



STUDY THE PREVALENCE OF BOVINE DERMATOPHYTOSIS IN RANGPUR DISTRICT OF BANGLADESH

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ABSTRACT

The study was carried out to investigate the prevalence of bovine dermatophytosis by epidemiological, clinical, microbiological and response to treatment. During the study period from February 2014 to January 2015 a total of 2025 clinical cases of bovine animal were registered, among which 69 (3.4%) were encountered as dermatophytosis. The annual prevalence of dermatophytosis were determined based on different epidemiological factors such as season, age, sex and breed. The clinical and pathological features including topographic positions of the lesions and therapeutic strategies were also reported. The overall highest, intermediate and lowest prevalence of dermatophytosis were recorded in summer (3.80%), rainy (3.17%) and winter (2.79%) season, respectively. Prevalence in female (3.52%) were more than male animals (3.25%). Young animals were more susceptible (4.42%) than calves (2.40%) and adult animals (3.83%). Indigenous cattle showed higher prevalence (3.58%) than cross breed animals (2.57%). The variation in season, age, sex and breed were not statistically significant ($p>0.01$). In therapeutic response combination use of oral Griseofulvin and topical application of whit-field ointment against dermatophytosis showed more effectiveness than their single dose.

Key words: Bovine, dermatophytosis, prevalence, therapy

INTRODUCTION

Dermatophytes are fungi which cause diseases of the skin of human, animals or both. They affect keratinized tissues, including nails, hair and stratum corneum of the skin, and cause dermatophytosis (Weitzman and Summerbell 1995). These fungi have frequently been treated as special group of dermatophytes or ringworm fungi. Dermatophytes are cosmopolitan and occur widely in soil and other keratin containing substrate such as bird's nest and thus, the soil serves as a source of infection (Beneke and Rogers 1980). Dermatophytosis is one of the several causes of down-grading tanned leather. It has also been reported to cause retarded growth in young animals, loss of body weight up to 20%, loss of milk yield, reduction in the market value of skin and fur bearing animals. In cattle and buffalo resolution of dermatophyte lesions occurs spontaneously (Lepper 1999). Dermatophytes produce severe lymphadenitis, pulmonary and subcutaneous mycetoma, respiratory and other allergies, immunodeficiency, granuloma of lymph nodes, testes, brain and vertebrae (Deboi 1983). Animals, which are infected can show clinical signs such as: hair loss, broken hairs, scaling (dandruff) and darkened skin color. Signs can be subtle and mimic other diseases. The relative importance of dermatophytosis in humans and

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animals has been reported to be increasing probably because of the widespread, and other chemotherapeutic agents used for leukemia, neoplasms and organ transplants (Carrol, 1994) and exploration of the fungal habitats by tillage of lands. The disease is known to exist in bovine animals but there is very limited research report of the disease in animals in Bangladesh (Neela and Alam 2000). To fill up this gap, the proposed study on bovine dermatophytosis, therefore, envisages to achieve with objectives to determine the prevalence of dermatophytosis in cattle.

MATERIALS AND METHODS

The samples were collected from the study area and brought to the microbiology laboratory of Hajee Mohammad Danesh Science and Technology University (HSTU) for laboratory diagnosis. The study was carried out for a period of one year starting from February 2014 to January 2015 and design was based on epidemiological, clinical, laboratory examination and response to treatment. A total of 2025 cattles from urban and rural areas at sadar upazila livestock office of Rangpur district were examined. The age, breed and sex of the animals were recorded.

Clinical investigation: The entire skin surface of each of the animals was examined clinically. The lesions were detected by visual inspection, palpation and by parting of the hairs at various places of the hair coat. The lesions were also examined by visual inspection; their characters were observed by slightly scratching the lesions with the help of scalpel. The size of the lesions was measured using divider and meter scale. The areas characteristics of the lesions; their shape, size, number and locations were recorded.

Laboratory investigation: About 50 samples of skin scrapings and hairs collected from different animals, during clinical examination, were examined in the laboratory. Following washing with soap water and swabbing with 70% alcohol, the skin scrapings and hairs were collected from periphery of the active lesions using sterilized scalpel into white paper envelope. A small portion of the samples was treated with 15% potassium hydroxide solution (KOH) and was examined under microscope suggested by Beneke (1966).

Culture of the skin scraps: The portion of the same sample was inoculated into Sabouraud's Dextrose Agar slants fortified with thiamine and chloramphenicol. The agar slants or plates were then incubated at 28°C temperature for a period of 6 weeks in order to observe the growth of dermatophytes.

Grouping of experimental animals for therapy: A total of 30 dermatophytes affected cattle were selected from the study area for comparative study of different drugs for treatment. Cattles were divided into three groups, A (n=10), B (n=10) and C (n=10). Group A were treated with whit-field ointment, Group B were treated with griseofulvin orally @ 25mg/kg twice daily for 6 weeks. Animals of group C were treated with combined whit-field ointment and griseofulvin.

Data Analysis: Collected data were subjected to statistical analysis by Chi-Square test.

RESULTS AND DISCUSSION

In laboratory investigation thick, separate, branching hyphae were found under microscope and culture of the skin scraps produce grey to white growth of fungus in Sabouraud's dextrose agar media.

Overall prevalence of bovine dermatophytosis: Among the observed 2025 cattles 69 (3.4%) were clinically diagnosed as positive for dermatophytosis. The results are shown in Table 1. The prevalence of 3.40%, however, is comparable to that the results of other workers (Ozegovic and

Grin 1957; Gupta *et al.* 1970). They reported similar prevalence of the disease varying from species to species in endemic form. But much lower than (Nardoni 2007; Neela 2000) and higher prevalence than (Madhavi *et al.* 2011).

Season wise prevalence of dermatophytosis in cattle: According to season there was a great variation of bovine dermatophytosis. Highest level of dermatophytosis was in the summer season 3.80% followed by medium in winter 3.17% and lowest in rainy season 2.79% respectively presented in Table 2. Similar prevalence of dermatophytosis was found by (Mantovi 1972, Chakrabarti *et al.* 1972).

Sex-wise prevalence of dermatophytosis in cattle: Sex-wise prevalence of dermatophytosis was more in female animals (3.52%) than male animals (3.25%) presented in Table 3. Similar findings were observed by Peerapur *et al.* (2004) and Huda *et al.* (1995).

Age wise prevalence of dermatophytosis in cattle: The age wise prevalence of dermatophytosis were found higher in young animals (4.42%) than calves (2.40%) and adult animals (3.83%) presented in Table 4. The result was similar with the findings of Chermette *et al.* (2008) and Negin (1981).

Breed wise prevalence of dermatophytosis in cattle: The breed-wise prevalence of dermatophytosis were found higher in indigenous cattle (3.58%) than crossbreed animals (2.57%) presented in Table 5. The result was nearly similar with the findings of Singh and Beena, 2003b.

Efficacy of the drugs against dermatophytosis affected cattle: The use of white-field ointment and Griseofulvin combinedly against dermatophytosis were more effective than used singly presented in Table 6. The result agreed with the observation of Bond, 2009 and Hill *et al.* 1995.

Table 1. Prevalence of dermatophytosis in bovine

Species	No. of animal examined	No. of animal affected	Prevalence (%)
Cattle	2025	69	3.40

Table 2. Season-wise prevalence of dermatophytosis in bovine animal

Season	No. of animal examined	No. of animal affected	Prevalence (%)
Summer(March-May)	1025	39	3.80
Rainy (June-October)	535	17	3.17
Winter(November-February)	465	13	2.79
P value			NS

NS = Non-Significant (P >0.05)

Table 3. Sex- wise prevalence of dermatophytosis in bovine animal

Sex	No. of animal examined	No. of animal affected	Prevalence (%)
Male	890	29	3.25
Female	1135	40	3.52
P Value			NS

NS = Non-Significant (P >0.05)

Table 4. Age-wise prevalence of dermatophytosis in bovine animals

Categorization of animals	No. of animal examined	No. of animal affected	Prevalence (%)
Calf (below 6 months)	915	22	2.40
Young (>6 months and below 2 years)	745	33	4.42
Adult (Above 2 years)	365	14	3.83
P Value			NS

NS = Non-Significant (P >0.05)

Table 5. Breed-wise prevalence of dermatophytosis in cattle

Categorization of animals	No. of animal examined	No. of animal affected	Prevalence (%)
Indigenous cattle	1675	60	3.58
Crossbreed	350	9	2.57
P Value			NS

NS = Non-Significant (P >0.05)

Table 6. Efficacy of whit-field ointment, griseofulvin against dermatophytosis in bovine animals

Experimental groups	Drugs used in affected animals	Administration strategies	Response to treatment
A (n=10)	Whitfield ointment	Locally	++
B (n=10)	Griseofulvin	Orally	++
C (n=10)	Combined drug (Whitfield ointment and griseofulvin)	Locally and Orally	+++

++ indicates medium response to recovery (more than 6 weeks) and +++ indicates rapid response to recovery (less than 6weeks).

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