

STUDIES ON THE EPIDEMIOLOGY AND CHEMOTHERAPY OF HAEMONCHOSIS IN SHEEP IN THE PUNJAB

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ABSTRACT

A study was conducted to ascertain the incidence and seasonal pattern of haemonchosis in sheep raised in different divisions of the Punjab province. For this purpose, faecal samples from 10,000 sheep were collected from eight divisions of Punjab and examined for the presence of *Haemonchus contortus* ova. The overall infection of *Haemonchus contortus* in these sheep was found to be 54.77%. The highest incidence of the haemonchosis (70.72%) was recorded in Rawalpindi, followed by 68.00% in Sargodha and around 66% in Gujranwala, D.G. Khan and Bahawalpur divisions. The lowest incidence of the disease (32.00%) was recorded in Faisalabad., followed by 34.00% in Multan and 34.32% in Lahore divisions. The month-wise prevalence of haemonchosis showed the highest incidence (89.55%) in the month of July, followed by 87.13% in August. The lowest prevalence of haemonchosis (20.02%) was observed in February, followed by 29.00% in March.

Keywords: Haemonchosis, epidemiology, chemotherapy, sheep

INTRODUCTION

Haemonchosis is one of the most important parasitic problems of sheep in Pakistan (Shah *et al.*, 1980; Javeed *et al.*, 1992), which results in huge economic losses amounting to approximately 19.7 million rupees per annum (Iqbal *et al.*, 1993). The disease is caused by a blood sucking parasite, *Haemonchus contortus*, which is found in the abomasum of sheep. A significant decrease in erythrocytic and lymphocytic counts, haemoglobin, packed cell volume, body weight and wool growth in terms of fleece weight, staple length and fiber diameter has been reported in lambs infected with the parasite (Rasool *et al.*, 1995; Hayat *et al.*, 1996). All such losses adversely affect the economic status of sheep farmers and the economy of the country.

However, there is relatively little information available in the literature regarding the area and season-wise incidence of haemonchosis in sheep kept in Punjab, the highly populated province of Pakistan. Therefore, a survey of *Haemonchus contortus* infection in sheep raised in eight divisions of the Punjab was conducted to figure out the incidence of the disease in this area and also effects of season on the incidence of the disease. Moreover, the response of the animals treated with Nегuvon (Bayer, Germany) was also studied.

MATERIALS AND METHODS

Faecal samples were collected from 10,000 sheep raised in eight divisions of the Punjab including, Lahore, Gujranwala, Faisalabad, Sargodha, Rawalpindi, Multan, D.G. Khan and Bahawalpur (Table 1). These samples were collected in screw-capped bottles directly from the rectum of each animal and taken to the laboratory for the identification of ova of *Haemonchus contortus* (Soulsby, 1982).

Therapeutic trials

Fifty sheep of Lohi breed, weighing about 40 kg on an average, found positive for haemonchosis on microscopic examination of the faecal samples, were selected from a flock of about 300 sheep. These animals were randomly divided into two groups, with 35 animals in group A and 15 animals in group B (untreated control). Animals of group A were treated twice orally with 10ml of 10 per cent aqueous solution of Nегuvon (Bayer, Germany), at an interval of 7 days, as recommended by the manufacturer. The eggs per gram (EPG) of the faecal material from individual sheep of both groups were counted before and 72 hours after the second treatment, using the McMaster egg counting technique (Soulsby, 1982).

RESULTS AND DISCUSSION

In the present study, faecal samples from 10,000 sheep maintained in various divisions of the Punjab province were examined for the presence of *Haemonchus contortus* ova. Among these, 5477 samples were found positive, indicating an incidence of 54.77 per cent. This incidence is relatively lower than 66.2 per cent observed by Durrani *et al.* (1981) for sheep and goats maintained in the Jhelum Valley, Azad Kashmir. In Faisalabad, Maqsood *et al.* (1996) recorded an incidence of haemonchosis as 65.2 per cent in sheep and 47.1 per cent in goats. According to these workers, ground grazing habit of sheep favours the chances of their exposure to parasitic infestation. These workers also found that the incidence of the disease was higher in sheep upto 2 years of age (59.1%) than 40.4% in those above 2 years of age. This low incidence in older animals was attributed to development of host resistance due to repeated exposure to infection or establishment of immunocompetence.

When the data were grouped according to the divisions (Table 1), the highest incidence of the haemonchosis (70.72%) was recorded in Rawalpindi, followed by 68.00% in Sargodha and around 66% in Gujranwala, D.G. Khan and Bahawalpur divisions. The lowest incidence of the disease (32.0%) was recorded in Faisalabad, followed by 34.0% in Multan and 34.32% in Lahore divisions (Table 1).

Table 1: Division-wise prevalence of haemonchosis in sheep in the Punjab.

Divisions	Samples positive	Percent infection
Lahore	429	34.32
Gujranwala	830	66.40
Faisalabad	400	32.00
Sargodha	850	68.00
Rawalpindi	884	70.72
Multan	425	34.00
D.G. Khan	834	66.72
Bahawalpur	825	66.00
Total	5477	54.77

These results show that the incidence of the disease was in general higher in northern parts of the province. These variations in the infection intensity may be due to the differences in macro and micro-climate, volume and height of the pastures (Blood *et al.*, 1983). According to Gupta *et al.* (1987), the incidence of nematodes in an area is directly related to the ability of pre-parasitic stages to withstand the environmental conditions. The prevailing agro-climatic conditions of the area like over stocking of the animals, grazing of young and adult animals together and poorly drained

land provide an ideal condition for the nematode infection (Pal and Qayyum, 1993).

The month-wise prevalence of haemonchosis in sheep is given in Table 2. It shows that the highest incidence (89.55%) was noted in the month of July, followed by 87.13% in August. The lowest prevalence of haemonchosis, 20.02% was observed in February, followed by 29.0% in March. The incidence of the disease remained higher (>60%) from June to November and was between 20 and 48% during the period from December to May (Table 2). Due to relatively heavy rains, the period from July to October is characterized by high relative humidity and ambient temperature, both of these conditions seem favourable for the development and survival of the pre-parasitic stages of the nematodes (Pal and Qayyum, 1993). Moreover, during the months of May to October, the increasing infestation problem in Rawalpindi, Sargodha, D.G. Khan, Bahawalpur and Gujranwala divisions may be due to intense grazing of sheep on the hilly pastures, canal banks and water storage/logging areas where the parasitic population multiply tremendously on account of suitable humidity and environmental temperature. Therefore, infestation during these months may lower the resistance of the animals adversely affecting their health status during the following autumn and winter seasons. Therefore, special attention should be paid to the anthelmintic treatment of sheep and goats during these months of the year.

Table 2: Month-wise prevalence of haemonchosis in sheep in the Punjab.

Months	Samples examined	Samples positive	Percent infection
January	832	400	48.07
February	834	167	20.02
March	831	241	29.00
April	835	261	31.25
May	830	351	42.28
June	836	515	61.60
July	833	746	89.55
August	832	725	87.13
September	834	666	79.85
October	831	582	70.03
November	835	501	60.00
December	837	322	38.47
Total	10,000	5477	54.77

Oral medication with Neguvon (group A) resulted in 100 per cent reduction in EPG of haemonchus species at 72 hours post treatment, whereas no such reduction in the EPG was noted in animals of the control group.

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