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Prevalence of Gastrointestinal Parasitic Infections in Cattle of Mahakaushal Region of Madhya Pradesh, India

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Abstract

Gastrointestinal (GI) parasitic infection in cattle is a worldwide problem as a cause of reduced productivity and profitability. The present study deals with the prevalence of various GI parasitic infections in cattle in the Mahakaushal region of Madhya Pradesh. A total of 1243 faecal samples collected during a period of one year revealed, 249 (20.03%) were positive for one or more gastrointestinal parasitic infection viz., Amphistomes (13.03%), Strongyle (5.47%), *Moniezia* (1.37%), Coccidia (1.21%), *Fasciola* (0.48%) and *Toxocaravitulorum* (0.16%) infection. Coproculture studies reveled that *Haemonchus* was predominant nematode followed by *Oesophagostomum*, *Trichostrongylus*, *Strongyloides* and *Bunostomum*. Seasonal prevalence revealed significantly higher ($p < 0.01$) prevalencein monsoon season (25.91%) than summer (21.40%) and winter (12.50%). Whereas, age wise prevalence was non-significantly higher in adult compared to young calves.

Key words; - Cattle, Gastrointestinal parasites, Prevalence, Madhya Pradesh

Introduction

Livestock plays an important role in Indian economy and about 20.5 million people depend upon livestock for their livelihood. Among the different types of livestock species, cattle play a significant role in milk and meat production and skin and hide industry. Although India has a vast population of cattle but the productivity is not optimum and several factors like diseases, genetic makeup, poor nutritional, managerial practices, environmental stress, etc., are responsible for the low productivity of our livestock (Wadhwa *et al*., 2011). Among all of these, GI parasitism is one of the major health problems as a consequence of reduced weight gain, digestive disturbance, lowered production, impaired reproductive performance, condemnation of affected organs, mortality particularly in calves and high production cost due to the use of drugs. The present study was undertaken to assessthe prevalence and seasonal distribution of GI parasites of cattle in the Mahakaushal region of Madhya Pradesh.

Materials and methods

A total of 1243 fecal samples were collected from different localities in the Mahakaushal region of Madhya Pradesh during one year period from April 2016 to March 2017. Samples were collected

at monthly interval directly from the rectum and examined by standard concentration techniques employing faecal floatation and sedimentation and examined for the presence of eggs / oocysts of GI parasites (Soulsby, 1982). A representative number of faecal samples were pooled in equal quantities and used for coproculture. Culture larvae were harvested using Bearmann's apparatus and were identified as per the key of Soulsby (1982). Suitable statistical technique was performed on prevalence data by applying χ^2-test as described by Snedecor and Cochran (1994).

Results and Discussion

Out of 1243 faecal sample of cattle examined during the period of one year, 249 (20.03%) sampleswere positive for different GI parasitic infections. More or less, similar observation was reported by Muraleedharan (2005) in Karnataka. Contrary to these findings, high rate of parasitism in cattle was reported earlier by Marskole*et al*. (2016) and Jamra *et al*.(2017) in Madhya Pradesh. The difference in the prevalence rate of GI parasite in this study might be difference in managemental practices adopted in different agro-climatic conditions, seasons and number of animals included in study. The eggs of Amphistomes where found predominant (13.03%) followed by Strongyle (5.47%), *Moniezia* (1.37%), Coccidia (1.21%), *Fasciola* (0.48%) and *Toxocara* (0.16%) (Table1). The maximum prevalence of Amphistomes with lesser percentage of other common infections in the present study is in agreement with Titi *et al*. (2010) and Kuchay *et al*. (2011). Higher prevalence of Amphistomes infection may be ascribed to presence of molluscan intermediate host

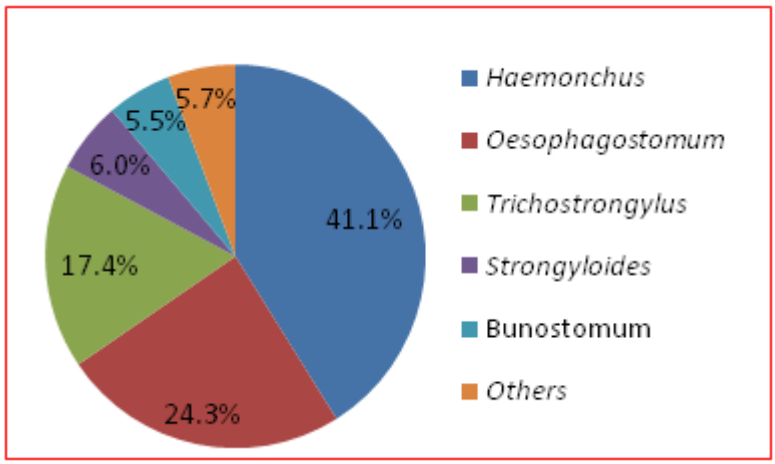
Table 1: Prevalence of gastrointestinal parasitic infections in cattle of Mahakaushal region of Madhya Pradesh

Factors	No. Examined	Positive (%)	Strongyle (%)	*Toxocara* (%)	*Fasciola* (%)	*Amphistome* (%)	*Moniezia* (%)	Coccidia (%)
	Season wise							
Summer	430	92 (21.40)	18 (4.19)	1 (0.23)	2 (0.47)	74 (17.21)	0 (0)	7 (1.63)
Monsoon	413	107 (25.91)	32 (7.75)	0 (0)	3 (0.73)	66 (15.98)	13 (3.15)	6 (1.45)
Winter	400	50 (12.50)	18 (4.50)	1 (0.25)	1 (0.25)	22 (5.50)	4 (1)	2 (0.50)
ρ value	df=2	<0.01	<0.05	NS	NS	<0.01	NS	NS
	Age wise							
Adult	928	193 (20.80)	54 (5.82)	2 (0.22)	4 (0.43)	132 (14.22)	10 (1.08)	5 (0.54)
Calf	315	56 (17.78)	14 (4.44)	0 (0)	2 (0.63)	30 (9.52)	7 (2.22)	10 (3.17)
ρ value	df=1	NS	NS	NS	NS	<0.05	NS	<0.01
	Overall							
Over all	1243	249 (20.03)	68 (5.47)	2 (0.16)	6 (0.48)	162 (13.03)	17 (1.37)	15 (1.21)

Figures in parentheses indicate per cent.

in the surroundings, use of contaminated water for drinking purpose and grazing of the animals in and around infected water bodies in this area. Coproculture studies of the pool faecal samples revealed that *Haemonchus* sp. (41.1%) as the predominant nematode larvae followed by *Oesophagostomum* sp. (24.3%), *Trichostrongylus* sp. (17.4%), *Strongyloides* sp. (6.0%), *Bunostomum sp.* (5.5%) and other 5.7 per cent (Figure 1). Predominance of *Haemonchus* sp. parasites in coproculture examination has also been reported by Yadav *et al*. (2008).

Figure 1: Mean generic composition of nematode larvae in Cattle



The seasonal prevalence of GI parasitic infection revealed significantly ($p< 0.01$) higher in monsoon season (25.91%), followed by summer (21.40%) and lower in winter (12.50%) (Table 1). These findings are in agreement with Shirale *et al*. (2008) who recorded higher incidence of parasitic infection during monsoon season. Higher incidence of GI parasitic infection during monsoon season may be due to environmental factors like temperature, humidity and rainfall which are favourable for the survival of the developmental stages of these GI parasites. In this study, the prevalence of Amphistomes infection in summer season significantly ($p < 0.01$) higher (17.21%) followed by monsoon (15.98%) and winter (5.50%). Similar observation has also been recorded by Mir *et al*. (2013). The geographical and climatic conditions like temperature, rainfall, humidity, etc. and availability of intermediate host in water bodies in this area may play importantrole in such type of incidences. The prevalence of strongyle infection in monsoon season significantly ($p < 0.05$) high (7.75%) followed by winter (4.50%) and summer (4.19%). This study is in agreement with Muraleedharan (2005) and the reason might be favourable conditions for development of larvae. Age wise prevalence was non-significantly ($p>0.05$) higher in adult cattle (20.80%) as compared to the calves (17.78%). This study is in agreement with Marskole *et al*. (2016). Prevalence of Amphistomes was significantly ($p<0.05$) higher in adult cow as compared to calves, whereas coccidia was significantly ($p<0.01$) high in young calves than adults. Vanisri *et al*. (2016) reported that the adult cattle were highly infected with Amphistomes than the young animals. The variations in prevalence on age basis can be attributed to group composition along with the use of management practices and immune status of animals.

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Conflict of Interest: All authors declare no conflict of interest.

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