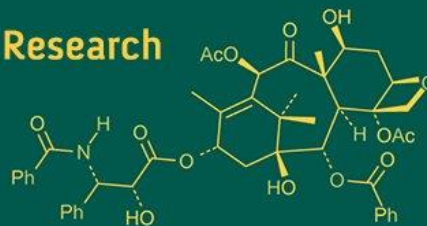
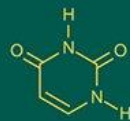
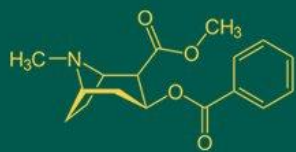


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
 ISSN Online: 2617-4707
 NAAS Rating (2026): 5.29
 IJABR 2026; 10(6): 1215-1218
www.biochemjournal.com
 Received: 02-06-2026
 Accepted: 28-06-2026

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Buxtonellosis in cattle and buffalo: A case report

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DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i6o.8874>

Abstract

Buxtonellosis is an emerging protozoan disease of bovines caused by the ciliated protozoan *Buxtonella sulcata*, which inhabits the large intestine of ruminants and may act as an opportunistic pathogen under favourable conditions. The present study describes the clinical findings, laboratory diagnosis, haematological changes, and therapeutic management of buxtonellosis in an adult cow and buffalo presented to the Veterinary Polyclinic, Vijayapura, Karnataka, during April 2026. Both the animals showed decreased appetite and diarrhoea of varying severity. Gross examination revealed greenish watery faeces mixed with mucus in the cow and mild diarrhoea in the buffalo. Microscopic examination of saline wet mount faecal preparations under 40× magnification revealed actively motile trophozoites of *Buxtonella sulcata* exhibiting characteristic rotary movement. Distinct morphological features including cilia, macronucleus, micronucleus, food vacuoles, and a curved groove were observed. Lugol's iodine preparations further confirmed the diagnosis. Haematological examination revealed macrocytic hypochromic anaemia in the cow and leucocytosis with mildly decreased haemoglobin concentration in the buffalo. Both the animals were treated with oxytetracycline along with supportive therapy including fluids, anti-inflammatory drugs, antihistamines, B-complex vitamins, probiotics, and prebiotics. Marked clinical improvement with reduction in diarrhoea and restoration of appetite was observed after seven days of treatment. The present cases highlight the pathogenic potential of *B. sulcata* in bovines and emphasize the importance of early diagnosis, appropriate therapy, proper hygiene, and good managerial practices for effective control of buxtonellosis.

Keywords: *Buxtonella sulcata*, buxtonellosis, bovine, diarrhoea, faecal examination, trophozoites, oxytetracycline

Introduction

Buxtonellosis is an intestinal disease of bovines caused by the ciliated protozoan *Buxtonella sulcata*. The organism was first described by Jameson in 1926 from the caecum of cattle. *B. sulcata* is commonly found in the large intestine of ruminants, particularly in the colon, where it may exist either as a commensal organism or as an opportunistic pathogen under conditions of stress, poor nutrition, or concurrent infections. The parasite has been reported in cattle and buffaloes from several parts of the world and is considered an emerging protozoan infection of veterinary importance.

Clinically, buxtonellosis is mainly associated with chronic or acute diarrhoea, reduced feed intake, weight loss, debility, and poor productivity. In severe cases, persistent diarrhoea may result in dehydration, weakness, and even death if timely treatment is not instituted (Ganai *et al.*, 2015) [3]. The pathogenicity of *B. sulcata* is believed to be associated with heavy parasitic burden and invasion of the intestinal mucosa, leading to irritation and inflammation of the large intestine.

The parasite exists in two developmental forms, namely trophozoites and cysts (El-Ashram *et al.*, 2019) [2]. The trophozoites are large, oval-shaped, and covered with cilia that aid in motility, whereas the cysts are typically oval to round, measuring approximately 80-100 µm in length and 60-80 µm in width, with a distinct double-layered wall (Omeragic and Crnkic, 2015) [6]. Transmission occurs mainly through ingestion of feed or water contaminated with infective cysts shed in the faeces of infected animals (Goz *et al.*, 2006) [4]. Poor sanitation, overcrowding, and contaminated water sources play an important role in the spread of infection.

Diagnosis of buxtonellosis is generally based on microscopic examination of faecal samples for the presence of cysts or trophozoites. However, *Buxtonella sulcata* infection in bovines is frequently mis-diagnosed as *Balantidium coli* infection because of the close morphological resemblance between the two ciliates.

Balantidium coli is a well-recognized pathogenic ciliate affecting both animals and humans (Manoj and Singh, 2019) [7]. Accurate identification of the organism is therefore essential for proper epidemiological studies, diagnosis, and therapeutic management of the disease.

Case Report

The present study was conducted at the Veterinary Polyclinic, Vijayapura, Karnataka, during April 2026. An adult cow and an adult buffalo were presented with a history of decreased appetite, dullness, and diarrhoea of varying severity. Clinical examination revealed normal rectal temperature in both animals, indicating the absence of systemic febrile illness. Pale pink conjunctival mucous membranes suggestive of mild anaemia were observed in the cow. Gross examination of faeces revealed greenish watery faeces mixed with mucus in the cow (Fig. 1), while the buffalo exhibited mild diarrhoea with semi-fluid faeces (Fig. 4). Both animals showed signs of weakness and reduced feed intake.

Blood samples were collected aseptically from the external jugular vein using sterile vacutainer tubes for haematological analysis. Faecal samples were collected directly from the rectum using disposable gloves and transported immediately to the laboratory for parasitological examination. Faecal examination was performed according to standard laboratory procedures. Wet mount examination was carried out separately using normal saline and Lugol's iodine to observe motility and morphological characteristics of the protozoan organisms. Microscopic examination of saline wet mount preparations under 40X magnification revealed numerous actively motile trophozoites of *Buxtonella sulcata* exhibiting characteristic rotary or self-spinning movement. During motility, distinct morphological features including a prominent kidney-shaped macronucleus, a smaller micronucleus, food vacuoles, and a curved groove extending from the anterior to posterior end were clearly visible. The entire body surface of the trophozoites was uniformly covered with cilia, facilitating their active movement in the preparation. These characteristic features enabled differentiation of the organism from other intestinal protozoa (Figs. 2 and 5).

In Lugol's iodine preparations, the trophozoites appeared as oval to round structures with clearly visible food vacuoles and peripheral cilia, further supporting the diagnosis of buxtonellosis. Moderate numbers of red blood cells were also observed in the background of the cow faecal smear, indicating intestinal irritation or mucosal damage associated with the infection (Figs. 3 and 6). Similar microscopic findings have previously been described by Omeragic and Crnkic (2015), Manoj and Singh (2019), and Kalkal and Sangwan (2019) [6, 7, 9].

Haematological examination of the cow revealed macrocytic hypochromic anaemia, suggestive of a regenerative response possibly associated with intestinal blood loss and impaired nutrient absorption. The presence of red blood cells in the cow faecal smear further supported intestinal mucosal injury. In the buffalo, leucocytosis with mildly decreased haemoglobin concentration was observed without significant alteration in erythrocytic indices, suggesting inflammatory changes associated with enteric infection. Proliferation of *Buxtonella sulcata* within the large intestine may enhance intestinal motility, resulting in rapid passage of ingesta, diarrhoea, and reduced absorption of nutrients. Heavy parasitic burden may also alter the intestinal pH and exert

cytotoxic effects on the intestinal mucosa, leading to epithelial damage, excessive mucus secretion, and compromised intestinal integrity. Such alterations predispose affected animals to secondary bacterial infections and aggravate the severity of diarrhoea (Tomczuk *et al.*, 2005; Das and Deka, 2017) [8, 1].

The cow was treated on the first day with intravenous oxytetracycline (10 mg/kg), flunixin meglumine (2.2 mg/kg) administered along with fluid therapy, chlorpheniramine maleate (0.5 mg/kg IM), and B-complex injection (15 ml IM). This was followed by oral oxytetracycline boluses and feed supplement boluses containing prebiotics, probiotics, and growth stimulants for the subsequent six days. The buffalo was treated on the 1st, 2nd, and 4th days with the same injectable therapy, while on the 3rd, 5th, 6th, and 7th days oral oxytetracycline boluses and feed supplement boluses were administered.

Following seven days of treatment, a marked reduction in diarrhoea along with improvement in appetite, feed intake, and general condition was observed in both animals. The faeces gradually returned to near-normal consistency, and the animals regained normal activity. Oxytetracycline is a broad-spectrum antibacterial and antiprotozoal drug reported to be effective against *Buxtonella sulcata* infection (Hasheminasab *et al.*, 2015) [5] and therefore was preferred in the present cases.



Fig 1: Cow showing greenish watery diarrhoea



Fig 2: Microscopic field of unstained faecal smear of cow showing trophozoite of *Buxtonella sulcata* having cilia on body under 40X.

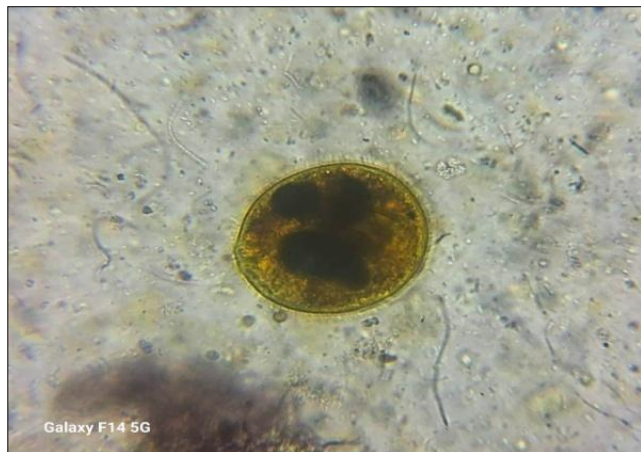


Fig 3: Microscopic field of stained faecal smear of cow with Lugol's iodine showing trophozoite of *Buxtonella sulcata* having cilia on the body under 40X.



Fig 4: Buffalo showing mild diarrhoea



Fig 5: Microscopic field of unstained faecal smear of buffalo showing trophozoite of *Buxtonella sulcata* having cilia on body under 40X.

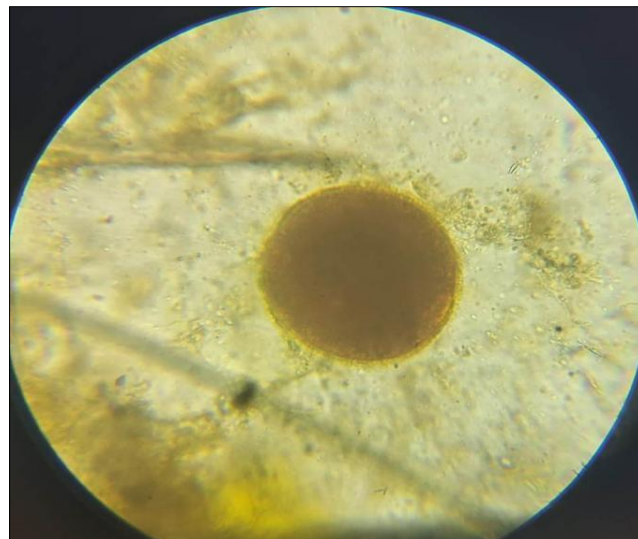


Fig 6: Microscopic field of stained faecal smear of buffalo with Lugol's iodine showing cyst of *Buxtonella sulcata* under 40X.

Table 1: Haematological Analysis of Cow and Buffalo

Parameter	Result		Unit
	Cow	Buffalo	
WBC	8.0	18.1	$10^9/L$
Lymph#	4.5	-	$10^9/L$
Mid#	0.3	-	$10^9/L$
Gran#	3.2	-	$10^9/L$
Lymph%	56.5	-	%
Mid%	3.9	-	%
Gran%	39.6	-	%
RBC	4.52	5.75	$10^{12}/L$
HGB	72	101	g/L
HCT	26.5	32.9	%
MCV	58.8	57.3	fL
MCH	15.9	17.5	pg
MCHC	271	306	g/L
RDW-CV	18.2	18.7	%
RDW-SD	34.4	33.8	fL
PLT	438	115	$10^9/L$

Conclusion

The present cases demonstrate that *Buxtonella sulcata* can act as an important opportunistic enteric pathogen causing diarrhoea in cattle and buffaloes. Although generally considered a commensal inhabitant of the large intestine, the organism may proliferate under conditions of stress, poor nutrition, compromised immunity, unhygienic management, or concurrent infections, leading to clinical disease. Early diagnosis through routine faecal examination and timely therapeutic intervention are essential for effective management and prevention of complications such as dehydration, reduced productivity, and poor growth. Proper hygiene, clean feed and drinking water, reduced environmental stress, and regular health monitoring are important for the prevention and effective control of the disease in livestock populations.

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