

# EPIDEMIOLOGICAL STUDIES ON LEG DERMATITIS OF DAIRY CATTLE IN KARNATAKA

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## ABSTRACT

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A study was conducted on 167 dairy cattle of different age groups from eight districts of milch shed areas of Karnataka with peculiar dermatitis on the hock region on the legs and spread over to udder characterized by erectopili. The frequency of occurrence of lesion was more in the hind limbs than on the fore limbs. The epidemiological data was recoded relating to breed, age, physiological status (lactation), type of management and season of occurrence. The occurrence of the disease was highest in Holstein Friesian (57.38%) cows followed by Jersey (40.98%) and in local cows (1.64 %). The prevalence was more in the age group of three to five years (45.90%) and least in the age group of one to three years (21.31%). The occurrence of leg dermatitis was found to be more in lactating animals, particularly in second lactation (57.38%) followed by pregnant animals (27.87 %) and in heifers (14.75 %). The disease was more prevalent during rainy seasons with moisture and humidity. The histopathological examination of biopsy material showed leucocytic infiltration, perivascular cuffing of mononuclear cells and hyperkeratosis indicative of bacterial infection.

**Key words:** Dermatitis, erectopili, epidemiology, humidity

## Introduction

The present study deals with one such newly emerged disease problem in dairy breeds. The dermatitis was characterized by erectopili on the limbs. The frequency of occurrence of lesion was more in the hind limbs than on the fore limbs. In some cases, the area was pruritic as evidenced by often biting and licking the lesion by the animal. The lesion seems to attract more winged vectors such as biting flies and aggravate the condition.

The first report of peculiar leg dermatitis was noticed from the dairy herds of a village near Tumkur district as early as 1988. This disease had so far not drawn attention of any disease investigation agency. Hence an attempt has been made in the present study to find out the etiology and epidemiology pertaining to the herd prevalence, point prevalence rate (within the herd), spatial distribution and influence of season, soil and rainfall in the area.

## Materials and Methods

The materials for the present study has been generated from clinical cases of dermatitis in milk shed area of different districts of Karnataka (Table 1). A specially designed epidemiological data sheet was circulated to the field Veterinarians all over the State of Karnataka and personal visits were also made to some of the endemic areas for data collection with personal contact with the farmers and recoded the information relating to breed, age, physiological status (lactation/pregnant etc.), type of management and season of occurrence.

Out of 167 herds examined, 57 herds showed prevalence of dermatitis (31.74%). The leg dermatitis showed signs of endemicity in certain areas with an overall incidence of 5.62 per cent point prevalence rate (Table 1).

## Results and Discussion

Dermatitis involving lower aspect of the limbs here after designated as Leg Dermatitis appeared to be a new disease entity in the above districts (Table 1). A detailed study was under taken to investigate this type of dermatitis in different zones, breed, age, seasons, feeding regimen and housing.

The occurrence of the disease was highest in Holstein Friesian (57.38%) cows followed by Jersey (40.98%) and in local cows (1.64%) (Table 2).

Highest prevalence (45.90%) was seen in the age observation also agrees with Lloyd and Sellers (1976) who also recorded more prevalence of group of three of five years and least in the age group of one to three years (21.31%). This suggested that the younger age groups and older animals above five years of age, though susceptible showed partial resistance which accounts for lower per centage in the respect of that age group (Table 2). This *Dermatophilus dermatitis* was recorded in middle age groups. Younger age group of three to five years appeared to suffer more than the other age groups (Table 2). The occurrence of leg dermatitis was found to be more in lactating animals, particularly animals in second lactation (57.38%) followed by pregnant animals (27.87 per cent) in heifers (14.75%) (Table 2). The prevalence rates were higher in crossbred cattle which were housed on concrete floor and stall fed than animals which were allowed for free grazing. The higher prevalence was observed in animals fed with commercial concentrate feeds (77.05%) as against in animals fed with locally compounded concentrate feed (14.75%) (Table 3). The disease was more prevalent during rainy seasons with more moisture and humidity which may be conducive for the establishment of the condition (Table 3). The zonal incidence analysis revealed that the eastern dry zone comprising of Bangalore rural, Kolar, Tumkur showed highest prevalence of 60.66 per cent followed by southern transition zone comprising Mandya and Hassan with 16.39 per cent. The hilly area comprising of Shimoga and Coorg showed 14.75 per cent prevalence, while the rate was 8.20 per cent in the coastal zone comprising of south Kanara (Table 4).

Perusal of the literature revealed no reference of such dermatitis in cattle. However, reports of mange in crossbred cattle (Zarzara, 1983), *Stephanofilariasis* involving dew claws and lower limbs (Agarwal and Shah, 1984; Nooruddin and Hoque, 1985; Ray and Mishra, 1990) and *Dermatophilus congolensis* infection

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Table 1: Occurrence of dermatitis in some of districts and their herd prevalence and point prevalence percentage

S. No	District	Prevalence (%)	Point Prevalence (%)
1.	Tumkur	40.00	6.92
2.	Coorg	33.33	6.67
3.	Hassan	27.78	8.33
4.	Mandya	25.00	3.57
5.	Shimoga	62.50	15.00
6.	South Kanara	83.33	16.67
7.	Kolar	11.63	2.33
8.	Bangalore rural	51.72	5.29
	Total	31.74	5.62

Table 3: Extrinsic factors associated with leg dermatitis cases

S. No.	Factors	No. of cases	Percentage
1.	SEASON		
	S-1 Cold Season (Jan-Feb)	6	9.84
	S-2 Hot Season (Mar-May)	5	8.20
	S-3 South-West Monsoon (Jun-Sept)	26	42.62
	S-4 North-East Monsoon (Oct-Dec)	14	22.85
	S-5 All Seasons (Jan-Dec)	10	16.39
	Total	61	
2.	Housing		
	Indoor (stone/concrete floor)	56	91.80
	Outdoor (soil floor)	5	8.20
	Total	61	
3.	Feeding (concentrates)		
	Commercially branded concentrates	47	77.05
	Locally computed concentrates	09	14.75
	None (without concentrates)	05	4.92
	Total	61	
4.	External parasites		
	Flies + mosquitoes	55	90.16
	Flies + mosquitoes + ticks	03	4.92
	Mosquitoes + ticks	03	4.92
	None	00	0.00
	Total	61	

Table 4: Distribution of leg dermatitis cases in different agro-climatic zones of Karnataka

S. No	Zones	District/ Taluk covered	Soil Type	Irrigated area (lakh ha.)	Rainfall (mm/annum) and months	Total occurrence Of cases
1	Eastern dry zone	Bangalore	Red soil and Red sandy soil	1.83	679-889	37 (60.66%)
		Kolar			May - Oct	
		Tumkur				
2	South Transition zone	Mandya	Red soil and Red sandy soil	2.00	700-1050	10 (16.39%)
		Hassan			pre-monsoon	
		Shimoga				
3	Hill zone	Coorg	Red soil and Red sandy soil	0.75	1300-3800	9 (14.75%)
		Virajpet			June - Nov	
4	Coastal zone	South Kanara	Red soil and Red alluvial laterite soil	0.41	3000-4700	5 (8.20%)
		Mangalore			South west monsoon	

involving limbs have been made by some earlier workers (Oppong, 1961; Egerton, 1964; Lloyd and Sellers, 1976). Based on the clinical examination and laboratory studies in the present study fits well to the requirement of *Dermatophilus congolensis* as described by earlier workers elsewhere cited, which remains to be investigated further.

The analysis of the above study also revealed that the leg dermatitis with low endemic prevalence in certain districts of Karnataka. The dermatitis was probably predisposed by rainy season, stall feeding, feeding of commercial concentrates and milking animals.

An epidemiological investigation of leg dermatitis in dairy cattle in Karnataka has been investigated. The dermatitis was very peculiar to legs. The disease was more prevalent during the rainy

Table 2: Intrinsic factors associated with leg dermatitis cases

S. No.	Factors	No. of cases	Percentage
1.	Breed		
	Holstein Friesian	35	57.38
	Jersey	25	40.98
	Local	1	1.64
	Total	61	
2.	Colour		
	Black and White	35	57.38
	Brown	26	42.62
	Total	61	
3.	Age group		
	One to three years	13	21.31
	Three to five years	28	45.90
	Above five years	20	32.79
	Total	61	
4.	Physiological state		
	Calf	0	0.00
	Heifer	9	14.75
	Lactating cows	35	57.38
	Pregnant	17	27.87
	Total	61	

season and occurred in the age group of three to five years lactating animals with commercial feeding regimen. Although epidemiological and clinical features fit well to *Dermatophilus congolensis* which remains to be investigated further.

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