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Short Communication

Prevalence of Bovine Dermatophilosis in Andhra Pradesh

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ABSTRACT

A total of 727 samples (148 cattle, 579 buffalo) were collected from clinically suspected cases of *Dermatophilus congolensis* in different districts of Andra Pradesh. All the samples were screened for the presence of *Dermatophiosis* using conventional isolation methods as well as molecular methods and the data was analyzed to study the epidemiology of the disease. Out of 727 samples screened 109 samples were found positive (14.99%) on diagnosis. Prevalence of the *Dermatophilosis* was found to be more in young animals, breeds of graded Murrah buffaloes maintained under rural house hold conditions during southwest mansoons. It was found that season, management condition, breed and age had high significance (P<0.01) influence on the bovine *Dermatophilosis.*

Key words: Prevalence, Bovine, Dermatophilosis, *Dermatophilus congolensis*, Andhra Pradesh

INTRODUCTION

Dermatophilosis is an economically important contagious zoonotic skin disease of livestock caused by Gram positive bacterium *Dermatophilus congolensis.* The disease has a wide host range from domestic to wild and aquatic animals (Zaria, 1993). The disease results in gradual loss of condition, decrease in milk and meat production, reduced working ability in draft animals, reproductive failures and deprived hide values and loss of body condition.

Though the clinical picture suggestive of *Dermatophilosis* has been noticed in several districts of Andhra Pradesh so far, the disease has not been diagnosed confirmatively. Therefore, the present work was aimed to study the prevalence of *Dermatophilosis* and factors influencing the occurrence of bovine *Dermatophilosis*.

MATERIALS AND METHODS

Sample collection

A total of 727 samples comprising of skin scrapings, scabs, crusts and plucked hair, swabs were collected from suspected clinical cases of *Dermatophilosis* from various districts of Andra Pradesh during period from June2010 to May 2011 and subjected for examination.

Direct microscopy

The impression smears made from the scabs, crusts, exudates and pustules were stained with Giemsa and Methylene blue stains and examined for the presence of *Dermatophilus congolensis* morphologically.

Isolation and identification

The samples were processed for isolation of *D. congolensis* by Haalstra`s method with slight modification (OIE, 2008). The inoculum was streaked on Brain Heart Infusion (BHI) agar (Himedia) and polymyxin-blood agar media plates (Polymyxin B sulfate @ 1000 IU/ml); incubated for 48-72 hours at 37ºC under 10% CO_2 tension and observed for polymorphology and growth characters (OIE, 2004). Biochemical and sugar fermentation tests are carried out as per the Mannan *et al*. (2009) and Babul *et al*. (2010).

Polymerase chain reaction

The polymerase chain reaction was also used for confirmatory diagnosis of *Dermatophilosis* using specific primers for *D. congolensis* were employed. Forward primer: 5'-ACATGCAAGTCGAACGATGA-3'; Reverse primer: 5'-ACGCTCGCACCCTACGTATT-3'. The target amplification of 500bp product of 16s ribosomal RNA gene was carried out as described by Shaibu *et al.*, (2010).

Statistical analysis

Results were analyzed using Chi-Square test as per Snedecor and Pochran (1986).

RESULTS AND DISCUSSION

Out of 727 samples examined (cattle-148 and buffalo-579), 21-cattle (14.20%) and 88-buffaloes (15.20%) were found positive for *Dermatophilosis* in Andra Pradesh. The overall prevalence of *Dermatophilosis*

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Table 1: Details of sample (skin scabs/scrappings) collection and prevalence of *Dermatophilosis* in Andhra Pradesh

Name of the district	Cattle		Buffalo	
	Number examined	Number positive	Number examined	Number positive
Kadapa	30	12	233	79
Chittor	103	10	-	-
Kurnool	15	5	250	-
Anantapoor	-	-	04	1
Prakasam	-	-	08	2
Nellore	-	-	11	-
Krishna	-	-	02	-
Guntur	-	-	16	-
East Godavari	-	-	19	-
West Godavari	-	-	09	-
Vishakhapatnam	-	-	22	-
Nalgonda	-	-	05	-
Total	148	21	579	88
Percent positivity	14.20		15.20	

Table 2: Breed wise Prevalence of Dermatophilosis in Andhra Pradesh

Breed	Animals examined	Animals infected	Percentage (%)
Indigenous	436	30	6.88
Graded Murrah Buffaloes	143	58	40.56
Holstein Friesien	17	03	17.65
Jersey	81	08	9.88
Ongole	50	10	20.0
Total	727	109	14.993
Chi Test (P-value) 0.0000**			

** means (P<0.01)

Table 3: Seasons wise prevalence of Dermatophilosis in Andhra Pradesh

Season	Number examined	Number positive	Percent positivity
Winter (January-March)	121	05	4.13
Summer (April-June)	218	46	11.93
South west Monsoon (July-September)	271	39	21.77
North east Monsoon (October-December)	117	19	16.24
Total	727	109	
Chi Test (P-value) 0.0032**			

** means (P<0.01)

Table 4: Prevalence of Dermatophilosis under farm and rural conditions in Andhra Pradesh

Management System	Animals examined	Animals infected	Percentage (%)
Intensive Dairy farm	260	05	1.92
Rural Households	467	104	22.27
	727	109	14.993
Chi Test (P-value) 0.0000**			

** means (P<0.01)

Table 5: Age wise prevalence of Dermatophilosis in Andhra Pradesh

Age (years)	Animals examined	Animals infected	Percentage (%)
<1	23	12	52.17
1-2	31	03	9.68
2-4	110	21	19.09
4-6	274	35	12.77
6-8	206	26	12.62
8-12	75	11	14.67
>12	08	01	12.50
Total	727	109	14.993
Chi Test (P-value) 0.0000**			

** means (P<0.01)

during the study was found to be 14.99% (Table: 1) which is similar to the findings of Babul *et al.,* 2010 (13.55%), (13.51%) Nooruddin and Khaleque (1986).

Clinical observations

Skin lesions are present on all over the body in the form of vesicles, pustules, matting of hair, thick crusts and yellowish brown scabs. In generalized chronic cases of bovine Dermatophilosis, thick horny scabs often were confluent forming a mosaic pattern (Fig.1). Lameness was noted in animals with lesions affecting the limbs.

Direct microscopy

The smears from clinical samples stained with Giemsa and Mythelene blue revealed the *D. congolensis* as thin, branched septate filaments with 2-6 rows of coccoid bodies giving characteristic tram track appearance (Amakiri, 1974) (Fig. 2).

Isolation and identification

All the isolates of *D. congolensis* produced grayish-white, small, beta hemolytic, raised, round to square or irregular, adherent and rough granular colonies on polymyxin blood agar media (Ellis *et al.,* 1993 and Mastis *et al.,* 1997) (Fig. 3).

On biochemical analysis, all the isolates of *D. congolensis* found to be positive for catalase, oxidase, citrate utilization tests and ferment glucose with the production of acid but without gas. However, all the isolates failed to ferment lactose, maltose, mannitol and xylose (Ellis *et al.,* 1993 and Babul *et al.,* 2010). Further; the isolates of *D. congolensis* were confirmed molecular level using PCR by amplifying 500bp product of 16s rRNA gene of *D. congolensis* specifically and it was supported by Han *et al.,* 2007 and Shaibu *et al.,* 2010 (Fig. 4).

During the study analysis of the data collected on the prevalence of Dermatophilosis under farm and rural conditions in Andhra Pradesh revealed that the disease is more prevalent in animals maintained under rural house hold conditions (22.27%) than intensive dairy farming system (1.92%) where cattle do not expose to thorny bushes and usage of contaminated wallowing tanks (Table: 4). Similar observations were also made by Nooruddin and Khaleque (1986) and Babul *et al.* (2010). Lowest prevalence in intensive dairy farming system was related to better management conditions.

During the study period occurrence of *Dermatophilosis* was reported in all the seasons under natural conditions. Rain, moist weather and dew are important factors for the germination of zoospores. Continuous wetting of the feet and body from grazing in wet lands, wallowing etc. play a contributing role in occurrence of *Dermatophilosis*. Increase in the prevalence of dermatophilosis was noticed in South West Monsoon period (21.77%) followed by North East Monsoon period (16.24%) and the summer (11.93%) (Table: 3).

Dermatophilosis found to be more prevalent in Graded Murrah Buffaloes (40.56%) than indigenous buffaloes (6.88%) (Table: 2). It is due to susceptibility of buffaloes to *Dermatophilosis* was related to genetic markers BoLA-DR/DQ class II haplotype.

Fig. 1: Dermatophilosis affected buffaloe showing erythema, matting of hair with dense scab formation

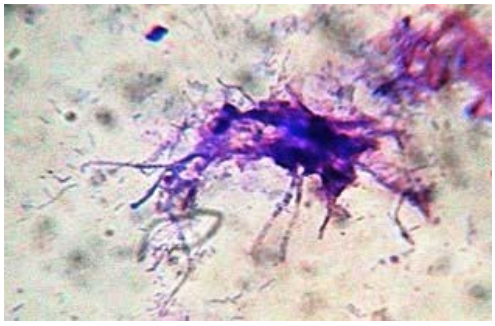

Fig. 2: Dermatophilosis infected skin scab smear stained with Giemsa stain (1000X) showing tram truck appearance

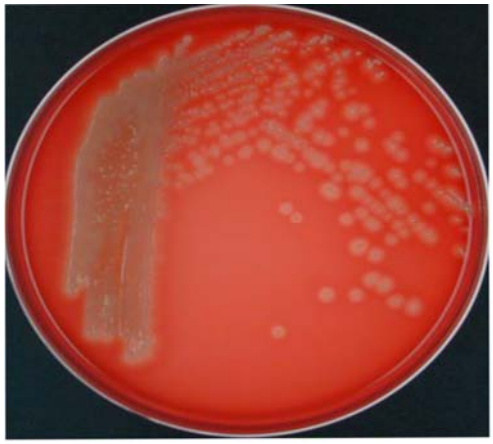

Fig. 3: Blood agar medium showing grayish white haemolytic colonies.

In the present investigation susceptibility was reported to be more in male animals than females (Nooruddin and Khaleque, 1986) also reported high prevalence in males, usage of males in draft purposes and damage to the skin leads to higher susceptibility of to *Dermatophilosis*.

In the present investigation, the disease was reported in all age groups, but significantly high prevalence was recorded in young animals below one year age group (Table: 5) (Babul *et al.,* 2010). Susceptibility of young animals could be related to low immune status and the habit of not providing sufficient milk and feed supplements to calves and young animals.

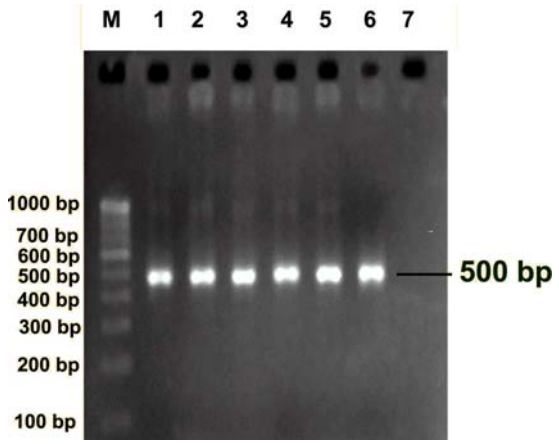

Fig. 4: PCR amplifying 16s rRNA gene with 500bp product

Conclusion

In conclusion, the present study indicated the occurrence of *Dermatophilosis* and establishment in Andhra Pradesh with percentage positivity of 14.99%. Prevalence of the disease was noticed more in young buffalo and cattle during South West Monsoon season, and also more in males than in females. The disease found to be more in animals maintained under rural house hold conditions than intensive dairy farming system. So, this study provides evidence that good management is the valuable tool in control of *Dermatophilosis* in field conditions.

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