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Popular Article

Colibacillosis in goat kids and its prevention and control

Dr. J. Shashank*, Dr. N. Rajanna, Dr.J. Saikiran
Krishi Vigyan Kendra, P.V. Narsimha Rao Telangana Veterinary University, Mamnoor, Warangal-506 166
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Abstract

Colibacillosis is an economically important disease of goat kids. Sudden death of neonates in small ruminants is a serious problem which affects the financial status of the animal owners. The death can either be due to microbial or non-microbial origin. The animals residing in stressful environmental condition are prone to succumb to death that of microbial origin. Among the different causes of microbial death in neonates, colibacillosis plays a significant role. It is caused by pathogenic serotypes of *Escherichia coli*. It causes severe enteric infection resulting in whitish-yellow or greyish colour diarrhea.

Introduction

Goat farming is not only a commercial enterprise but also a mode of life which contributes substantially to farmer's income as well as in national economy (Sarker and Islam, 2011). Goat rearing has the potential to emerge as a very good source of income and employment for the rural youth especially in the adverse environments. According to the 20th Livestock Census, total goat population is 148.88 million, registering an increase of 10.1% over the quinquennial census (Patel *et al.,* 2020). Diseases are the major cause of mortality leading to economic losses to the farmers (Dohare *et al.,* 2013). Among various diseases, diarrhoea is one of the most common causes of mortality in goat kids (30-40%). Diarrhoea is a costly disease causing great economic losses to goat rearers. Economical losses from diarrhoea in goats include decreased performance, high morbidity, mortality and expensive medication and labor to treat sick animals (Sharma and Joshi, 2018).

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Colibacillosis is the most common diarrhoeal disease of kids leading to morbidity and mortality in kids (Sahoo *et al.,* 2015). Colibacillosis is an important indicator of poor management practices including poor nutrition, hygiene and environmental contamination and it is mainly associated with low concentrations of immunoglobulins (Rosilawati, 2016).

Clinical Signs

There are a few predisposing factors causing enteritis and there are several common clinical signs that can be seen in the goat kids having enteric colibacillois. The condition depends on the cause, severity and location.

- Newly borned kids with deficiency of immunoglobulins are more susceptible than the adults.
- Multiple stresses such as transportation, deprivation of food and water or weaning may cause immunosuppression to the animal thus leading to enteritis.
- Prolonged use of antibacterial agents through oral route may alter the intestinal microflora and permit the development of resistance by the organisms.
- Enteritis is an inflammation of the intestinal mucosa resulting in clinical signs of diarrhoea (watery, whitish-yellow or greyish colour that is known as "white scours"), dehydration, weight loss, systemic reaction, acid-base and electrolyte imbalance as well as abdominal pain. In severe cases, mucus might be present in the faeces while in worst case there might be shreds or sheets of exfoliated mucosa (Fig.1 and 2).

Fig.1

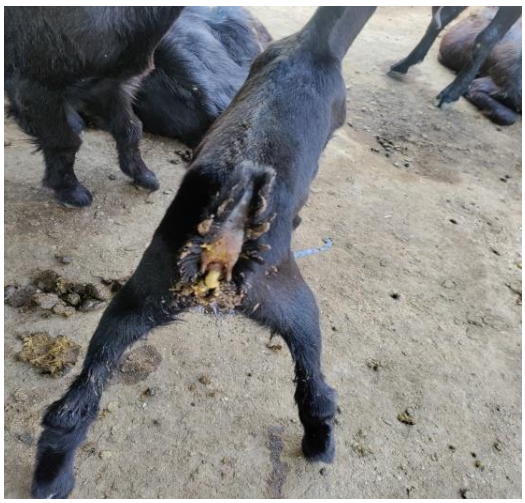

Fig. 2

Fig.1 and 2: Diarrhea in goat kids

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- Inflammation and necrosis of the intestinal wall, efficiency of fluid absorption and excretion in the intestine will be reduced significantly. *E. coli* produces enterotoxins which are virulent factors that adhere to the enterocytes through the use of frimbae and cause severe infection and inflammation in the submucosal layer of the intestine (Blood *et al.*, 2011 ; Kaper *et al.*, 2004). Severely dehydrated animals will have electrolyte imbalances and metabolic acidosis causing hyperventilation and muscle weakness due to inadequate bicarbonate and sodium concentrations in the blood circulation (Ghanem *et al.*, 2012).

Diagnosis

- There are different diagnostic methods available for identification of *E. coli.* and they are mainly clinical history or clinical signs, cultural characteristics and Gram's staining. Isolation of pure culture of *Escherichia coli*. as streaking on Eosin-methylene blue (EMB) agar plates. Colonies which showed characteristic metallic sheen were suggestive of *Escherichia coli.*

Prevention and Control

- *Escherichia coli.* is usually controlled by a combination of good management and antimicrobial therapy.
- The primary therapeutic plan for animals with enteric collibacillosis is usually vigorous antimicrobial therapy to reduce morbidity and mortality. Antibiotics like streptomycin, tetracyclines and neomycin are effective against *E. coli.* Although the sensitivity to different strains varies widely. It is advisable to carry out drug sensitivity before the treatment is started; the most important control measure in neonatal colibacillosis is feeding of adequate colostrum to neonates (Wani *et al.*, 2013).
- Vitamin-B complex medications along with clean drinking water should be provided.
- Diseased animals should not be allowed to mix in the existing healthy herd.
- Optimum mother's milk should be provided to the goat kids. Milk overfeeding should be avoided.
- Control also depends upon improved sanitation, hygiene, decreasing density of crowding, proper housing with adequate ventilation and sunlight in the farm.
- Animal excretions and secretions should be disposed properly.

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Conclusion

- Colibacillosis may occur in animals of any age but more commonly in kids due to *Escherichia coli*. infection where common clinical signs such as diarrhoea, dehydration, weight loss and abdominal pain will be observed. The disease can be prevented with proper farm hygiene and can be control by early diagnosis and prompt treatment to prevent great economic losses in goats.

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