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Research Paper

Prevalence of Fascioliasis in goats in different regions of Indore (M.P.), India.

Zoology

KEYWORDS : Fascioliasis, Capra hircus (Goat), faecal sample, Prevalence, Seasonal

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ABSTRACT

The present study deals with prevalence of fascioliasis in goat of Indore region in relation to age, sex and season. The total 2250 faecal samples were collected from Indore region during present study period. In which, 1125 faecal samples were collected from house hold and 1125 faecal samples were collected from slaughter house goats. These faecal samples were examined, 510 faecal samples were positive out of 2250. In household 127 faecal samples were found positive out of 1125 and 383 faecal samples were found positive for slaughter house out of 1125.

The overall prevalence of fascioliasis was 22.66% in which, household was 11.2% and 34.4% in slaughter house based on results. In young age groups prevalence of fascioliasis was 28.4%. In male goats prevalence of fascioliasis was 13.86%. In female goats prevalence of fascioliasis was 25.33%.The prevalence of complete one year (study period) in relation of season were observed (58.6%) in rainy season followed by in winter (19.46%) and in summer (10%). It was concluded that the prevalence of Fasciola hepatica in goat was significantly affected by age, sex and season. Effective control and strategic use of anthelmintic is need for the treatment of intensive fascioliasis.

INTRODUCTION

Fasciolosis also known as Fascioliasis, Distomatosis and liver Rot is an important disease of cattle caused by trematodes *i.e. Fasciola hepatica* and *Fasciola gigantica* (common liver flukes). This condition of internal parasitism is one of the major problems that lower the livestock productivity throughout the world said to Vercruysse and Claserebont (2001). Rondelaud *et al.* (2001) have been reported the significance of helminth infestation has been increased many folds in developing countries, the disease is of paramount importance due to its broad distribution and definite hosts. It causes acute and chronic infections Sampaio Silva *et al.* (1996). The disease in predominantly caused by *Fasciola hepatica* or *Fasciola gigantica* Soulsby (1987).

Goats are the most second important livestock in India which contributes in poverty alleviation and by supplying animal protein of high caloric value in the form of milk and meat. Parasitic diseases especially *Fasciola hepatica* infection in ruminants causes enormous economic losses of the livestock population and these losses are due to costs of anthelmintics, reduction in milk and meat production, fertility and draught power. The disease also has public health significance, causing human fascioliasis (Bhuyan, 1970; Lebbie *et al.,* 1994).

Fasciolosis is a significant live stock problem; yearly an estimated US$ 2 billion are foregone due to weight loss, reduction in milk yield and fertility in production animals. Fasciolosis is a dangerous disease leading to huge economic losses in live stock production and causing severe illness in human livers (Mas-Coma, *et al*., 2005 and Hussein, *et al.,* 2009).

Most of the economic losses are due to sub- clinical effects and although not immediately noticed by the owners, these can be substantial. The most complicated part of developing an efficient strategic deworming program for most dairy farmers is being able to understand the natural occurrence of these parasites in dairy animals. Economic losses are caused by gastrointestinal parasitism are in a variety of ways: they cause losses through lowered fertility, reduced work capacity, involuntary culling, a reduction in food intake and lower weight gains, lower milk production, treatment costs, and mortality in heavily parasitized animals (Lebbie *et al.,* 1994). In the present investigation studied the prevalence of Fascioliasis in goats of Indore region and its relationship with age, sex and season.

MATERIALS AND METHODS

Study area: This study was conducted in Indore regions. Household and slaughter house goats were included in this study. The goats were belongs to different age, sex. The different region of Indore such as Dakachya, Mangalya, Sanwer, Mhow, Rao were included for present study.

Study Period: This study was conducted over 1 year period. The one year period is divided into three seasons such as Rainy, winter and summer.

Experimental animal: The goats (Capra *hircus*) were used as experimental animal for present study. The goats were categorized into two categories.

Experimental parasite: *Fasciola hepatica* (Liver fluke) was used as experimental parasite for present study.

Collection of faecal samples: Faecal samples were collected directly from the rectum of each goat in a clean polythene bag. These faecal samples were labeled and refrigerated till further processing.

Analysis of faecal samples: The faecal samples were analyzed by flotation and sedimentation techniques, as described by Cable (1985).

RESULTS AND DISCUSSION

During the present study period a total 2250 faecal samples were collected from Indore region. In which, 1125 faecal samples were collected from house hold and 1125 faecal samples were collected from slaughter house goats. These faecal samples were examined, 510 faecal samples were found positive out of 2250. In household 127 faecal samples were found positive out of 1125 and 383 faecal samples were found positive for slaughter house out of 1125. The results of prevalence of fascioliasis are summarized in (Table:- 1-3 and figure:- 1-7).

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Table-1: Prevalence of Fascioliasis in goats of different region of Indore.

S.No.	Study area	Household			Slaughter house			Overall No. of positive
		No. of Examined	No. of positive	Prevalence (%)	No. of Examined	No. of positive	Prevalence (%)	
	Dakachya	225	35	15.5%	225	117	52%	152
	Mangalya	225	29	12.8%	225	96	42.6%	125
	Sanwer	225	23	10.2%	225	72	32%	95
	Mhow	225	21	9.3%	225	55	24.4%	76
	Rao	225	19	8.4%	225	43	19.1%	62
	Total	1125	127	11.22%	1125	383	34.04%	510
Overall prevalence – 22.66%								

Figure –1: Prevalence of Fascioliasis in goats of different region of Indore.

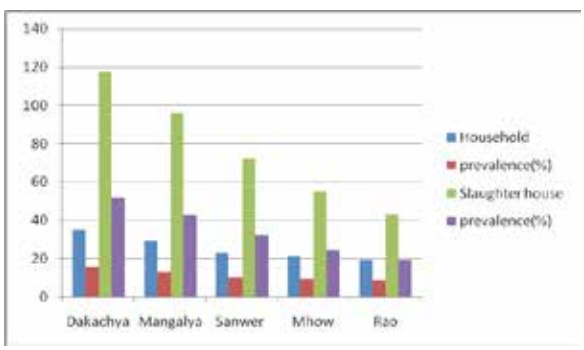


Figure –2: Prevalence of fascioliasis in household and slaughter house goats (young age) of different region of Indore.

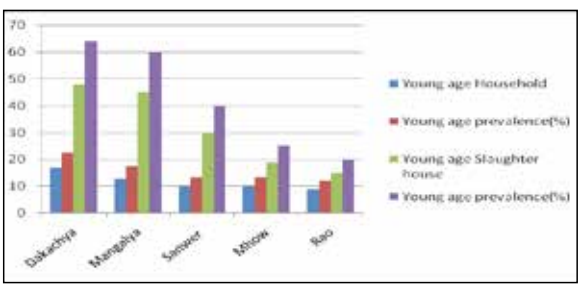
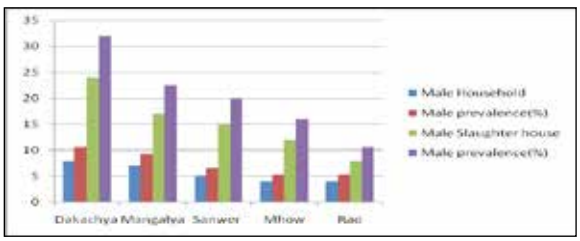


Table- 2:- Prevalence of fascioliasis in household and slaughter house goats in relation to age factors (Young age, Male groups & Female groups) in different region of Indore.

S. No.	Study area	Young age							Male							Female						
		Household			Slaughter house			Overall prevalence %	Household			Slaughter house			Overall prevalence %	Household			Slaughter house			Overall prevalence %
		No. of Examined	No. of positive	Prevalence (%)	No. of Examined	No. of positive	Prevalence (%)		No. of Examined	No. of positive	Prevalence (%)	No. of Examined	No. of positive	Prevalence (%)		No. of Examined	No. of positive	Prevalence (%)	No. of Examined	No. of positive	Prevalence (%)	
1	Dakachya	75	17	22.6	75	48	64		75	8	10.6	75	24	32		75	10	13.3	75	45	60	
2	Mangalya	75	13	17.3	75	45	60		75	7	9.3	75	17	22.6		75	9	12	75	34	45.3	
3	Sanwer	75	10	13.3	75	30	40		75	5	6.6	75	15	20		75	8	10.6	75	27	36	
4	Mhow	75	10	13.3	75	19	25.3		75	4	5.3	75	12	16		75	7	9.3	75	24	32	
5	Rao	75	9	12	75	15	20	28.4%	75	4	5.3	75	8	10.6	13.86%	75	6	8	75	20	26.6	25.33%
	2250	375	59	14.9%	375	157	41.86%	216	375	28	7.46%	375	76	20.2%	104	375	40	10.06%	375	150	40%	190

Figure–3: Prevalence of fascioliasis in household and slaughterhouse goats (Male groups) of Indore region.



Figure–4: Prevalence of fascioliasis in household and slaughterhouse goats (Female groups) of Indore region.

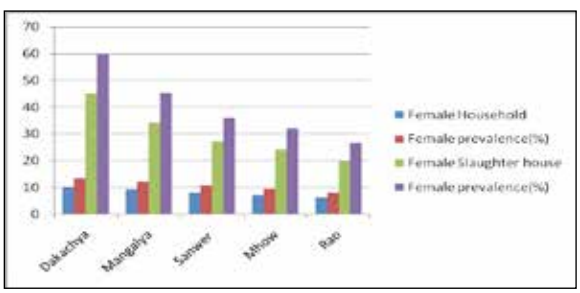


Table -3: Seasonal prevalence of Fascioliasis in goats of different regions of Indore.

Season	Study area	Household				Slaughter house				
		No. of Examined	No. of positive	Prevalence (%)	Overall prevalence(%)	No. of Examined	No. of positive	Prevalence (%)	Overall prevalence (%)	Overall prevalenc (%)
Rainy	Dakachya	75	23	30.6	22.13%	75	56	74.6	54.9%	58.6 %
	Mangalya	75	19	25.3		75	50	66.6		
	Sanwer	75	14	18.6		75	44	58.6		
	Mhow	75	13	17.3		75	31	41.3		
	Rao	75	14	18.6		75	25	33.3		
Winter	Dakachya	75	8	10.6	8.26%	75	42	56	30.66%	19.46%
	Mangalya	75	7	9.3		75	31	41.3		
	Sanwer	75	6	8		75	17	22.6		
	Mhow	75	6	8		75	14	18.6		
	Rao	75	4	5.3		75	11	14.6		
Summer	Dakachya	75	4	5.3	3.46%	75	19	25.3	16.53%	10%
	Mangalya	75	3	4		75	15	20		
	Sanwer	75	3	4		75	11	14.6		
	Mhow	75	2	2.6		75	10	13.3		
	Rao	75	1	1.3		75	7	9.3		
	Total	1125	127	11.29%	11.22%	1125	383	34.04%	34%	22.66%

Figure- 5: Prevalence of Fascioliasis in household and slaughter house goats of different regions of Indore during Rainy Season.

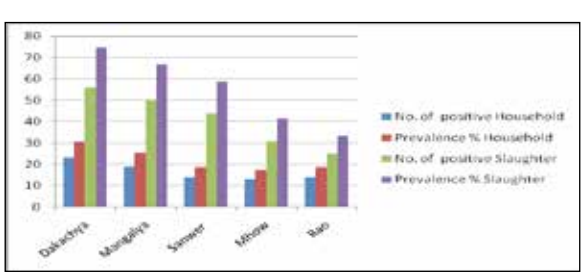


Figure- 6: Prevalence of Fascioliasis in household and slaughter house goats of different regions of Indore during Winter Season.

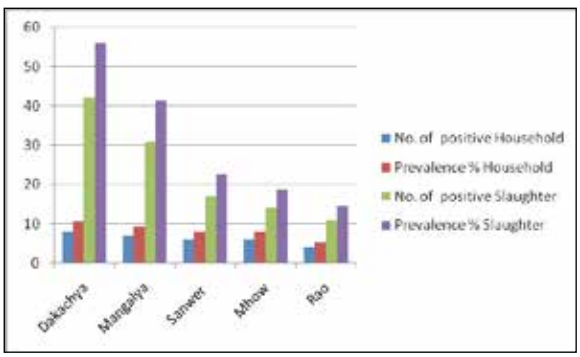
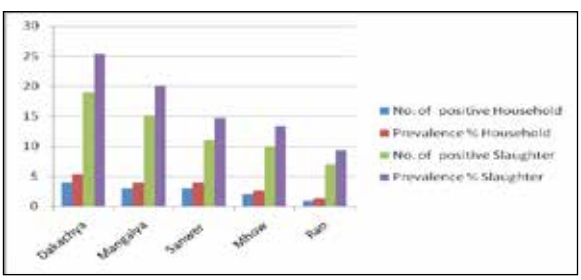


Figure- 7: Prevalence of Fascioliasis in household and slaughter house goats of different regions of Indore during Summer Season.



The overall prevalence of fascioliasis was 22.66% in goats. In which, household was 11.22% and 34.04% in slaughter house.

In the young age group the prevalence of fascioliasis was 28.4%. In which, household was 14.9% and 41.86% in slaughter house. In the male group the prevalence of fascioliasis was 13.86%. In which, household was 7.46% and 20.2% in slaughter house. In the female group the prevalence of fascioliasis was 25.33%. In which, household was 10.06% and 40% in slaughter house.

The prevalence of fascioliasis in rainy season was (58.6%). In which, house hold was 22.13% and 54.9% in slaughter house. The prevalence of fascioliasis in winter season was (19.46%). In which, house hold was (8.26%) and (30.66%) in slaughter house. The prevalence of fascioliasis in summer season was (10%). In which, house hold was (3.46%) and (16.53%) in slaughter house. The prevalence of complete one year (study period) in relation of season were observed (58.6%) in rainy season followed by in winter (19.46%) and in summer (10%).

The infection rate was higher in young age group, female group and male group (Table 2) which is in agreement with the result of other workers (Chowdhury *et al.,* 1994; Tasawar *et al.,* 2007). Similarly, Keyyu *et al.,* (2005) reported that the high infection rates in female groups associated with age and consequently longer exposure time. Females were more affected than males (Table 2). This finding is conformity with other workers (Chowdhury *et al*., 1994; Maqbool *et al.,* 2000). Female goats were found to be more infected and were probably due to the fact that the female goats in this country are slaughtered at adult age.

The young age groups of goats found to be infected more with helminths is an important factor in the onset of infection because immunity plays a great role in the establishment of parasites in the host body and/or undernourishments and generally poor husbandry. In adult animals, the prevalence of helminth is low due to the development of significant immunity. When the animals cross one year of age the major part of their parasitic infection is eliminated so called self cure phenomenon and/or

high acquired immunity which increase with age. Winkler (1982) reported that host may recover from parasitic infection with increasing age and hence become resistant. On the other hand, young age groups of goats were more infected than adults may be due to decrease of immunity. Similar observation was reported by Shah-Fischer and Say (1989), Kiyyu *et al.,* (2003) and Tasawar *et al.,* (2007).

Female goats were more infected than their counter partners. These findings are in agreement with others who have reported of Dhar *et al.,* (1988), Selim *et al.,* (1997) and Fatima *et al.,* (2008). Physiological peculiarities of female animals which usually constitute stress factors like calving and lactation reduced their immunity to infections. Females are usually weak and malnourished and consequently are more susceptible to infections besides some other reasons (Blood and Radostits, 2000).

Goats were more infected in rainy than in summer and winter seasons (Table 3). This observation appeared in agreement with the earlier reports (Selim *et al.,* 1997 & Maqbool *et al.,* 2000). The study also shows seasonal relation of infections indicated that the highest infection was observed in rainy season followed by in winter and in summer. These results are similar to finding of Mzembe and Chowdhury (1981), Jithendran and Bhat (1999) and Tamloorkar *et al.,* (2002). Climatic conditions, particularly rainfall, were frequently associated with differences in the prevalence of fascioliasis because this was suitable for intermediate hosts like snails to reproduce and to survive longer under moist conditions (Ahmed *et al.,* 2007). The prevalence of *Fasciola hepatica* was found to be significantly higher during the wet season than that of dry season. The proportion of animals passing fluke eggs increased gradually from the early dry season and peaked at the end of the dry season and the early part of the rainy season (Keyyu *et al.,* 2005).

The result of present study prevalence of fascioliasis in relation to age, sex and supported by above mention authors.

We recommend that the Health regulatory agencies should establish and run modern veterinary infrastructure with adequate medications to control liver fluke parasites. Animal breeders should be enlightened on the appropriate breeding methods to adopt, application of proper sanitation, effect of malnutrition, etc.

The overall higher incidence of heminths infection in the areas surveyed could be attributed to lower immunity of hosts as a result of malnutrition. All the livestock in the area under investigation largely depended on grazing in deteriorated range-lands. It was also observed that farms in these areas lack fences and cattle, sheep and goats use the same pasture for grazing.

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