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# Screening for Gastrointestinal parasites in Murrah calves of Buffalo Research Station of West Godavari Region of Andhra Pradesh

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**Abstract**

The present study was aimed to screen the presence of gastrointestinal endoparasites in Murrah buffaloes calves reared in the Buffalo Research Station (BRS), Venkatarammannagudem of Andhra Pradesh, India. A total of 44 dung samples were collected during the month of January 2021, from calves of different age groups ranging from 15 days to one year. Microscopic screening of the dung samples revealed presence of Buxtonella sulcata cysts and trophozoite forms in higher number and few helminthic infections of Toxocara vitulorum and Strongyle eggs. An overall incidence of the gastrointestinal parasites was found to be 43.18%, among which the incidence of Buxtonella sulcata was higher (36.36%) when compared to other endoparasites (6.81%). From the above study, it could be summarised that Buxtonella sulcata is a common inhabitant of gastrointestinal tract of buffaloes and responsible for diarrhoea in association with other helminths or mixed infections.

**Keywords:** Bubalus bubalis; Endoparasites; Buxtonella sulcata; Andhra Pradesh.

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## Introduction

Andhra Pradesh has a wide coastal region and is the best potential source for the extensive maintenance of buffaloes. Andhra Pradesh holds nearly 10.6 million buffaloes and positioned 4th in India for buffalo milk production constituting nearly 7.4 million metric tonnes (Sivaji et al., 2018). Presently the Buffalo research station, recorded a total milk production of 99,221.5 kg from the milch animals during the year 2020-21. Murrah buffaloes are good high milch yielding animals with nearly 1360 to 2270 kg per lactation (Suresh, 2013). Parasites of helminthic origin cause hazardous economic losses to the farmers so proper safe guarding of the health of the buffaloes from the various factors especially the gastrointestinal parasites should be done regularly (Saha et al., 2013). Gastrointestinal parasites mainly include Buxtonella sulcata Fasciola gigantica, Strongyloides Paramphistomum cervi, Schistosoma nasale, S. indicum, S. spindale, Toxocara vitulorum, papillosus, Strongyle group of worms, Eimeria sp. etc. and play a vital role in the of degradation the health of the domestic animals finally leading to severe economic losses (Grisi et al., 2014). Buxtonella sulcata a general inhabitant of gastrointestinal tract of cattle appears morphologically similar to Balantidium coli present in pigs. The severity of the endoparasitic infection in

the calves leads to gastrointestinal disturbances like white scours, indigestion, malabsorption of minerals and vitamins in the gastrointestinal tract, reduced appetite, and discolouration in the haircoat. (Hamid et al., 2016). The presence of endoparasites in a farm may become a predisposing factor for the spread of infection among the healthy animals. Individual animal's health performance is very important in assessing the farm status. The present study was aimed for a routine screening of the dung samples to detect for the presence of any gastrointestinal infections in buffalo calves.

## Materials and Methods

*Study Area*: Buffalo research station is located in Venkataramannagudem of Tadepalligudem mandal *, West Godavari District, Andhra Pradesh, India. The geographical coordinates of Venkataramannagudem are 17.4? 48′ 52.2864 ? N and 78.48? 31′35.6048 ? E.

Collection and microscopic examination of dung samples.

A total of forty four samples (n=44) were collected for the present study as given in table 1.

**Table 1:** Collection of Dung samples.

| Category | Calves (Below) (3 months) | Calves ( 3 to) (6 months) | Calves (6 months) (to 1 year ) | Total no. of samples |
|---|---|---|---|---|
| Number of calves | 13 | 9 | 22 | 44 |

The dung samples were collected from the rectum in the early hours of dawn in sterile plastic containers and stored at a refrigeration temperature of 4?C until the samples were processed for microscopic examination using binocular microscope. Both direct smear and sedimentation methods (Soulsby, 1982) were followed for the identification of parasites eggs, cysts and trophozoite forms.

Direct smear examination was performed by placing a little amount of dung sample on a clean glass slide and equal quantity of water was added and mixed thoroughly with wooden stick and a thin smear was prepared and observed under 10X and 40X objective for better clarity under microscope. Sedimentation method required nearly 1-2 gm of fresh dung sample emulsified in 10 ml of water and later strained and centrifuged at 2000 rpm for 3-5 minutes.

A drop of sediment was placed at centre of slide and cover slip was placed with care avoiding air bubbles and observed under low power and high power objectives. The microscopic measurements were made for the parasitic eggs, protozoan cysts and trophozoites using the ocular micrometer.

## Results and Discussion

On thorough examination of the dung samples employing both direct smear and sedimentation techniques, the total endoparasitic infections in the Murrah calf buffaloes noted the highest presence of Buxtonella sulcata ( 36.36 %) (fig. 1), followed by Strongyle eggs (4.54 %) (fig. 2) and Toxocara vitulorum eggs (2.27 %) (fig. 3). The results of the detected endoparasites were given based on animals grouped as age wise in Table 2.

**Table 2:** Age wise incidence of endoparasites in Murrah calves.

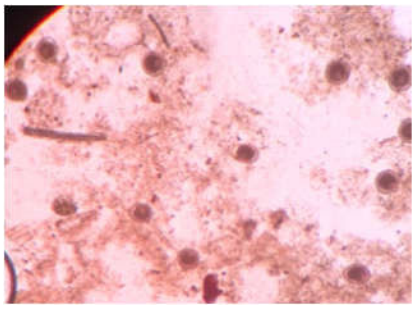
| Age | No. of samples screened | Parasites recorded | No. of positive samples | Incidence percentage |
|---|---|---|---|---|
| Calves (Below 3 months) | 13 | Buxtonella sulcata cysts & Trophozoites | 6 | 46.15 % |
| | | Strongyle eggs | 1 | 7.69 % |
| | | Toxocara vitulorum eggs | 1 | 7.69 % |
| Calves (3 -6 months) | 9 | Buxtonella sulcata cysts | 4 | 44.44 % |
| Calves (6-1year) | 22 | Buxtonella sulcata cysts | 6 | 27.27 % |
| | | Strongyle eggs | 1 | 4.54 % |

In the diarrhoeic buffalo calf dung samples, *Buxtonella sulcata* cysts and Toxocara vitulorum were identified. Results of the present study revealed that *Buxtonella sulcata* cysts were commonly observed in the dung samples of healthy buffaloes but not as heavy infestation. Earlier reports of *Buxtonella sulcata* incidence in India, Karnataka (Mamatha and Placid, 2006), Jammu (Ganai et al.2015) and abroad, Iraq (Aayiz, 2005) , Nepal (Adhikari et al. 2015) recorded a variation of 21 to 71% (Biswas et al., 2014).

**Different Gastrointestinal endoparasites found in the feces of Murrah buffalo calves.**

**Fig. 1:** Buxtonella sulcata cyst and Buxtonella sulcata Trophozoite.

**Fig. 2:** Strongyle eggs.



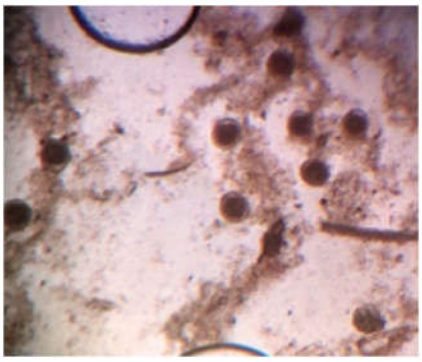


**Fig. 3:** Toxocara vitulorum eggs.

Buxtonella sulcata, is a ciliated protozoan is a common inhabitant of the gastrointestinal tract of buffaloes and is usually non-pathogenic in nature. Buxtonella sulcata acts as a commensal in the intestines of the calves and aids in the digestion of plant matter (Tomczuk et al., 2005; Kumar et al., 2017) . It was also reported by few authors the pathogenic nature of Buxtonella sulcata (Roy et al., 2011) in causing chronic diarrhoea. Along with Buxtonella sulcata, lesser percentage of other parasitic eggs like Toxocara vitulorum and strongyles were detected but the infection is very meagre. The reason for less parasitic infection in the farm might be due to clean animal husbandry and hygienic managemental practices maintained in the farm and also the environmental conditions. Kumar et al. 2017 also reported less incidence of parasitic infection internally due to better hygienic practices of Jaffarbadi buffaloes maintained in Gujarat farm. The incidence of Buxtonella sulcata in Murrah buffaloes with respect to age was slightly higher in calves when compared to adult buffaloes. The findings were in accordance to Ganai et al. 2015 who reported that Buxtonella sulcata was common in young animals but contradictory to Kumar et al. 2017 who reported that the incidence was higher in older animals. The varying reasons could be due to the climatic conditions prevailing in the geographical region of farm, besides environmental conditions, care and managemental practices followed in the maintenance of farm also play a key role for the growth and incidence of the parasites.

The infected calves with Toxocara vitulorum were treated with Levamisole hydrochloride @7.5kg/body weight and those affected with Strongyloides were treated with Fenbendzole were treated with @ 5kg/ body weight. As Buxtonella sulcata is a common inhabitant general deworming with albendazole was carried out for all the calves in the herd and thorough washing of the water troughs maintained in the farm was done regularly.

In the present study, from the observations it can be summarized that the incidence of ciliated protozoa Buxtonella sulcata was revealed but not to level of causing chronic diarrhoea except in case of mixed infection with causing diarrhoea in calves. Other helminthic infections like Toxocara vitulorum and strongyle eggs were very few and thus it could be concluded that the care and managemental practices carried out in the organised farm were effective in safeguarding and controlling the endoparasites in Murrah buffaloes.

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