

Prevalence of Gastrointestinal Parasites in Cattle Calves in and around Rewa, Madhya Pradesh

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ABSTRACT

The present study was conducted to know the prevalence of gastrointestinal parasite infection in cattle calves in and around Rewa, Madhya Pradesh. The study revealed that overall prevalence of gastrointestinal parasite infection was 29.04% (97/334). The highest prevalence was of coccidia infection (11.98%) and least of *Toxocara vitulorum* (0.30%) and *Fasciola gigantica* (0.30%). In post-monsoon season, the prevalence (46.43%) of parasite infection was significantly higher ($p \leq 0.01$) than summer and monsoon season. The calves of 3 to 6 months were more affected (32.32%) as compared to 0 to 3 months calves (24.26%). The prevalence was more in female calves (30.67%) as compared to male calves (25%). Mono-infection was more prevalent (57.97%) than mixed infection.

Key words: Cattle calves, Coccidia, Gastrointestinal Parasites, Nematodes, Prevalence.

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INTRODUCTION

As per 20th livestock census, the total livestock population in India is 536.76 million, out of which cattle population is 193.46 million (Livestock census, 2019). In developing countries like India, the dairy animals play an important role in the economy of farmers as they form the major source of subsidiary income for their families. Gastrointestinal parasite (GI) infections are a major constraint to cattle production worldwide and are more problematic in developing countries, especially due to poor nutrition and poor sanitation (Chowdhury *et al.*, 2017). GI parasites inhabit the digestive tract of cattle, which leads to considerable economic loss as a consequence of inappetence, anaemia, diarrhoea, poor growth, reduced weight gain, impaired reproductive performance and mortality in infected animals (Marskole *et al.*, 2016). Gastrointestinal nematodes and *Eimeria* species are the most important agents causing disease in calves (Bruhn *et al.*, 2012). As a very few studies of GI parasites of cattle calves have been done in the area, the present study was conducted to know the prevalence of gastrointestinal parasite infection and its associated predisposing factors causing infection in cattle calves to understand the impact on animal health and productivity.

MATERIAL AND METHODS

A total of 334 calves of either sex were randomly selected for the prevalence study of gastrointestinal parasitic infection in and around Rewa. These calves were divided into 0 to 3 months and 3 to 6 months of age groups. The study period was divided into three seasons: summer (March-June),

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monsoon (July-September) and post-monsoon (October-November). Faecal samples were collected from different areas of Rewa in polyethene zip covers with labeling and were brought for examination (Zajac and Conboy, 2012). The faecal samples were examined using both flotation and sedimentation methods. For flotation technique, saturated salt solution was used for detection of eggs. The signalment of animals were recorded for the study before collection of samples like age, sex and deworming history. The association of different risk factors (*i.e.*, season, age and sex) with the prevalence of parasites was tested employing Chi-square test of independence of attributes. Risk factor correlations with $p < 0.05$ were considered significant and $p < 0.01$ were considered highly significant (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

The prevalence of gastrointestinal parasites in cattle calves with various risk factors in and around Rewa are presented in Table 1.

The overall prevalence of GI parasites in cattle calves was 29.04% (97/334). Area wise, the highest prevalence (40.80%) of gastrointestinal parasites was observed in Bansi village in Rewa. Such a high prevalence of GI parasites in some areas could be due to poor socioeconomic conditions and lack of awareness of the farmers regarding deworming. The parasite wise prevalence in cattle calves revealed that coccidia were the most prevalent parasites (11.98%) followed by strongyles (11.38%), amphistomes (4.79%), *Strongyloides* spp. (2.99%), *Trichuris* spp. (1.50%), *Balantidium coli* (0.60%), *Buxtonella sulcata* (0.60%), *Fasciola gigantica* (0.30%) and *Toxocara vitulorum* (0.30%). In Mahakaushal region, Gupta *et al.* (2012) reported that strongyle infection (43%) and coccidia (24.25%) were more prevalent in cattle followed by amphistomes (17.59%), *Trichuris* spp. (5.96%), *Fasciola gigantica* (0.99%), *Toxocara vitulorum* (0.43%), *Strongyloides* spp. (0.28%) and *Moniezia benedeni* (0.28%). The reason for the high prevalence of protozoa might be due to overcrowding of calves in the stalls, keeping calves and adult animals together, and lack of good farm management and sanitation.

Age wise prevalence of GI parasites was slightly higher in cattle calves aged 3 to 6 months (32.32%) as compared to 0 to 3 months calves (24.26%). Although the prevalence of coccidia was highest in calves in the present study, the occurrence of *Eimeria* infection was relatively low in calves aged 0-3 months may be due to the presence of maternal antibodies. Moreover, calves of this age group are generally not allowed for grazing, and are maintained under stall-feeding conditions. This may explain the lower occurrence of parasites in calves aged 0-3 months compared to those in the 3-6 months age group. Our results were similar to those reported by Hailu *et al.* (2022), who also observed a higher

prevalence of gastrointestinal parasites in calves aged 4-6 months (28.3%) compared to those aged 0-3 months (16.9%).

In sex wise prevalence, female calves (30.67%) showed non-significantly higher prevalence as compared to male calves (25.00%). Singh (2021) also reported significantly higher ($p \leq 0.05$) GI nematode infection in female cattle (67.39%) compared to male cattle (58.33%). In contrast, Bilal *et al.* (2009) reported a higher prevalence of gastrointestinal parasites in male calves and attributed this to the relatively greater neglect of male calves by farmers. In the present study, prevalence of mono-infection was higher (88.65%) than the prevalence of mixed infection (11.35%). These findings were in agreement with those of Gebrelibanos (2016), who also reported a higher proportion of mono-infection (57.97%) compared to mixed infection (42.02%).

The season wise prevalence of GI parasites was significantly higher ($p \leq 0.01$) during the post-monsoon season (46.43%) compared to summer season (25.71%) and monsoon season (25.43%). Choudhury *et al.* (2018) reported the highest prevalence of GI nematode infection in cattle in monsoon season (52.41%) and the lowest in winter season (28.46%). Jas and Pandit (2017) reported that the GI nematode infection was significantly higher in monsoon season compared to others seasons in cattle of New Alluvial zone of West Bengal. Breed wise, prevalence of GI parasites was higher in crossbred cattle calves (50%) compared to non-descript cattle calves (28.26%). This could be due to over representation of non-descript calves in the study.

The study in general revealed that gastrointestinal parasitic infections are common in cattle calves in and around Rewa, Madhya Pradesh, with an overall prevalence of 29.04%. Coccidia and strongyle infections were the most prevalent parasites. Seasonal variation played an important role, with significantly higher infection rates observed during the post-monsoon season. These findings indicate the need for regular monitoring, improved management practices and targeted deworming programmes to reduce

Table 1: Prevalence of gastrointestinal parasites based on risk factors

Factor	Level	No. examined	No. found affected	Prevalence (%)	X ² value
Age	0-3 months	136	33	24.26	0.11
	3-6 months	198	64	32.32	
Sex	Female	238	73	30.67	0.30
	Male	96	24	25.00	
Mono/ Mixed	Mono	97	86	88.65	-
	Mixed		11	11.35	
Season	Summer	105	27	25.71	0.007**
	Monsoon	173	44	25.43	
	Post-monsoon	56	26	46.43	
Breed	Crossbreds	12	06	50.00	0.10
	Non-descript	322	91	28.26	
Overall		334	97	29.04	--

**Highly significant ($p < 0.01$)



the burden of gastrointestinal parasites and improve health and productivity in cattle calves.

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