

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

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### ABSTRACT

From August 2004 to December 2005, a total of 338 fecal samples were collected (86 from sheep 252 from goats) to determine the prevalence of various endoparasites in and around twin cities of Rawalpindi and Islamabad. Of the total samples examined, 65.7% were found positive for endoparasites. The prevalence of gastrointestinal parasites tended to be higher ( $p = 0.059$ ) in sheep 62 (72%) than in goats 160 (63.7%). The endoparasites identified in sheep included *Haemonchus* (80.64%), *Coccidia* (51.61%), *Trichuris* (32.25%), *Nematodirus* (29.03%) and *Fasciola* (4.38%) while only *Haemonchus* (75%), *Trichuris* (62.5), and *Coccidia* (57.5%) were recovered from the fecal samples of goat.

**Key words:** Prevalence, sheep, goats, endoparasites

### INTRODUCTION

Helminthiasis, especially parasitic gastroenteritis, constitutes to pose a serious health threat and a limitation to the productivity of small ruminants due to the associated morbidity, mortality, cost of treatment and control measures (Nwosu et al., 2007). Nematode parasites of small ruminants result in low productivity due to stunted growth, poor weight gain and poor feed utilization (Pedreira et al., 2006). The prevalence of gastrointestinal helminths 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). *Haemonchus contortus*, found in the abomasum of sheep and goats, causes blood loss resulting in decrease in erythrocytes, lymphocytes, hemoglobin, packed cell volume, body

weight and wool growth (Hayat et al., 1996). A decrease in profitability up to 15% and weight loss up to 50% due to gastrointestinal parasites have been reported by Hussain (1985). Economic losses amounting to Rs. 19.7 millions per year have been estimated by Iqbal et al. (1993). Javed et al. (1992) found that losses associated with lowered meat and wool production in sheep and goats in Faisalabad was amounting to 31.4 million per year.

Changes in season, prevalence and relative burden are the key factors to control the parasitic diseases effectively (Malczewski et al., 1996). However, in most areas of Pakistan no study has been conducted regarding the prevalences of different gastrointestinal parasites in small ruminants. Therefore, the current study was aimed to investigate the prevalence of various endoparasites of

sheep and goats in Rawalpindi and Islamabad.

## MATERIALS AND METHODS

A total of 338 fecal samples were investigated; 86 of these were from sheep and 252 from goats. The fecal samples were collected from various farms and small stock holders of Rawalpindi and Islamabad. The samples were transported to the National Veterinary Laboratories, Islamabad for the identification of endoparasitic infection using direct microscopic examination, centrifugation floatation and sedimentation techniques. Identification of the eggs or cysts was made on the basis of morphological characteristics and size of eggs (Foriet, 1999).

The data were analyzed statistically using the Chi-Square test (SPSS for windows, Version 12).

## RESULTS AND DISCUSSION

The overall prevalence of endoparasites in both sheep and goats was found to be 65.7%. However, the prevalence of endoparasites tended to be higher ( $p = 0.06$ ) in sheep (72%) compared to goats (63.69%). The frequency of occurrence of different species identified in sheep and goats are shown in Table 1. A significant difference ( $p < 0.001$ ) was noted regarding the prevalence of various species of parasites in sheep. Similar outcomes were also observed for goats. The prevalence of *Haemonchus* was higher ( $p = 0.05$ ) in sheep compared to goats. Similarly, *Trichostrongylus* were more frequently ( $p < 0.01$ ) found in the fecal samples of sheep compared to goats. However, the

prevalence of *Coccidia* was alike ( $p > 0.05$ ) in both types of animals (Table 1). On the other hand, *Nematodirus* and *Fasciola* were only detected in the fecal samples of sheep and were absent in the goats (Table 1).

Various species of endoparasites recovered in the present study has also been reported earlier (Asnji and Williams, 1987; Gupta et al., 1987; Guiomaraes and Walter, 1987; Njau, 1987; Uriarte and Valderrabno, 1989; Pal and Qayyum, 1993). The higher prevalence of haemonchosis in sheep than goats may be attributed to a variety of factors like ground grazing habit of sheep, relatively less cleanliness and extensive pasture grazing compared with goats (Riche et al., 1973; Suh et al., 1980; Javed et al., 1992). *Haemonchus* is an important and common nematode parasite and requires special attention for its control. It has been suggested that *Haemonchus* can acquire resistance faster than other gastrointestinal nematodes, like *Trichostrongylus*, because of its high biotic potential (Torres-Acosta et al., 2003).

The results of the current study show that *Haemonchus*, *Trichostrongylus* and *Nematodirus*, *Coccidia* are prevalent in the areas of Rawalpindi and Islamabad. It has been reported that *Coccidia* and other gastrointestinal nematodes as mixed or single infections are the major parasitic diseases of sheep and goats in tropical and temperate climates (Faizala and Rajapakse, 2001). Deaths due to *Eimeria* species may also occur though lowered productivity due to poor growth is usually unnoticed by farmers (Faizala et al., 1999).

Table 1 Species-wise prevalence of gastrointestinal endoparasites in sheep and goats

Parasite	Sheep (n = 86)			Goats (n = 252)		
	No. of samples positive	Relative prevalence* (%)	Overall prevalence (%)	No. of samples positive	Relative prevalence* (%)	Overall prevalence (%)
<i>Haemonchus</i>	50	80.7	58.1	120	75.0	47.6
<i>Coccidia</i>	32	51.6	37.2	92	57.5	36.5
<i>Trichuris</i>	20	32.3	23.2	100	62.5	39.6
<i>Nematodirus</i>	18	29.0	20.9	ND	ND	ND
<i>Fasciola</i>	02	4.4	2.32	ND	ND	ND

\* Based on number of positive samples for sheep (62) and goats (160). ND = Not detected

Prevailing agro-climatic conditions like overstocking of the animals, grazing of young and adult animals together with poorly drained land provide ideal conditions for transmission of the endoparasites to build up clinical infestation of the host. The overall higher incidence of nematodes infestation in the areas surveyed could be attributed to lower immunity of hosts as a result of malnutrition. As the livestock in that area under investigation largely depended on grazing in deteriorated range-lands. It was also observed that farms in these areas lacked fences and cattle, sheep and goats used the same pasture for grazing. In conclusion, various gastrointestinal parasites have been found in both sheep and goats. Regular control measures should be practiced to reduce the parasitic burdens in the affected areas.

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