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Gastro-intestinal parasites in calves: Comparing diarrheic and healthy calves

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Abstract
Gastrointestinal parasitism poses a significant challenge in the livestock sector, especially among vulnerable calves. This study investigates the age, gender, season wise prevalence gastrointestinal parasites in calves. A comprehensive analysis of 372 fecal samples revealed an overall prevalence of 36.6%, with higher rates in younger, male animals during the rainy season. Notably, diarrheic calves exhibited a higher prevalence than healthy ones across age groups. Male calves also showed a slightly elevated prevalence.

Keywords: Calves, parasitism, gastrointestinal parasites, season, age wise

Introduction
Gastro-intestinal parasitism is a major problem in the livestock sector, especially in calves. These young bovines are vulnerable to a variety of parasite ailments, which can have a negative impact on their health, growth, and overall productivity. The gastrointestinal parasites leads to economic loss to the farmers and country by decreased weight gain, interrupted digestion, decreased production, compromised reproductive capacity, the need to replace afflicted organs, and increasing mortality rates (Raza, *et al*., 2007) [11]. *Strongyles* sp., *Amphistomes* sp., *Fasciola* sp., and *Monezia* sp. are common parasites associated with this disease. The clinical manifestations of intestinal parasitism in calves may vary depending on the parasite implicated and the severity of the infestation. Diarrhea, weight loss, dehydration, poor growth, anemia, a dull coat, and a debilitated state are all common signs. The study used fecal and hematological exams to determine the severity of parasite infestation in cattle. It aimed to compare the prevalence of gastrointestinal parasitism in diarrheal calves and adult cows to that in healthy animals.

Materials and Methods
The study collected a total of 372 fecal samples from both diarrheic (94 samples) and non-diarrheic (278 samples) calves from diverse parts of Hassan district, Karnataka. Fresh fecal samples were collected from animals in dry and clean polythene bags and transported to the laboratory after being properly labeled. The samples were analyzed using direct smear examination and the sedimentation technique to detect helminth eggs and coccidian oocysts, as per Soulsby's technique (1982) [14].

Results and Discussion
A total of 372 fecal samples were analyzed in the present study, with 136 animals testing positive for one or the other gastrointestinal parasites, resulting in an overall occurrence of 36.6 percent. These prevalence rates are in agreement with the findings of earlier research. Jagannath *et al*. (1989) [3] reported a lower prevalence of gastrointestinal parasites in cattle at 30.01 percent, while Muraleedharan (2005) [7] documented an even lower rate of 18.22 percent in cattle.

Contrary to the present work, Murthy and D'Souza (2016) documented a comprehensive prevalence of gastrointestinal parasites at approximately 75.2% in cattle in Karnataka. Similarly, Samanta Arindam and Santra Prabir Kumar (2007) [13] reported a prevalence of 76.17% in cattle in West Bengal. This variation in parasite load can be attributed to a combination of environmental, climatic, host-related, and management factors.

Additionally, in the present study, a large number of samples were collected from non-diarrheic animals.

Out of the 278 non-diarrheic animals tested, 95 were identified as positive for gastrointestinal parasites, indicating aoccurrence of 34.2 percent. Among the 94 diarrheic animals that were examined, 41 tested positive for gastrointestinal parasites, indicating a higher occurrence of 43.6 percent in this category (Table 1). The results revealed that the prevalence of gastrointestinal parasites was higher in calves with diarrhea compared to healthy animals across all age groups. This could be due to compromised immune system, increased stress, and altered gastrointestinal conditions in diarrheic animals.

Table 1: Comparison of Gastrointestinal Parasite Occurrence in Calves: Diarrheal vs. Healthy animals

Animal type	Number of Animals	Tested Positive	Percentage Positive
Non diarrheic animals	278	95	34.2
Diarrheic animals	94	41	43.6
Total samples	372	136	36.6

In terms of gender, male calves exhibited a slightly higher prevalence of gastrointestinal parasites, with 50% of examined male calves showing positive results, compared to 41.67% in female calves (Table 2). These results align with the findings of several other studies, including those by Tigist *et al*. (2012) [15], Fikru *et al*. (2006) [2], Priyanka *et al* (2016) [10] and Nayana *et al*. (2018) [8]. Notably, the highest prevalence was observed in calves aged 1-6 months, with a rate of 52.78% in diarrheic calves and 38.89% in non-diarrheic calves. Pfukenyi *et al*. (2007) [9], Regassa *et al*. (2006) [12], and Nayana *et al*. (2018) [8] also observed a higher prevalence of gastrointestinal parasites in younger age group animals. It is challenging to precisely explain the reasons for the variations in the prevalence of gastrointestinal parasites in cattle concerning both age and gender.

Table 2: Comparison of Gastrointestinal Parasites in Diarrheal vs. Healthy Animals by Age and Gender wiseoccurrence

	Animals with Diarrhea		Apparently Healthy Animals	
	Number examined	Number positive	Number examined	Number positive
AGE Wise Occurrence				
1-6 Months	36	19 (52.78)	108	42 (38.89 %)
7-12 Months	27	11 (40.74)	74	27 (36.48)
1-5 Years	31	11 (35.48)	96	26 (27.08)
Gender Wise Occurrence				
Male	24	12 (50)	48	20 (41.67)
Female	70	25 (35.71)	230	75 (32.61)

The study also investigated the seasonal variation in the incidence of gastrointestinal parasites. Results indicated that the highest prevalence was observed during the rainy season (June to August), with 56 positive cases out of 88 examined samples. Furthermore, a higher incidence of parasites was recorded during the winter and autumn seasons compared to the summer season. Higher prevalence of gastrointestinal parasites during the rainy season has been observed by Maharana *et al*. (2016) [6], Chattopadhyay and Bandyopadhyay (2013) [1], and Laha *et al*. (2013) [5]. This may be attributed to the elevated levels of moisture and temperature during the rainy season, creating favorable conditions for the growth and development of gastrointestinal parasites.

Conclusion

In the current study revealed a higher prevalence of gastrointestinal parasites in diarrheic animals compared to healthy calves. The prevalence was more pronounced in young, male animals, particularly during the rainy season.

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