

Prevalence of Gastrointestinal Parasites of Sheep and Goat in and around Rawalpindi and Islamabad, Pakistan

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Abstract

From August 2004 to May 2008, a total of 400 submitted faecal samples comprising of 90 samples from sheep and 310 from goats of Rawalpindi and Islamabad were analyzed to confirm the presence of gastrointestinal parasitic infection. 254 (63.50%) samples were found positive for endoparasites. Among the samples from sheep 48 (53.33%) and 206 (66.45%) from goats were detected positive for gastrointestinal parasites. *Trichuris*, *Haemonchus*, *Coccidia*, *Nematodirus* and *Fasciola* were found with prevalence of 40.00, 28.88, 27.77, 11.11 and 4.44 per cent respectively in sheep. In case of goat the incidence of *Haemonchus*, *Coccidia*, *Trichuris*, *Nematodirus*, *Trichostrongylus*, *strongyloides* and *Fasciola* were 64.19, 43.87, 35.48, 13.00, 4.51, 3.22 and 0.66 % respectively.

Key words: Endoparasite, sheep, goat, nematode, helminth, prevalence.

Introduction

Livestock plays a crucial role in the economy of Pakistan. It increases economic status of the rural poor. Due to improper care, unhygienic environment, extreme climate and close contact with infected animals they get infected with a variety of parasites.

Parasitism in sheep and goat is a substantial problem plaguing farmers across the nation. As gastrointestinal parasite infection is the most important limiting factor of sheep productivity, parasitism has a highly detrimental effect on the sheep industry (Jones, 2001).

Production potential of livestock development programs is plagued in tropical and subtropical areas due to prevalence of helminthes which causes high mortality and great economic losses (Al-Quaisy *et al.*, 1987). The prevalence of gastrointestinal helminthes is related to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behavior of the host (Pal and Qayyum, 1993). Amongst the parasitic diseases, endoparasites are of greatest importance in sheep and goats. Common parasites of sheep and goat include coccidia, roundworms, tapeworms, and liver flukes (Bagley, 1997). The blood sucking parasite *Haemonchus contortus* which is found in the abomasum of the sheep

and goat causes significant blood loss; each worm removes 0.05 ml blood per day so that sheep with a 500 *H. contortus* may loss about 250 ml per day (Urquhart *et al.* 1987) resulting in decrease in erythrocytes, lymphocytes, hemoglobin, PCV, body weight and wool growth (Rasool *et al.* 1995; Hayat *et al.* 1996).

Outbreaks are most severe in warm, humid climates; the optimum temperature for larval growth is between 50° and 80° Celsius and the optimal rainfall is at least 5 centimeters. A climate that is too hot or dry can kill most larvae on the pasture. Larvae numbers peak in late winter and early spring. *Haemonchus* has a life cycle lasting approximately four weeks. When ingested, the larvae travel to the abomasum of the animal, where they burrow into the mucosa and develop into true adults in 21 days (Fitch, 2006). While in the abomasums, female adults can lay over 5000 eggs per day (Scarfe, 2006). Roughly 10,000 adult *Haemonchus* worms can kill a sheep. The eggs are deposited in feces. After approximately 24 hours, the eggs hatch on grass in pastures and under optimal conditions, become infective in five to seven days (Fitch, 2006).

The economic losses due to low quality of wool, hides and skin by various parasitic infections in livestock have been assumed (Irfan, M. 1984). A decrease in

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profitability up 15% (Restani, R. *et al* 1971) and 50% weight loss, due to gastrointestinal parasitism has been reported by Hussain, Q. (1985). Endoparasites result in huge economic losses amounting to Rs. 19.7 millions per year (Iqbal *et al*. 1993) and the estimated losses due to lowered meat and wool production in slaughtered sheep and goats in Faisalabad were 31.4 million per year (Javed *et al*. 1992). The geo-climate condition of Pakistan is conducive for the optimum growth and proliferation of parasites, posing challenge for the veterinarians.

Materials and Methods

A total of 400 faecal samples from sheep (90) and goat (310) submitted to the National Veterinary Laboratories, Islamabad between August 2004 and May 2008 from various parts of the Islamabad and Rawalpindi were analyzed for the confirmation of endoparasitic infection.

Direct microscopic examination, centrifugation floatation technique and sedimentation technique (Urquhart, 1987) were used to investigate faecal samples. Identification of the eggs or cysts made on the basis of morphology and size of eggs.

Results and Discussion

The present study revealed that 254 (63.35%) samples were infected by endoparasites, Among the submitted samples of Sheep 53 (53.33%) while for goat 206 (66.45%) were detected positive. Cases of single and multiple infection (infection with endoparasites of different genus) were observed, most of the samples were found with multiple infection than single infection 38 (42.22%) and 156 (50.32%) in sheep and goat samples were diagnosed as multiple infection.

Species-wise incidence of *Trichuris*, *Haemonchus*, *Coccidia*, *Nematodirus* and *Fasciola* were recorded as 40, 28.88, 27.77, 11.11 and 4.44 % respectively in sheep. In case of goats the incidence of *Haemonchus*, *Coccidia*, *Trichuris*, *Nematodirus*, *Trichostrongylus*, *strongyloides* and *Fasciola* were 64.19, 43.87, 35.48, 13, 4.51, 3.22 and 0.64 % respectively.

The various species of nematodes recovered during this investigation had already reported by various researchers in different parts of the world (Ahmed and Ansari, 1987, Asanji and Williams, 1987, Guimaraes and Walter, 1987, Njau, 1987, Uriarte and Valderrabno, 1989, Pal and Qayyum, 1993).

Prevalence of the haemonchosis was significantly higher in goat compared with sheep, these results are not coincided with the results of other researchers (Riche *et al.*, 1973; Suh *et al.*, 1980; Javed *et al.*, 1992).

Conclusion

The results show that major nematodes

belonging to genera *Haemonchus*, *Trichuris* and *Nematodirus* and intestinal protozoan parasite *Coccidia* were prevalent in the areas of Islamabad and Rawalpindi. Prevailing agro-climatic conditions like overstocking of the animals, grazing of young and adult animals together with poorly drained land provide an ideal condition for the transmission of the endoparasites to build up clinical infestation of the host.

The overall higher incidence of nematodes 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.

Keeping in view the above results some control measure for gastrointestinal parasites can be undertaken to reduce the intensity of the parasitic infection. In this regard, it is suggested that practice of separate grazing of animals with low stocking rate may be adopted. Furthermore, during the rainy season climatic factors like temperature and humidity are favorable for the development and survival of pre-parasitic stages of nematodes. It is, therefore, suggested that anthelmintic treatment on quarterly basis may be implemented to reduce the risk of re-infection. However, resistance to these drugs has recently been observed on several occasions. In order to delay the development of drug-resistant parasite strains, anthelmintics must not be overused and drugs must be delivered at optimal times.

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