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Prevalence of gastrointestinal parasites in buffaloes of Karnal, district, India

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Abstract

The present study was carried out to determine the prevalence of gastrointestinal (GI) parasites in buffaloes of Karnal district, Haryana. Total of 400 faecal samples was collected from four blocks Karnal, Gharaunda, Indri and Nilokheri, over one year (January to December 2017). Faecal samples were examined using floatation and sedimentation techniques. The correlation of age and sex of the host with the prevalence of GI nematodes was determined using IBM SPSS software (version 20). Result revealed 305 (76.25%) samples positive were infected with one or more species of GI parasites. In positive cases, *Eimeria* spp. (38.25%) was the most prevalent followed by *Paramphistome* spp. (33.25%), strongyles spp. (29%), *Trichuris* spp. (7.75%), *Moniezia* spp. (5%) and *Fasciola* spp. (2.25%). Age-wise prevalence of *Eimeria* spp. (21.75%) was found higher in animals below six months of age. However, higher ($p < 0.01$) prevalence of *Paramphistome* and strongyles spp. was recorded in animals above 6 months. Sex wise prevalence of *Eimeria* spp. (26%) and *Moniezia* spp. (2.75%) was found higher ($p < 0.01$) in females as compared to males. *Paramphistome*, Strongyles, *Trichuris* and *Fasciola* spp. were also recorded higher in female due to the higher number of female samples. Result of the present investigation indicated a higher prevalence of GI parasites in eastern Haryana.

Keywords: Buffalo, Karnal, prevalence, *Fasciola* spp. and parasites

1. Introduction

Buffaloes are raised as economically important animals because they are multipurpose; providing milk, meat and good quality hides. They are also used as draft animals ("tractors" in Southeast Asia) in agriculture farms, means of transportation, and their dung act as a good fertilizer (Liu *et al.* 2009) [6]. Gastrointestinal (GI) parasitic infections of buffaloes are common, which cause considerable global economic losses to the buffalo industry and farming communities as a consequence of mortality in infected animals, reduced weight gain and the condemnation of the affected organs during meat inspection in slaughterhouses. Gastrointestinal parasites like coccidian, ascarid, strongyle, Setaria, and amphistomes were documented in countries with tropical and temperate climatic conditions such as India, Bangladesh, South Africa, Sri Lanka, Italy, and Mongolia, with a prevalence rate ranging from 20 to 96% (Sharma and Busang 2014; Faizal and Rajapakse 2001 and Sharma *et al.* 2009) [9, 2, 8]. For an anthelmintic strategy to be successful, in-depth knowledge of pathophysiology and epidemiology of the parasite, in the context of immunity and management of the host, is required. Therefore, periodical monitoring of parasitic species among livestock animals would be beneficial to control and manage diseases at early stages of infections in farm management practices.

2. Materials and Methods

2.1 Location, Geography and Climate

The district Karnal of Haryana is located at 29.68°N north latitude and 76.98°E east longitudes. It covers a geographical area of 2,471 sq. km. and with an elevation of 240 meters above sea level.

2.2 Sample collection and analysis

A total of 400 faecal samples were collected from buffaloes of Karnal districts. Multi-stage stratified random sampling was done while collecting the faecal sample from Karnal districts. Four blocks were randomly selected from Karnal district and from each block four villages were randomly selected and 25 samples were collected from each village. Only one faecal sample was taken from each wiling household covering a cross-section of the village.

Samples were examined using floatation and sedimentation techniques. Effect of age (1-6 months and 6 months above) and sex (male and female) was epidemiologically investigated.

2.3 Statistical analysis

The data generated were statistically analysed using IBM SPSS software (version 20). Chi-square test was applied for epidemiological investigations.

3. Results and Discussion

3.1 Prevalence of GI parasites

The results of the survey revealed the prevalence of GI parasitic infections in buffalo of Karnal as 76.25% and

Eimeria spp. 38.25% was the most prevalent GI parasite followed by *Paramphistome* spp. 33.25%, strongyles spp. 29%, *Trichuris* spp. 7.75%, *Moniezia* spp. 5% and *Fasciola* spp. 2.25% as shown in Table 1.

Table 1: Prevalence of GI parasites in Karnal, Haryana

Parasite	No. of samples positive	Total no. of samples	Per cent of prevalence
<i>Eimeria</i> spp.	153	400	38.25
<i>Paramphistome</i> spp.	133		33.25
Strongyles spp.	116		29
<i>Trichuris</i> spp.	31		7.75
<i>Moniezia</i> spp.	20		5
<i>Fasciola</i> spp.	9		2.25

Table 2: Age-wise prevalence of GI parasites in Karnal, Haryana

Parasite	No. of samples positive		Total no. of samples	Per cent of prevalence	
	1-6 months	Above 6 months		1-6 months	Above 6 months
<i>Eimeria</i> spp.	87	66	400	21.75	16.5
<i>Paramphistome</i> spp.	47	86		11.75	21.5
Strongyles spp.	32	84		8	21
<i>Trichuris</i> spp.	13	18		3.25	4.5
<i>Moniezia</i> spp.	11	9		2.75	2.25
<i>Fasciola</i> spp.	1	8		0.25	2

Table 3: Sex wise prevalence of GI parasites in Karnal, Haryana

Parasite	No. of samples positive		Total no. of samples	Per cent of prevalence	
	Male	Female		Male	Female
<i>Eimeria</i> spp.	49	104	400	12.25	26
<i>Paramphistome</i> spp.	23	110		5.75	27.5
Strongyles spp.	19	97		4.75	24.25
<i>Trichuris</i> spp.	11	20		2.75	5
<i>Moniezia</i> spp.	9	11		2.25	2.75
<i>Fasciola</i> spp.	1	8		0.25	2

Hussain (1985)^[3] and Dairo *et al.* (1975)^[1] reported 76.7 and 64.9% GI parasitic infestation, which are more or less similar to our findings. Variation in nematodes infestation might have attributed to the difference in physiological status, age, animal spp, climatic conditions and the existing management practices at the farm. Higher prevalence of *Eimeria*, *Paramphistome* spp. and strongyles spp. infection was recorded because of regional variation and it may be attributed to different geographical distributions, host factors and climatic conditions required for the development of free-living stages of the nematodes. These reports are more or less similar and reported from various parts of India (Muraleedharan, 2005; Singh *et al.* 2008; Kaur and Kaur, 2008 and Singh *et al.* 2012)^[7, 10, 5, 11].

3.2 Age-wise prevalence of GI parasites in buffalo calves

Age-wise prevalence of *Eimeria* spp. (21.75%) was found higher in animals below six months of age. However, significantly higher ($p < 0.01$) prevalence of *Paramphistome* (21.5%) and strongyles (21%) spp. was recorded in animals above 6 months (Table 2). The findings of the present study are more or less similar to earlier reports (Singh *et al.* 2008 and Singh *et al.* 2012)^[10, 11].

3.3 Sex wise prevalence of GI parasites in buffalo calves

Sex wise prevalence of *Eimeria* spp. (26%) and *Moniezia* spp. (2.75%) was found higher ($p < 0.01$) in females as compared to males. *Paramphistome*, Strongyles, *Trichuris* and *Fasciola*

spp. were also recorded higher in female due to the higher number of female samples (Table 3). These findings are more or less similar which have been reported from both sexes of buffaloes but in calves (Jyoti *et al.* 2012 and Kaur and Kaur, 2008 and Singh *et al.* 2008)^[4, 5, 10].

4. Conclusion

The results of the present investigation indicated that the prevalence of GI parasites in buffaloes is very common. Future investigations are necessary to evaluate the economic impact of GI parasites. Keeping in view the present findings, it can be concluded that there is an urgent need for chemotherapeutic and prophylactic strategies for the helminths control in this region of Haryana.

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