

Prevalence of Gastrointestinal Parasites in Cattle in and around Patna

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INTRODUCTION

Among the livestock health problem, gastrointestinal parasitism is a major constraint for livestock production leading to heavy economic losses to the livestock producers. They have an important impact on the profitability of dairy production systems (Beasley *et al.*, 2010) by affecting the productivity and reproductively of the animals. In the recent years, various epidemiological surveys of GI parasitic infections in domesticated animals have been carried out in different parts of India (Samanta and Santra, 2007 and Jyoti *et al.*, 2011). The problems associated with the parasitism are frequently classified as production disease which occurs due to in reduced feed intake and alteration of GI motility leading to diarrhea (Rupa and Portugaliza, 2016) and in severe cases, it may even cause death. These diseases are mainly caused by internal helminths (roundworms, tapeworms and flukes) and protozoans and helminths parasite is highly prevalent and economically important in many parts of the world (Gracey, 1986).

Farmers whose herds are infected with parasites pay higher costs to raise sick animals and earn less because of lower production. Planned preventative programs are necessary to minimise the risks of parasitic disease outbreaks and sub-clinical (invisible) losses of animal production, and to ensure the most efficient use of control chemicals. Integrated parasite management programs aim to provide optimal parasite control for the minimal use of chemicals by integrating pre-emptive treatments, parasite monitoring schedules and non-chemical strategies such as nutrition, genetics and pasture management.

In this regard, the present study was designed to record the parasitic profile of GIT and give awareness to the farmers about parasitism and its impact on the health and production of cattle in around patna, Bihar. Furthermore, to suggest proper treatment, control and preventive measures to the farmers regarding the GIT parasites.

MATERIALS AND METHODS

A total of 2042 fecal samples consisting of 920 samples were positive. The samples were received from different areas of Patna to the parasitology section of Institute of Animal Health and production (IAHP), Bihar, Patna for gastrointestinal parasite examination during April 2017 to March 2018.

The samples were processed and screened by direct smear method and ova of parasites were identified through their morphological features (Soulsby, 1982). The samples were further examined by both floatation and sedimentation techniques for qualitative analysis. The rate of infection among the animals was derived in terms of percentage of total samples examined.

RESULTS AND DISCUSSION

Total 2142 samples examined, 911 (42.53%) were found for helminths and protozoa. Among these positive samples 345(37.87%) were positive for trematodes, 202(22.17%) for nematodes, 248(27.73%) for Protozoa and 116(12.73%) samples showed mixed infection Table 1 and Fig. 1. The most prevalent helminth parasites and protozoa isolated were amphistomes (36.66%), Strongyle type spp. (14.48%), *Toxocara sp.* (6.26%), *Strongyloides spp.* (0.77%), *Trichuris spp.* (0.66%), *Fasciola spp.* (0.66%), *Schistosoma spp* (0.55%) and *Balantidium coli* (21.41%), *Coccidia* (5.82%) and Mixed Species (12.73%) as shown in Table 2 and Fig. 2.

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ABSTRACT

The present study was conducted to determine the prevalence and burden of gastrointestinal (GI) parasites in cattle. A total of 2142 fecal samples were collected directly from the farmers in Institute of Animal Health and Production, Bihar, Patna. These samples were processed and screened by direct smear method for the detection of parasitic ova. Ova of parasites were identified through their morphological features using the available keys. Total 2142 samples examined, 911 (42.53%) were found for helminths and protozoa. Among these positive samples 345(37.87%) were positive for trematodes, 202(22.17%) for nematodes, 248(27.73%) for Protozoa and 116(12.73%) samples showed mixed infection. The overall prevalence of intestinal parasitic infection were amphistomes (36.66%), Strongyle type spp. (14.48%), *Toxocara sp.* (6.26%), *Strongyloides sp.* (0.77%), *Trichuris spp.* (0.66%), *Fasciola spp.* (0.66%), *Schistosoma spp*(0.55%) and *Balantidium coli* (21.41%), *Coccidia* (5.82%) and Mixed Species (12.73%) and Among the season wise prevalence revealed higher incidence of gastrointestinal parasitic infection in rainy season followed by summer and winter.

KEYWORD

Cattle, Gastrointestinal Parasites, Prevalence, seasons

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Table 1: Overall prevalence of fecal eggs/oocysts in cattle in and around Patna, Bihar.

Sl. No.	Parasite	No. (%) of positive
1	Trematode	345(37.87)
2	Nematode	202 (22.17)
3	Protozoan parasite	248(27.23)
4	Mixed parasite	116(12.73)
Total No. of positive samples (%)		911(42.53)

Table 2: Species wise prevalence of gastrointestinal helminths in cattle in and around Patna, Bihar.

Sl.No.	Species	Total positive	Prevalence (%)
1	Amphistomes	334	36.66
2	<i>Fasciola spp.</i>	6	0.66
3	<i>Schistosoma spp.</i>	5	0.55
4	Strongyles	132	14.48
5	<i>Strongyloides spp.</i>	7	0.77
6	<i>Trichuris spp.</i>	6	0.66
7	<i>Toxocara sp.</i>	57	6.26
8	<i>Balantidium coli</i>	195	21.41
9	Coccidia	53	5.82
10	Mixed infection	116	12.73

Table 3: Season wise prevalence of gastrointestinal parasites in cattle in and around Patna, Bihar.

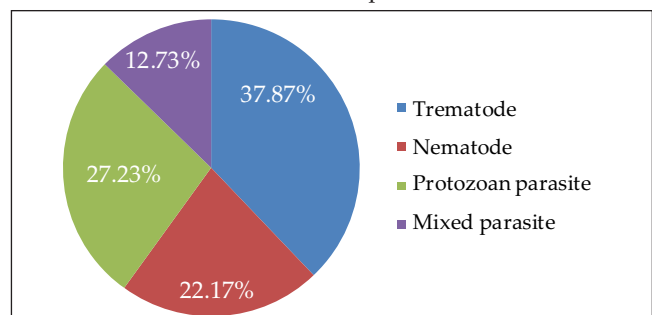
Sl. No.	Season	No. of samples	No. of positive sample	Incidence (%)
1	Winter	652	252	38.65
2	Summer	695	285	41.00
3	Rainy	795	374	47.04

Generally, the infestation with endoparasites is caused mainly by nematodes, trematodes and coccidian. The results of this study showed that cattle infected with a various types of gastrointestinal parasite species with a prevalence of 42.53 per cent out of 2142 samples. This is similar to that of Reddy *et al.* (2012) and Maharana *et al.*, (2016), who has recorded 42.00% positive sample for gastrointestinal parasitic infections in cattle in Andhra Pradesh and Jamnagar (Gujrat) respectively. The prevalence of these parasites in ruminants is usually high especially due to traditional methods of husbandry (Adejinmi and Harrison, 1997) and also might be due to the inefficient methods of control, including no/low attention given to the sub-clinical infections together with prevailing climatic condition suitable for development and survival of larval stages of the parasites (Biffa *et al.*, 2007). The present study showed that, among various infections, the maximum incidence was of trematodes (37.87%) followed by protozoa (27.23%), nematodes (22.17%) and mixed infection (12.73%) which was more or less agreements with Mir *et al.*, (2013) who observed maximum incidence of trematodes (24.83%) followed by nematodes (21.93%) and minimum of cestodes (4.51%). Swai *et al.*, (2006) also observed maximum infections of trematodes (56.6%) followed by nematodes (20%) and oocyst of coccidian (2.2%). On contrary to this, Bilal *et*

al. (2009) recorded the highest prevalence of nematodes followed by mixed infection and cestodes. This might be attributed to different geographical distributions, host factors and climatic conditions. The present results shown in Table 2 and Fig.2 indicated that, amphistomes infection (36.66%) was more prevalent as compared to other helminths. This was similar to the findings of Agrawal *et al.* (2004), Singh *et al.*, (2009), Mir *et al.*, (2013) and Jas and Pandit, (2017) who reported highest prevalence of amphistomes as compared to other helminths. This may occur due to hot and humid weather and availability of intermediate host (water snail) favoured for the presence of the parasite (Nath *et al.*, 2016). As for protozoal infection, overall prevalence of *Balantidium coli* and *Coccidia sp.* was reported 21.41% and 5.82%, respectively and this was in close agreement with Singh, 2014 and Nath *et al.*, (2016) who recorded *Balantidium Coli* as dominant protozoa. The mixed infection in the present findings was (12.73%). Marskole *et al.*, (2016) observed 27.50% mixed infection in cattle where as Yadav *et al.*, (2004) reported 5.46% mixed infection with one or more helminthic ova in bovines. This variation in results might be due to difference in environment, climatic, conditions and management practices followed in the study area. Season wise prevalence Table 3 and Fig.3 revealed higher incidence of gastrointestinal parasitic infection in rainy season followed by summer and winter. This was similar to the findings of Yadav *et al.* (2004), Sardar *et al.* (2006), Chavhan *et al.* (2008), Jyoti *et al.* (2011), Vanisri *et al.*, (2016) and Shit *et al.*, (2017) who noticed highest gastrointestinal parasitic infestations in the rainy season. The high rate of infection in rainy season is quite applicable as the temperature and humidity become optimum for development of pre-parasitic larval stages of the parasites (Gupta, *et al.*, 2012) and also increased concentration and/or contamination of the grazing area by the infective larval stages of the parasites, increasing the chance of contact between host and larvae (Yadav *et al.*, 2004).

CONCLUSION

The present study revealed overall high prevalence of gastrointestinal parasitic infection, especially of amphistomes in cattle in around Patna. Although a number of drugs are commercially available in the market for the treatment against parasitism but most of the farmers are unaware and not treat their animals routinely. Therefore, it is suggested that anthelmintic treatment on quarterly basis, especially before onset of monsoon season may be implemented to reduce the risk of infection and maximize the production.

**Fig. 1** Overall prevalence of fecal eggs /oocysts in cattle in around Patna

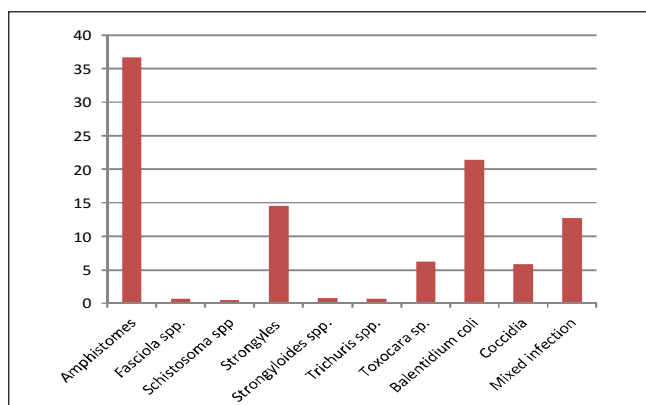


Fig. 2 Species wise prevalence of gastrointestinal helminths in cattle in Around Patna, Bihar.

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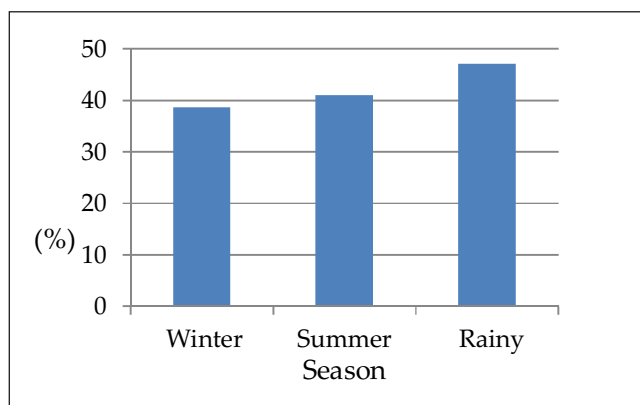


Fig. 3 Season wise prevalence of gastrointestinal parasites in cattle

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