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**Research Article**

# PREVALENCE OF DERMATOPHYTOSIS IN CATTLE FARMS AT HISAR

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## ABSTRACT

Dermatophytosis, commonly known as ringworm, is of considerable importance in domestic animals due to its wide host range and zoonotic importance. The present study was conducted to determine the prevalence of dermatophytosis at 4 organized cattle farms located in and around Hisar. Skin scrapings were taken from animals showing suspected lesions of dermatophytosis and were examined by direct microscopy and cultural examination. Direct microscopic examination of the skin scrapings revealed fungal spores and hyphae indicative of *Trichophyton* spp. Typical colonies of *T. verrucosum* were isolated on culture medium. The overall prevalence of dermatophytosis in cattle at 4 organized farms based on clinical observations, direct microscopy and cultural examination was found 1.4 per cent. However, in the 4 organized cattle farms, the prevalence of dermatophytosis was zero, 1.58, 2.28 and 2.09 per cent, respectively. The incidence of disease was more in male crossbred calves below 6 months of age.

**Key words:** Dermatophytosis, ringworm, cattle, prevalence

Dermatophytosis, commonly known as ringworm is of considerable importance in domestic animals due to its wide host range and zoonotic potential. Dermatophytosis is adverse superficial fungal infection of keratinized layer of skin (Sharma *et al.*, 1991). Various species of genera *Trichophyton* and *Microsporum* have been found to cause dermatophytosis in domestic animals and human beings. This study was conducted to determine the prevalence of dermatophytosis at 4 organized cattle farms located in and around Hisar.

## MATERIALS AND METHODS

The present study was undertaken at 4 organized animal farms located in and around Hisar. These farms were designated as A, B, C, and D where total cattle population maintained was 1200, 946, 700 and 1290, respectively. Cattle showing suspected lesions were examined for dermatophytosis. The sites of the suspected fresh lesions were searched on the skin of animals. The lesions were cleaned with a swab dipped in 70 per cent alcohol and skin scrapings were collected in sterilized petridishes from the periphery of lesions along with some hair with the help of sterilized scalpel (Monga *et al.*, 1974). Three to four scrapings were taken from each animal. The culture medium used for isolation of fungi was Sabouraud's Dextrose Agar (SDA) with supplementation of chloramphenicol and cycloheximide. Microscopic morphology of fungi was seen in lactophenol cotton blue mounts. A portion of skin scrapings was examined by direct microscopic examination under high power of microscope for presence of fungal hyphae and spores (Monga *et al.*, 1974).

The prevalence of dermatophytosis was determined on the basis of number of diseased animals in relation to number of animals in population at risk of developing disease. Various determinants like age, sex, breed, general hygienic conditions, space and feeding that affect the occurrence of disease were assessed and interaction with dermatophytosis was determined.

## RESULTS AND DISCUSSION

In the affected cattle calves, the grayish white, crusted, circular, raised, thick and cir-

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cumscribed lesions were confined on the head, around the eyes, neck and forelegs (Fig. 1). In few calves, the lesions were distributed all over the body. Direct microscopic examination of the skin scrapings revealed fungal spores and hyphae indicative of dermatophyte *Trichophyton* spp. Typical colonies of *T. verrucosum* were isolated on SDA. *T. verrucosum* is considered to be the main cause of ringworm in cattle and is of worldwide distribution. Many workers (Gupta *et al.*, 1970, Thakur *et al.*, 1985, Wabacha *et al.*, 1998) had earlier isolated *T. verrucosum* from cattle affected with dermatophytosis.

The prevalence of dermatophytosis in cattle at 4 organized farms based on clinical observations, direct microscopy and cultural examination was found 1.4 per cent (Table 1). A total of 58 out of 4136 cattle were found positive for dermatophytosis. A similar rate of incidence (1.56%) was recorded at dairy farm of Habbwal (Karnataka) and Punjab Agricultural University, Ludhiana (Punjab) (Nooruddin and Singh, 1987). However, Borikar and Singh (1994) observed comparatively low incidence (0.38%) in Marathwada region of Maharashtra. This low incidence may be attributed to provision of more space to animals and unfavourable environmental conditions like temperature and humidity required for the growth of fungus *Trichophyton*. However, Rashid *et al.* (1996) recorded a higher prevalence (9.3%) of dermatophytosis in Bangladesh which might be due to poor hygienic conditions. In the 4 organized cattle farms A, B, C and D, the prevalence of dermatophytosis was zero,

**Table 1**
**Prevalence of dermatophytosis at 4 organized cattle farms at Hisar**

| Farm/ herd | Total number of animals | Prevalence |
|---|---|---|
| A | 1200 | 00 (0.00) |
| B | 946 | 15 (1.58) |
| C | 700 | 16 (2.28) |
| D | 1290 | 27 (2.09) |
| Total | 4136 | 58 (1.40) |

Figure in parenthesis indicates percentage.

Fig.1. A cattle calf showing typical lesions of dermatophytosis on face, head and neck.

1.58, 2.28 and 2.09 per cent, respectively (Table 1). The absence of disease at farm A might be due to regular cleaning/ bathing of animals i.e. 4 times a week in summer and 2 times a week in winter, regular spraying of insecticide at 15 days interval and provision of more space (363 $m^2$/animal) to the animals in comparison to that of farms B, C and D (2.3 $m^2$/animal). Animals of other farms were either not given bath or infrequently bathing was done. Similarly spraying with insecticide was done at monthly interval in these farms. Overcrowding results in close contact of animals resulting in rapid spread of infection and thus increases the prevalence of the disease. Regular insecticide spray might has played the indirect role by controlling the ectoparasites like ticks, lice and mites, which produce lesions on skin that become sites for fungal spores present in the environment thus leading to dermatophytosis. In addition, spray of insecticide might also helped in washing off any fungal spores that have settled on the animals' skin, thus controlling the fungal infection. The hygienic measures like regular cleaning of animals sheds and bathing of animals were also contributing factors for the absence of disease in farm A, as the dermatophytes are able to grow on dung in a

building in which infected cattle had been housed (Sharma *et al.*, 1991) thus causing infection in animals coming in contact with it.

In male calves, the prevalence of dermatophytosis was 3.76 per cent, which was comparatively more than the female calves (0.67 per cent) (Table 2). Similarly, Mitra *et al.* (1990) and Nooruddin and Singh (1987) also observed higher incidence in male calves in comparison to female calves. This may be attributed to the fact that male calves are given less attention and are provided less space and kept in poor hygienic conditions in comparison with female calves.

In calves below 6 months of age, the prevalence of disease (14.36%) was higher (Table 3) in comparison to calves aged between 6 months to 1 year (1.36%). However, the animals above one year of age were free from the disease. The overall incidence of disease was 7.86 per cent in animals below one year of age. This finding is in agreement with the earlier report of Gupta *et al.* (1970) who also observed a higher incidence (9.4%) of ringworm in cattle below one year of age at Hisar. Likewise, Silveira *et al.* (2003) also observed higher incidence of dermatophytosis in calves below one year of age, males and in winter periods. In West Bengal also, Chatterjee and Sengupta (1979) recorded a similar 9.8 per cent incidence of dermatophytosis in cattle calves in rural areas. In young animals, high prevalence in comparison to adult animals may be due to non-acidic nature of skin, which is more susceptible to fungal infection (Arora *et al.*, 1979). Also, older animals may be immunized to the infection of dermatophytes because of their previous exposure during young age.

**Table 2**
**Prevalence of dermatophytosis with relation to sex in different age groups**

| Age | Male | | Female | |
|---|---|---|---|---|
| Months/ Year | No. of animals | Prevalence | No. of animals | Prevalence |
| 0-6 m | 170 | 34 (20.00) | 200 | 19 (9.50) |
| 6 m-1year | 175 | 3 (1.71) | 192 | 2 (1.04) |
| Above 1year | 640 | 0 (0.00) | 2759 | 0 (0.00) |
| Total | 985 | 37 (3.76) | 3151 | 21 (0.67) |

Figure in parenthesis indicates percentage, m-months

**Table 3**
**Prevalence of dermatophytosis in different age groups at 4 organized cattle farms at Hisar***

| Farms | Age | | | |
|---|---|---|---|---|
| | 0-6 months | | 6 months-1 year | |
| | No. of animals | Prevalence | No. of animals | Prevalence |
| A | 90 | 0 (0.00) | 100 | 0 (0.00) |
| B | 55 | 10 (18.18) | 102 | 5 (4.90) |
| C | 100 | 16 (16.00) | 65 | 0 (0.00) |
| D | 125 | 27 (21.16) | 100 | 0 (0.00) |
| Total | 370 | 53 (14.36) | 367 | 5 (1.36) |

* Disease was not observed in animals above one year of age, Figure in parenthesis indicates percentage.

The prevalence of dermatophytosis in calves of Hariana breed below one year of age was 8.05 per cent (Table 4) whereas in crossbred calves, the prevalence was slightly more (10%). In 65 calves of Sahiwal breed, none was found affected with ringworm. Similarly, Nooruddin and Singh (1987) have also recorded higher prevalence in young crossbred male cattle. The higher prevalence of dermatophytosis in crossbred calves may be due to their low general resistance to disease in comparison to Hariana cattle.

**Table 4**
**Prevalence of dermatophytosis in different breeds of cattle at 4 organized farms at Hisar**

| Age | Hariana | | Cross-bred | | Sahiwal | |
|---|---|---|---|---|---|---|
| | Total no. of animals | Prevalence | Total no. of animals | Prevalence | Total no. of animals | Prevalence |
| 0-6 months | 230 | 33(14.34) | 110 | 20 (18.18) | 30 | 0 (0.00) |
| 6 months -1 year | 242 | 5(2.07) | 90 | 0(0.00) | 35 | 0 (0.00) |
| Total | 472 | 38(8.05) | 200 | 20(10.00) | 65 | 0 (0.00) |

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