

Incidence of gastro-intestinal parasites in Murrah buffalo (*Bubalus bubalis*) calves under organized farming system in East coast plain region of Andhra Pradesh

K. Tanmaie¹, A. Teja^{2*}, M. R. Kumar², K. A. Rao², T. V. Singh³, C. S. A. Reddy¹ and K. Sivani¹

¹Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry- 605 009, India; ²Buffalo Research Station, Venkataramannagudem- 534 101, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India; ³Department of Livestock Production Management, NTR College of Veterinary Science, Gannavaram- 521 101, Sri Venkateswara Veterinary University, Andhra Pradesh, India

Abstract

Present study was carried out to determine the prevalence of gastrointestinal parasitic infection in Murrah buffalo calves reared in the Buffalo Research Station (BRS), Venkataramannagudem of Andhra Pradesh, India. Rectal faecal samples were collected and brought to the laboratory maintaining cold chain. Sampling was done from different age groups and from both sexes. Coproscopy was done by direct smear method and conventional salt floatation technique. The overall prevalence of *Eimeria* spp. was 70.83%, followed by *Strongyle* spp. (41.66%), *Toxocara vitulorum* (12.5%), and *Strongyloides* spp. (4.16%). Murrah buffalo calves had a higher prevalence of gastrointestinal parasites. It is concluded that among all the gastrointestinal parasites, the protozoan *Eimeria* spp. infection is higher in Murrah buffalo calves.

Keywords: *Eimeria*, Murrah buffalo calves, *Strongyle*, *Strongyloides*, *Toxocara*

Highlights

- Prevalence of gastro-intestinal parasites is high in Murrah buffalo calves.
- Predominant parasites were *Eimeria*, *Strongyle* spp., *Toxocara vitulorum* and *Strongyloides papillosus*.
- Effective managerial practices like pasture management, proper deworming schedule and proper nutritional intervention can reduce gastrointestinal parasitism in bubaline species.

INTRODUCTION

Parasitic infestations are responsible for the major economic loss in buffalo productivity and profitability (Sanyal, 1998). Among buffaloes of different age groups, the young calves are more susceptible to gastrointestinal (GI) parasitic infestation. The most common parasites include worms like *Fasciola gigantica*, *Paramphistomum cervi*, *Schistosoma nasale*, *S. indicum*, *S. spindale*, *Toxocara vitulorum*, *Strongyle* group of worms. Apart from worms, protozoan parasites like *Eimeria*, *Buxtonella* spp., etc. (Soulsby, 1982). In order to take proper preventive measures, the prevalence of parasitic infection has to be worked out. An earlier report focused on parasitic prevalence among multiple species of ruminants in this region (Shameem *et al.*, 2021). Species specific studies in buffaloes were also reported from larger geographical areas involving many individual farmers (Jyoti *et al.*, 2014; Sreedevi and Hafeez, 2014). In order to understand the prevalence of an organized buffalo farm, the present investigation was carried out at Buffalo Research Station (BRS), Venkataramannagudem, West Godavari district of

Andhra Pradesh. This buffalo farm has a total strength of 170 buffaloes of different categories including 70 breedable buffaloes with 60 calves born every year. This work was undertaken in order to assess the efficacy of periodical deworming practices and to make necessary changes in the type of drug and/or periodicity of deworming practice.

MATERIALS AND METHODS

Study location and experimental animals: The current study was carried out at BRS, Venkataramannagudem of Sri Venkateswara Veterinary University (SVVU), located at an altitude of 44.7 meters above sea level at 16.8831°N latitude and 81.4513°E longitudes. The institute was located at the upland area where the water source mainly depends on rainfall and bore well, where temperature rises to 37°C in summer and comes closer to 19°C during the winter season. Murrah breed is considered to be one of the superior breeds of Indian milk buffaloes with an average lactation yield and lactation length of 1752 kg and 310 days, respectively. Twenty-four (24) apparently healthy Murrah buffalo

*Corresponding Author, E-mail: dralluteja@gmail.com

calves of age 1 to 180 days were selected for the present study and maintained at Buffalo Research Station of SVVU, Venkataramannagudem under loose housing system in lactating animal shed. The Murrah buffalo calves were categorized into three different groups of eight animals each, viz. group I (up to 30 days), group II (31-90 days) and group III (91-180 days).

Sample collection: The samples were collected from the rectum in the early hours of the morning in sterile plastic containers of age groups 1 to 180 days for qualitative fecal examination. The samples were brought to the laboratory of the Buffalo Research Station of SVVU, Venkataramannagudem maintaining cold chain.

Floatation technique: The fecal sample was prepared in normal saline for the examination of protozoal cysts and ova of various parasites and examined under 100X and 400X magnification. The samples were processed by conventional salt floatation technique (Soulsby, 1982).

Sedimentation technique: In a mortar and pestle, 1-2 g fecal samples were triturated with normal saline. The suspension was then filtered through a sieve and centrifuged for 2 minutes at 626 g. The supernatant was removed, the sediment was reconstituted, and a drop was placed on a clean glass slide for microscopic examination. The helminth eggs and oocysts were identified based on morphological features.

RESULTS

During the present study, it was observed that, overall, 70.73% samples were positive for *Eimeria* spp., 41.66% samples had *Strongyle* spp., 12.5% samples were positive for the eggs of *T. vitulorum* and 4.16% samples had *Strongyloides* spp. *T. vitulorum* was noticed only in calves below 4 weeks of age (37.5%). Group I had the highest prevalence of *Strongyle* spp. (75%) and presence of *Eimeria* spp. oocyst was the highest in groups II and III (100%). *Strongyloides* spp. was only found in buffalo calves from group I (12.5%). The percentage incidence of group I was 75% for *Strongyle* spp., 37.5% for *Toxocara vitulorum*, and 22.5% for *Strongyloides* spp. Group II had a 100% incidence for *Eimeria* spp. and a 12.5% incidence for *Strongyle* spp. A 100% incidence

of *Eimeria* spp. and a 37.5% incidence of *Strongyle* spp. were found in group III.

DISCUSSION

Parasitic infections have been linked to decreased fertility, reduced work capacity, decreased food intake, weight and milk production, and a higher mortality rate (Rafiullah *et al.*, 2011; Pfukenyi and Mukaratirwa, 2013; Raza *et al.*, 2014; Owhoeli *et al.*, 2014). The selected farm for this study is under constant prophylactic measures. In spite of these measures, prevalence of parasites in all the calves can be attributed to the warm and wet environment in this agroclimatic zone, which is favourable for outhouse development of the parasites in the environment (Muraleedharan, 2005). Further, habit of calves like floor licking may be another factor for repeated infection (Jyoti *et al.*, 2014). High prevalence of GI parasites in buffalo calves has been reported earlier in India (Gupta *et al.*, 1985; Pradhan *et al.*, 1991; Singh *et al.*, 1993; Singh *et al.*, 2008). The high prevalence of GI parasites in the study area may be attributed towards congenial environment (Bukhari and Sanyal, 2011).

Therefore, we conclude that parasitic infection is common in Murrah buffalo. However, our study is a very preliminary note. In future, speciation of *Eimeria* spp. and quantitative evaluation of parasitic ova or oocyst will add more information to the existing knowledge pool.

Conflict of interest: Authors have no conflict of interest in this study.

Author's contribution: KT, AT: Conceptualization and design; KT, AT, MRK, KAR: Data compilation; KT, AT, TVS: Performed statistical analysis of data; KT, AT, CSAR, KS: Performed interpretation of the results.

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