

Coccidiosis in Murrah Buffalo Calves from Meghalaya's Subtropical Hilly Region

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ABSTRACT

The present study reports the prevalence of coccidiosis in Murrah buffalo calves (8 nos.) of 11-22 days of age in hilly region of Meghalaya. Clinical signs observed were diarrhea, anorexia, weakness and loss of weight. Fecal sample examination by flotation and modified McMaster techniques revealed the presence of four species of *Eimeria*, viz., *E. bareillyi* (29.42%), *E. zuernii* (22.76%), *E. bovis* (36.53%) and *E. ellipsoidalis* (11.29%). High intensity of infection oocyst per gram (OPG) of feces was observed in infected calves. The OPG ranged from 20200 to 121000. Mortality was observed in one calf when OPG exceeded 121000 which may be due to severe diarrhea, anorexia and weakness. The calves were successfully treated with Amprolium @ 10 mg per kg body weight orally for 7 days, Ceftriaxone @ 0.5 gm I/M for 5 days, Melonex @ 1.5 mL I/M for 5 days, Tribivet @ 1.5 mL I/M along with vimeral @ 10 mL orally for 3 days and fluid therapy @ 500 mL intravenously daily for 3 days. After 7 days of treatment most of the calves recovered gradually and started normal feeding.

Key words: Buffalo, Calves, Coccidiosis, Hilly region, Meghalaya

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INTRODUCTION

One of the most pathogenic intestinal diseases is coccidiosis caused by many *Eimeria* species that are members of the Phylum-Apicomplexa (Lopez-Osorio *et al.*, 2020). Coccidiosis is typically observed in India in the late summer and the winter, but it can happen at any time of the year. Mature animals frequently act as sources of infection for more vulnerable juvenile animals since they are typically asymptomatic carriers (Bangoura *et al.*, 2012; Abebe *et al.*, 2008). In calves, anorexia, weight loss, diarrhoea, emaciation, and occasionally death are symptoms of the infection that cause abrupt invasion and destruction of the intestinal mucosa (Coetzer and Tustin, 2004). According to Nalbantoglu *et al.* (2008), they cause significant financial losses to the cattle industry through the mortality and morbidity of young calves.

Overcrowding and a lack of sanitation raise the possibility of a high infection rate. *Eimeria* spp. in buffaloes has been reported as common, in various states of India such as Uttar Pradesh (Singh and Agrawal, 2003), Punjab (Jyoti *et al.*, 2012), Haryana (Nain *et al.*, 2017), Rajasthan (Sodha *et al.*, 2021), Assam (Das *et al.*, 2021) but from the hilly region of Meghalaya, no report on prevalence of coccidiosis in buffaloes was available. Therefore in this study, the prevalence of *Eimeria* spp. in Murrah buffalo calves from Meghalaya's hilly region is reported.

MATERIALS AND METHODS

Eight Murrah buffalo calves of 11-22 days of age from Dairy Farm, ICAR Research Complex NEH Region, Umiam, Meghalaya displayed signs of malnutrition, diarrhoea, and

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dung smearing on the perineum and tail. Clinical examination of the calves indicated dehydration, rough skin, sunken eyeballs, elevated pulse rate (103-104°F), normal respiratory rate (28-30/min), high temperature (103-104°F) and increased pulse rate (100-105/min).

Samples of faeces were taken right from the rectum of the infected calves and preserved in clearly labelled plastic vials. Using the direct flotation technique and a saturated salt and sucrose solution, three grams of faecal samples were screened (Pyziel and Demiaszkiewicz, 2013). The modified McMaster technique was used to quantify positive samples and determine the oocysts per gram (OPG) of faeces (MAFF, 1986). Samples that were not examined on the same day were preserved in 2.5% potassium dichromate solution and kept refrigerated (4°C) for examination the following day. Sporulation of the oocyst was accomplished by combining

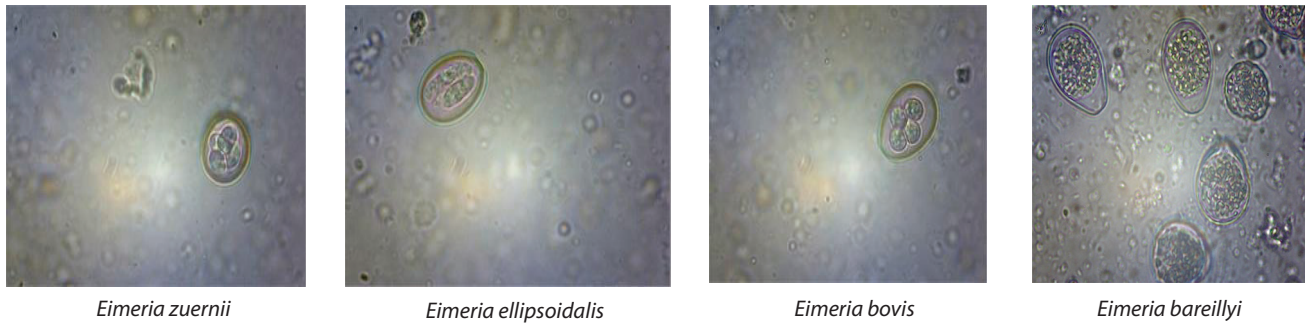


Fig.1: Microphotographs of oocysts of *Eimeria* spp. in buffalo calves (40x)

a positive faecal sample containing an oocyst of *Eimeria* spp. with a 2.5% potassium dichromate solution (Duszynski and Wilber, 1997) and 4-7 days incubation at room temperature, with daily checks. The morphological characterization and measurement of oocysts were performed in accordance with the guidelines of Duszynski and Wilber (1997) and Soulsby (1982) by using an Olympus BX51 light microscope at magnifications of 200x and 400x.

TREATMENT AND DISCUSSION

Four *Eimeria* species, viz., *E. bovis* (36.53%), *E. bareillyi* (29.42%), *E. zuernii* (22.76%), and *E. ellipsoidalis* (11.29%) were identified from buffalo calves (Fig. 1). Infection intensity was found to be quite high, oocyst per gram (OPG) of feces ranged from 20200-121000. Mortality was observed when OPG exceeded 121000. Most of the calves (6 nos.) were treated successfully with Amprolium @ 10 mg per kg b. wt. orally for 7 days, Ceftriaxone @ 0.5 gm I/M for 5 days and Melonex @ 1.5 mL I/M for 5 days. Damage to the intestinal mucosa reduces the calf's ability to absorb fluids and nutrients from the intestine, resulting in dehydration in infected calves. To prevent dehydration and electrolyte imbalance, intravenous fluid therapy @ 500 mL was administered once daily, for three days. Tribivet @ 1.5 mL I/M along with vimeral @ 10 mL orally were given for 3 days. After 7 days of medication most of the calves gradually recovered and resumed normal feeding. In the present study, calves of 11-22 days of age were infected with *Eimeria* spp. which might be due to spread of infection from adult animals. This could be due to a lack of coccidiostat or coccidicidal medication in infected adult animals. Previously, Ramakrishnan *et al.* (2020) from Chennai and Port Blair reported *E. braziliensis*, *Eimeria canadensis*, *E. bareillyi*, *E. zuernii*, *E. wyomingensis*, *E. bukidonensis* and *E. ellipsoidalis* in buffaloes. *E. bareillyi* is pathogenic in buffaloes (Dubey, 2018). Dubey *et al.* (2008) confirmed clinical coccidiosis in 22 day old buffalo calf. Yatoo *et al.* (2013) and Das *et al.* (2015) revealed a higher prevalence in younger animals and opined that immature immunity could be a critical factor in determining symptomatic and asymptomatic infections in young animals. According to Navkar *et al.* (2022), amprolium

and sulphadimidine were more effective than toltrazuril in reducing coccidial burden in buffalo calves which corroborate to the present investigation. Similarly, Yatoo *et al.* (2013) reported that fluid, electrolyte, and multivitamin preparations, as well as sulphadiazine and trimethoprim are effective in 20 day old buffalo calf.

Since, coccidiosis induces severe diarrhoea, dysentery, fluid loss, distress, decreased appetite, frailty and recumbency (Ahmed and Soad, 2007); it causes significant economic losses as a result of decreased feed efficiency, slower weight gain, and increased susceptibility to other diseases (Thomas, 1994). Improving calves' immunity through proper colostrum feeding and preventing infection from contaminated feed or fodder are crucial aspects in controlling coccidiosis in early life because healthy calf rearing is critical for economic growth as well as the restoration of high-quality germplasm (Tiwari *et al.*, 2009) and the excellence of buffalo dairy farming is heavily reliant on calf mortality control.

The current study describes the aetiology and therapeutic management of coccidiosis in Murrah buffalo calves of hilly region of Umiam, Meghalaya.

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