 4% in sheep, 4% in goats and 25% in cats. While, the apparently healthy buffaloes, horses, donkeys and dogs were culturally negative for dermatophytes (Table, 4). These findings were nearly similar to those reported by Abou-Eisha and El-Attar (1994) who found that the overall dermatophyte infection rate among apparently healthy animals was 8.6% in Ismailia governorate, Egypt.

Regarding the location in Suez Canal area, the occurrence rates of dermatophyte culturally positive among the examined apparently healthy animals in Ismailia, Port Said and Suez provinces respectively were 16.7%, 0.0% and 20% in cattle, 8.3%, 0.0% and 0.0% in sheep, 0.0%, 20% and 0.0% in goats and 25%, 25% and 25% in cats. This variation in the dermatophyte infection rates in Suez Canal provinces may be due to the difference in the true prevalence of this disease among animals clinically affected with ringworm lesions in these areas and the number of examined animals in each province.

Regarding the dermatophyte isolates from apparently healthy animals, T. verrucosum was the most common isolate from cattle (2, 8%). This result was nearly similar to that reported in Ismailia governorate, Egypt by Abou-Eisha and El-Attar, 1994 (6.5%). It was lower than that obtained by Takatori et al. (1993) who reported high detection rate of T. verrucosum from healthy calf skin (17.1%). While, it was higher than that reported by Efuntoye and Fashanu (2002) in Oyo State, Nigeria (2.5%). Mourad (1983) isolated T. verrucosum from apparently healthy cattle that were in contact with diseased ones in Upper Egypt.

The second most common dermatophyte isolated from apparently healthy cattle was T. mentagrophytes var. mentagrophytes (1, 4%). This result was nearly similar to that reported by Efuntoye and Fashanu (2002) in Oyo State, Nigeria (2.5%).

The dermatophyte isolates from apparently healthy sheep and goats, in this study, were T. mentagrophytes var. mentagrophytes at a rate of 4% for each of them (Fig., 9). This result was nearly similar to those reported by Samaha et al. (2002) who
isolated *T. mentagrophytes var. mentagrophytes* from apparently healthy sheep and goats at rates of 2.67% and 6%, respectively.

The present study revealed that the overall dermatophyte culturally positive rate among the apparently healthy cats was 25% and the isolated dermatophytes were *M. gypseum* (15%) (Fig., 10) and *M. canis* (10%). This result varied from those reported by Romano et al. (1997), Patel et al. (2005) and Iorio et al. (2007) who mentioned that *M. canis* is the most common fungus isolated from apparently healthy cats. However, this finding confirmed that apparently healthy cats are significant reservoir for *M. canis* and they are often blamed for transmission of this species between animals and humans (Patel et al., 2005).

In the present study, no dermatophyte fungi were isolated from apparently healthy buffaloes, dogs, horses and donkeys. This finding was in agreement with those reported in Egypt by Abou-Eisha and El-Attar (1994) and Maysa (2002) who failed to isolate dermatophytes from apparently healthy buffaloes. Failure of dermatophyte isolation from these animals may be attributed to secretion of anti-dermatophytic substance from *Chrysosporium keratinophilum*, which is present in the hair coat of these apparently healthy animals and it may inhibit the growth and conidia production of some *Trichophyton*, *Microsporum* and *E. floccosum* species (Gokulshankar et al. 2005).

From the mentioned above, the existence of some dermatophytic fungi in the healthy hair coat of the examined animals is due either to mere environmental contamination or to apparent infection (Otcenásek et al., 1980). These findings highlight the role of apparently healthy animals in transmission of such dermatophytic fungi to humans or other animal species.

In conclusion, the isolated zoophilic dermatophytes, *T. verrucosum*, *M. canis*, and *T. mentagrophytes var. mentagrophytes*, and geophilic *M. gypseum* form the examined farm and pet animal reassured that these animals act as important source and reservoir of human infections with dermatophytes and reflecting the danger of contact with these animals because these agents are more inflammatory and causing sever disease than the anthropophilic one.
Fig. (1): Distribution of dermatophytes among the examined animals clinically showing ringworm lesions in Suez Canal area.

Fig. (2): Ringworm lesions in cattle caused by *T. verrucosum*, showing typical circular lesions on the head, neck and dewlap covered with grayish white crusts.

Fig. (3): Ringworm lesions in sheep caused by *T. verrucosum*, characterized by alopecia and scaling around the eye.
Fig. (4): Ringworm lesion in a cat caused by *M. Canis*, showing erythematous area of alopecia on the leg.

Fig. (5): Microscopy of *T. verrucosum* isolated from infected cattle skin scrapings, showing typical chains of chlamydoconidia "chains of pearls" (X400).

Fig. (6): Microscopy of *M. canis* isolated from cat's ringworm lesion, showing typical spindle shaped long, thick – walled macroconidia. X400
Fig. (7): Frequency distribution of dermatophyte culturally positive cases among the examined animal species according to season.

Fig. (8): Frequency distribution of dermatophyte culturally positive cases among the examined animal species according to sex.
Abou – Eisha et al.,

Fig. (9): Microscopy of *T. mentagrophytes var. mentagrophytes* isolated from apparently healthy goat, showing numerous spherical microconidia arranged in clusters with rare cigar shaped macroconidia (X400).

Fig. (10): Microscopy of *M. gypseum* isolated from apparently healthy cat showing ellipsoidal rough, thin walled 4-6 celled Macroconidia.
Table (1): Occurrence of dermatophytes among the examined animals clinically showing ringworm lesions in Suez Canal area.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. exam.</th>
<th>Age</th>
<th>Ismailia province</th>
<th>Port Said province</th>
<th>Suez province</th>
<th>Total</th>
<th>Isolated strains (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M.E. No. (%)</td>
<td>C.E. No. (%)</td>
<td>M.E. No. (%)</td>
<td>C.E. No. (%)</td>
<td>M.E. No. (%)</td>
<td>C.E. No. (%)</td>
<td>M.E. No. (%)</td>
</tr>
<tr>
<td>Cattle</td>
<td>72</td>
<td>≤ 2 years</td>
<td>38/49 (77.6)</td>
<td>33/49 (67.3)</td>
<td>11/12 (91.7)</td>
<td>10/12 (83.3)</td>
<td>11/11 (100)</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>2</td>
<td>≤ 1 year</td>
<td>2/2 (100)</td>
<td>1/2 (50)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sheep</td>
<td>35</td>
<td>≤ 1.5 years</td>
<td>15/21 (71.4)</td>
<td>15/21 (71.4)</td>
<td>6/8 (75)</td>
<td>6/8 (75)</td>
<td>4/6 (66.7)</td>
</tr>
<tr>
<td>Goat</td>
<td>20</td>
<td>≤ 3 years</td>
<td>8/11 (72.7)</td>
<td>6/11 (54.5)</td>
<td>3/3 (100)</td>
<td>2/3 (66.7)</td>
<td>5/6 (83.3)</td>
</tr>
<tr>
<td>Horses</td>
<td>4</td>
<td>&gt; 5 years</td>
<td>2/3 (66.7)</td>
<td>1/3 (33.3)</td>
<td>--</td>
<td>--</td>
<td>1/1 (100)</td>
</tr>
<tr>
<td>Dogs</td>
<td>12</td>
<td>≤ 1 year</td>
<td>¼ (75)</td>
<td>1/4 (25)</td>
<td>2/4 (50)</td>
<td>3/4 (75)</td>
<td>1/4 (25)</td>
</tr>
<tr>
<td>Cats</td>
<td>30</td>
<td>≤ 1 year</td>
<td>13/19 (68.4)</td>
<td>10/19 (52.6)</td>
<td>3/6 (50)</td>
<td>5/6 (83.3)</td>
<td>3/5 (60)</td>
</tr>
<tr>
<td>Grand Total</td>
<td>175</td>
<td></td>
<td>81/109 (74.3)</td>
<td>67/109 (61.5)</td>
<td>25/33 (75.8)</td>
<td>25/33 (75.8)</td>
<td>23/33 (69.7)</td>
</tr>
</tbody>
</table>

M.E.: Microscopical Examination.
C.E.: Cultural Examination.
Table (2): Frequency distribution of dermatophyte culturally positive cases among the examined animal species clinically showing ringworm lesions according to season.

<table>
<thead>
<tr>
<th>Season</th>
<th>Summer</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Total</th>
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<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No.</td>
</tr>
<tr>
<td>Cattle</td>
<td>4 (7.4)</td>
<td>22 (40.7)</td>
<td>20 (37)</td>
<td>8 (14.8)</td>
<td>54</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>--</td>
<td>--</td>
<td>1 (100)</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>Sheep</td>
<td>--</td>
<td>5 (20)</td>
<td>18 (72)</td>
<td>2 (8)</td>
<td>25</td>
</tr>
<tr>
<td>Goat</td>
<td>0 (0.0)</td>
<td>4 (30.8)</td>
<td>9 (69.2)</td>
<td>0 (0.0)</td>
<td>13</td>
</tr>
<tr>
<td>Horses</td>
<td>--</td>
<td>0 (0.0)</td>
<td>1 (100)</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>Dogs</td>
<td>1 (20)</td>
<td>2 (40)</td>
<td>2 (40)</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Cats</td>
<td>2 (11.8)</td>
<td>10 (58.8)</td>
<td>5 (29.4)</td>
<td>--</td>
<td>17</td>
</tr>
<tr>
<td>Grand Total</td>
<td>7 (6)</td>
<td>43 (37.1)</td>
<td>56 (48.3)</td>
<td>10 (8.6)</td>
<td>116</td>
</tr>
</tbody>
</table>

Table (3): Frequency distribution of dermatophyte culturally positive cases among the examined animal species according to sex.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>Sex</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td>41 (75.9)</td>
<td>13 (24.1)</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Buffaloes</td>
<td>1 (100)</td>
<td>--</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td>19 (76)</td>
<td>6 (24)</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Goat</td>
<td>8 (61.5)</td>
<td>5 (38.5)</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Horses</td>
<td>1 (100)</td>
<td>--</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dogs</td>
<td>2 (40)</td>
<td>3 (60)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Cats</td>
<td>5 (29.4)</td>
<td>12 (70.6)</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>77 (66.4)</td>
<td>39 (33.6)</td>
<td>116</td>
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</tr>
</tbody>
</table>
Table (4): Occurrence of dermatophytes among the examined apparently healthy animal species in Suez Canal area.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. exam.</th>
<th>Age</th>
<th>No. of culturally positive cases for dermatophytic fungi / total No. of examined animals</th>
<th>Isolated strains (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td></td>
<td>Ismailia</td>
<td>Port Said</td>
</tr>
<tr>
<td>Cattle</td>
<td>25</td>
<td>≤ 3 years</td>
<td>2/12 (16.7)</td>
<td>0/8 (0.0)</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>25</td>
<td>≤ 2 years</td>
<td>0/13 (0.0)</td>
<td>0/10 (0.0)</td>
</tr>
<tr>
<td>Sheep</td>
<td>25</td>
<td>≤ 1.5 years</td>
<td>1/12 (8.3)</td>
<td>0/4 (0.0)</td>
</tr>
<tr>
<td>Goat</td>
<td>25</td>
<td>≤ 1.5 years</td>
<td>0/14 (0.0)</td>
<td>0/5 (0.0)</td>
</tr>
<tr>
<td>Horses</td>
<td>5</td>
<td>&gt; 5 years</td>
<td>0/5 (0.0)</td>
<td>--</td>
</tr>
<tr>
<td>Donkeys</td>
<td>2</td>
<td>&gt; 5 years</td>
<td>0/2 (0.0)</td>
<td>--</td>
</tr>
<tr>
<td>Dogs</td>
<td>15</td>
<td>≤ 2 years</td>
<td>0/5 (0.0)</td>
<td>0/4 (0.0)</td>
</tr>
<tr>
<td>Grand Total</td>
<td>142</td>
<td></td>
<td>6/75 (8)</td>
<td>2/35 (5.7)</td>
</tr>
</tbody>
</table>

REFERENCES


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الملخص العربي
الفطريات الجلدية في الحيوانات وأهميتها كمرض مشترك في منطقة قناة السويس

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في مسح شامل للفطريات الجلدية لحيوانات المزرعة والكلاب والقطط بمنطقة قناة السويس، وجد أن فطر تريكوفيتون فيروكوزم المسبب الرئيسي الذي تم عزله من حالات حيوانات المزرعة التي صنفت إكلينيكيا إصابتها بالفطريات الجلدية وهي الأبقار (61٪)، الجاموس (67٪)، الأغنام (63٪)، الخيل (65٪)، بينما فطر ميكروسبورم كانز تم عزله من حالات الكلاب والقطط التي صنفت إكلينيكيا إصابتها بهذا المرض بنسبة 56٪ و41٪ على التوالي. وتبين أن أعلى معدل للإصابة بين الحيوانات التي تم فحصها كان في أشهر الخريف والشتاء وأقل معدلات الإصابة في أشهر الصيف والربيع. كما أظهرت الدراسة أن الحيوانات الصغيرة أكثر قابلية للإصابة من الحيوانات الكبيرة في العمر. وعلى الجانب الآخر، بفحص الحيوانات السليمة ظاهرة تبين أن عدد 142 (40٪) من 354 حيوانًا تابعًا للفطريات الجلدية وهي تريكوفيتون منتاجروفابيس والتي تم عزلها بنسبة 6٪ من كلا من الأبقار، والأغنام والخانس، وتم تزويجهم فيروكوزم في الأبقار بنسبة 8٪، وميكروسبورم جينسيم وميكروسبورم كانز من القطط بنسبة 15٪ و10٪ على التوالي. بينما لم يتم عزل الفطريات الجلدية من الجاموس والخيول والحمير والكلاب السليمة ظاهراً. وهذه النتائج تؤكد أن هذه الحيوانات مصدر مستورد هام لإصابة الإنسان بهذه الفطريات الجلدية وتتعكس خطورة التلامس مع هذه الحيوانات.