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THE PREVALENCE OF *FASCIOLA HEPATICA* IN GOATS AROUND MULTAN

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ABSTRACT

Faecal Samples of 80 goats belonging to Nachi and Teddy breeds were collected bimonthly from areas around Multan, Pakistan. The overall prevalence of *Fasciola hepatica* in goats and relationship between body weight, age, breed of the host and also effect of parasite on the litter size of the host were studied. The overall prevalence of *F. hepatica* was 28.75%. Infection of parasite was more prevalent in Teddy than in Nachi goats (42.10 VS 16.67%; $P<0.05$). Moreover, highest prevalence (39.13%) was observed in weight group of 16-30 kg and lowest (13.33%) in weight group of >45 kg, the difference was significant ($p<0.05$). Results regarding the relationship between different age groups of goats and *F. hepatica* showed that highest prevalence (35.71%) of parasite was observed in age group of 13-24 months and it was lowest (18.18%) in age group of >36 months. The prevalence was significantly different ($P<0.05$) in different age groups. It was concluded that the prevalence of *Fasciola hepatica* in goats was significantly affected by the breed age, and body weight of the animal. However, it had no effects on the litter size.

Key words: *Fasciola hepatica*, prevalence, goats, age, body weight, litter size.

INTRODUCTION

Fasciola hepatica is an important parasite of sheep, goats and cattle and has been the subject of many scientific investigations. This is not only because of its high prevalence rates but also due to its enormous production losses in these animals reported from various parts of the world, such as Burma (Griffiths, 1957), Nigeria (Fabiyi, 1986), Central Africa (Babalola *et el.*, 1976; Diaw *et al.*, 1998), Bangladesh (Rahman *et al.*, 1972), Indonesia (Edney and Muchlis, 1962) and Thailand (Srikipjakarn, 1986). Man is not usually considered to be a host of *F. hepatica* but in fact this infection is not unusual in humans and infections have been reported in many countries including Europe and the USA. The eating of watercress appears to be a common source of human infection. The usual site of infection is the liver but in aberrant host other sites such as the lungs may be involved. The overall prevalence of *F. hepatica* in goats and its relationship with breed, age and body weight of goats have been described in this paper.

MATERIALS AND METHODS

The present survey was conducted to collect information on the overall prevalence of *Fasciola hepatica* in goats around Multan, Pakistan and relationship between body weight, age and breed of the host with the parasite. For this purpose, three field stations viz. Basti Rata, Basti Labar and Bibi Pur were selected in September/October 2003 and 80 goats belonging to Nachi (n = 42) and Teddy (n = 38) breeds were selected. Faecal samples were collected and animals were weighed bimonthly. The collected material was transported to Parasitology Laboratory, Bahauddin Zakariya University Multan. Floatation technique and Sedimentation technique, as described by Cable (1985), were used to examine the parasites in the faecal samples.

The parameters studied were the overall prevalence, relationship between weight, age and breed of the host with the parasite. The effect of *F. hepatica* on the litter size of the host was also studied. Results are expressed in percentages and the values between various groups were compared by Chi square test.

RESULTS AND DISCUSSION

The overall prevalence

Out of 80 animals examined, 23 were infected with *F. hepatica.* The prevalence of the parasite was 28.75%. Boray (1982) studied the prevalence of *F. hepatica* in goats, sheep, horses and pigs, in Cuba, the prevalence recorded was 4–43%. From Turkey, Aysen *at al.* (1999) reported the prevalence of fascioliasis as 1.2, 0.04 and 0% in cattle, sheep/goats and camels, respectively. Haridy *et al.* (1999) reported the overall prevalences of *F. hepatica* as 2.02% for sheep and goats, 3.54% for cattle and 1.58% for buffaloes. In Egypt, prevalence based on faecal examination has been estimated as 12.70% in sheep and goats (Mazyad and El-Nemr, 2002). El-Shazly *et al.* (2002) reported the overall rates of infection in cows, buffaloes, sheep and goats as

Table 1: Relationship between different breeds of goats and *Fasciola hepatica*

Nachi breed			Teddy breed		
Examined	Infected	Prevalence (%)	Examined	Infected	Prevalence (%)
42	7	16.67	38	16	42.10

Table 2: Relationship between body weight of goats and prevalence of *Fasciola hepatica*

Body weight (Kg)	1-15	16-30	31-45	>45
Animals examined	n =25	n =23	n =17	n =15
Animals infected	8	9	4	2
Infection (%)	32.00	39.13	23.50	13.33

12.31, 9.73, 17.84 and 5.40% respectively. In Australia, the prevalence recorded by faecal examination was 26.5% in sheep and 52.2% in cattle (Molloy *et al.*, 2005). This difference in the prevalence of *F. hepatica* reported from various studies may be due to differences in resistance to infection, grazing habits and breed of the host.

Relationship between breeds of goats and *Fasciola hepatica*

Table 1 shows that the *F. hepatica* was more prevalent in Teddy breed (42.10%) as compared to Nachi breed (16.67%; $P<0.05$). Preston and Allonby (1979) found significant breed differences in susceptibility to helminths infection. They explained that the breed differences could be due to difference in resistance to parasitic infection, because some breeds have better resistance than others.

Relationship between body weight of goats and *Fasciola hepatica*

Relationship between body weight of goats and *F. hepatica* in goats (Table 2) showed that *F. hepatica* had highest prevalence (39.13%) in weight group of 16-30 kg and lowest (13.33%) in >45 kg weight group. The difference was statistically significant ($P<0.05$). These results show that as the weight of the animal increases the parasitic infection decreases. This could be due to acquired immunity in the host.

Relationship between age of goats and *Fasciola hepatica*

Relationship between age and *F. hepatica* in goats (Table 3) indicated that the parasite had highest prevalence (35.71%) in age group of 13-24 months and lowest (18.18%) in age group of >36 months, the difference was significant ($P<0.05$). The probable explanation for the lower prevalence in age group >36 months compared to younger age groups could be due to the so called self-cure phenomenon (Blamire *et al.*, 1970; Fryod, 1975; Assanji, 1988) and/or high acquired immunity which increase with age. It has been reported that host may recover from parasitic infection with increasing age and hence become resistant (Winkler, 1982).

Effects of *Fasciola hepatica* on litter size of goats

Effects of *F. hepatica* on the litter size of goats were calculated. According to these results, the litter size was lower in infected groups as compared to uninfected groups (Table 4). However, the difference between the two groups was non significant.

It was concluded that the prevalence of *Fasciola hepatica* in goats was significantly affected by the breed, age and body weight of the animal. However, it had no effects on the litter size.

Table 3: Relationship between different age groups of goats and prevalence of *F. hepatica*

Age (months)	1-12	13-24	25-36	>36
Animals examined	n =37	N = 14	n = 18	n = 11
Animals infected	12	5	4	2
Infection (%)	32.43	35.71	22.22	18.18

Table 4: Effect of *F. hepatica* on litter size of goats

Litter size				Infected				Uninfected			
Single	Twin	Triplet	Aborted	Total	Single	Twin	Triplet	Total	Single	Twin	Triplet
31	13	2	3	39	31	6	0	9	0	7	2

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