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Study on prevalence of ruminal acidosis in goats with digestive disorders in Udaipur district

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Abstract

Ruminal acidosis is also known as lactic acidosis, carbohydrate engorgement and acidic indigestion. The present work was planned to find out the prevalence of ruminal acidosis in goats in southern part of Rajasthan. A Total of 165 goats were examined at Veterinary Clinical Complex, CVAS, Navania, Udaipur. Out of examined goat, 95 goats were affected with digestive disorders and, 11 of these cases were diagnosed as ruminal acidosis. Complete physical and clinical examination was performed and ruminal fluid examination was conducted for confirmative diagnosis. The overall prevalence of ruminal acidosis in goats was 6.67% and the prevalence of ruminal acidosis in goats among digestive disorders was 11.57%. The study suggests that the farmer should avoid feeding low quality feed ingredients and large quantities of feed at one time.

Keywords: Prevalence, goat, rumen, ruminal acidosis

Introduction

Ruminal acidosis in goats is either acute or chronic in nature. Acute ruminal acidosis also known as lactic acidosis, grain overload, acid indigestion and rumen over-load. It is a very serious problem in goats and leads to death, occurs within 24 hours, due to excessive feeding of fermented carbohydrate diet like wheat chapatis & cereals, potatoes and rapid production of lactate in the rumen (Crichlow and leek, 1986; Garry, 1990) ^[2, 3].

Chronic ruminal acidosis is generally related to nutritional habits caused by consumption of high concentration diets and inadequate amount of fiber and leads to decrease milk production and increased damage to the rumen environments (Kersting and Thompson., 1999; Nordlund and Garrett, 1994) ^[5, 7].

The diagnosis of acidosis is primarily based on clinical symptoms such as ruminal motility, state of distress and discomfort, distension of rumen, alterations in the body parameters such as body temperature, respiration rate, heart rate and analysis of ruminal fluid (Constable, 2017) ^[1].

Methods and Materials

Present study was conducted at Veterinary Clinical Complex, College of Veterinary and Animal Science, Navania, Udaipur (Rajasthan), to record the prevalence of ruminal acidosis in goat, a total of 165 goats were examined and 95 goats affected by digestive disorder, out of which 11 were diagnosed as ruminal acidosis in goats. Complete history (feed & water intake), age, sex, breed, anorexia, diarrhoea, difficulty in breath, and abdominal pain were recorded.

Physical & clinical examination were also carried out, with body temperature, respiration and heart rate recorded in each case. For the affected goat ruminal fluid was collected by using a 16 gauge needle directly from rumen at the left paralumbar fossa and fluid was collected into a 10 ml syringe for further diagnosis. Ruminal fluid was also examined for colour, odour, consistency and rumen pH using a digital pH meter or pH stripe.

Results and Discussions

During the study period, a total of 165 goats were brought for treatment at the Veterinary Clinical Complex of the college of Veterinary and Animals Science, Navania, Udaipur - Rajasthan, out of which 95 goats were affected with digestive disorders and among these cases 11 goats were affected with carbohydrate engorgement. These cases were diagnosed based on history, clinical signs and ruminal fluid examination.

Overall percentage prevalence of ruminal acidosis affected goats

The prevalence of ruminal acidosis in goats among the total number of clinical cases was 6.67%, and the prevalence of ruminal acidosis in goats among digestive disorders was 11.57 %, as shown in Table 1 & Figures 1 & 1A. Similar findings have been reported by Udainiya *et al.*, (2019) ^[9] which is 11.41% and a lower prevalence of acidosis reported by Rahman *et al.*, (2014) ^[8] is 3.55 %. Slightly difference in overall prevalence of ruminal acidosis occurred due to environmental, management and feeding practice.

Table 1: Prevalence percentage of ruminal acidosis affected goats

Goat	No. of examined Goat	No. of ruminal acidosis affected Goat	Prevalence (%)
Total screened Goat	165	11	6.67
With digestive disorders	95	11	11.57

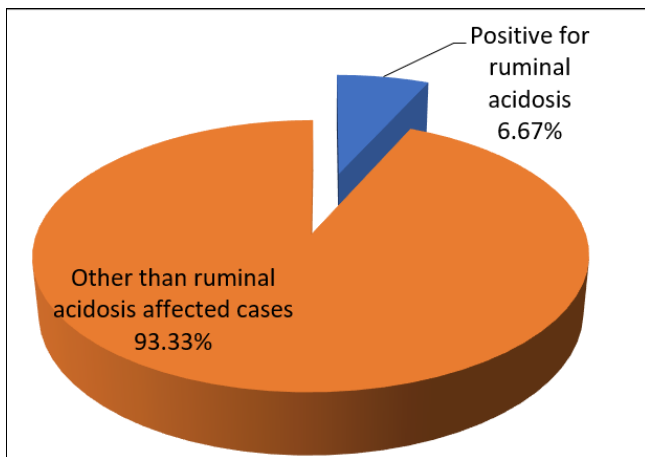


Fig 1: Prevalence percentage of ruminal acidosis affected goats with total screened goats.

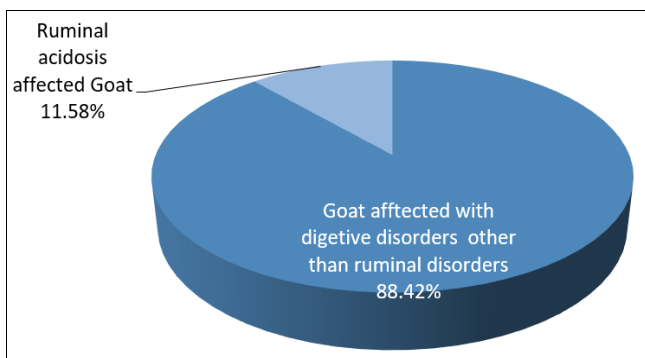


Fig 1A: Prevalence percentage of ruminal acidosis affected goats with digestive disorders affected goats.

Age-wise prevalence in goats affected by ruminal acidosis
All ruminal acidosis affected goats were divided into three

age groups i.e. 6 months to 1 years, 1 to 2 years and more than 2 years. The prevalence of ruminal acidosis in goats less than 1 year of age was 2.10%, in goats aged 1 year to 2 years the prevalence was 5.26 % and in goats aged more than 2 years the prevalence was 4.21% (Table 2 and fig 2 & 2A.).

Table 2: Age wise prevalence percentage of ruminal acidosis affected goats

Age Groups (Year)	Total number of examined Goat (95)	Total no. of affected Goat (11)	Prevalence (%)
Less than 1 years	26	02	2.10
1 to 2 years	37	05	5.26
Above 2 years	32	04	4.21

The Highest prevalence of ruminal acidosis was observed in goats aged 1 to 2 years (5.26%), while the lowest prevalence was recorded in goats less than 1 years old (2.10%). Similar finding has also been reported by Ningadalli *et al.*, (2017) ^[6] and Rahman *et al.*, (2014) ^[8]. Goat aged 1 to 2 years were more affected by ruminal acidosis due to weak digestion, sudden change in diet & overfeeding, lack of exercise and pregnancy status than goats of other age groups.

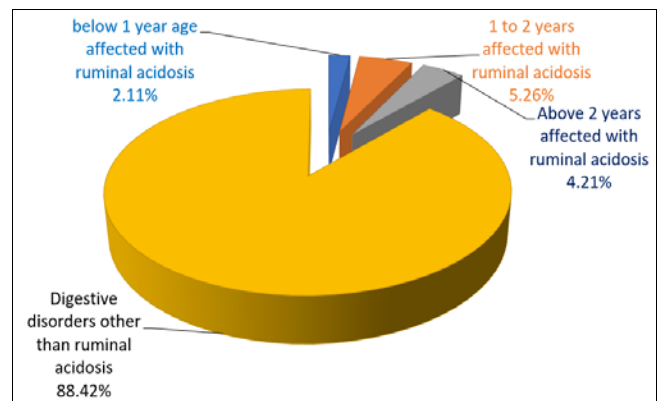


Fig 2: Age wise percentage prevalence of ruminal acidosis affected goats with digestive disorders affected Goats

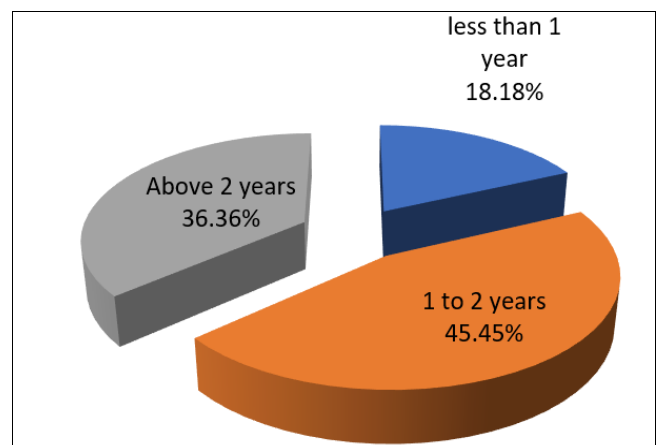


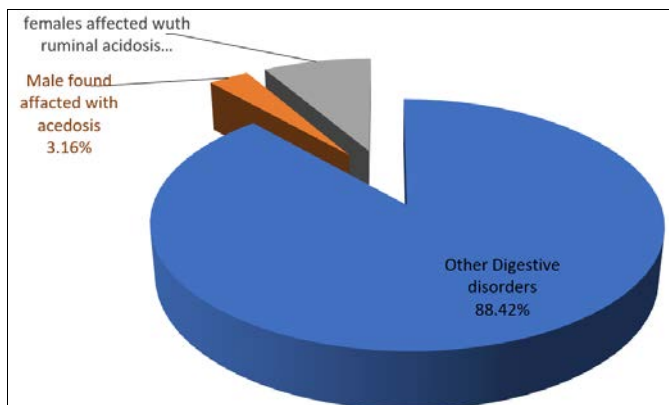
Fig 2A: Age wise percentage prevalence of only ruminal acidosis affected goat

Sex-wise prevalence of ruminal acidosis affected goats

The sex wise prevalence of ruminal acidosis was higher among female goats than male goats in study area. The highest prevalence was recorded among females at 8.42% and among male at 3.16 %, data is presented in Table 3 & Figure 3.

Table 3: Sex-wise prevalence of ruminal acidosis affected goats

Sex	Total number of examined Goat (95)	Total number of affected Goat (11)	Prevalence (%)
Male	35	03	3.16
Female	60	08	8.42

**Fig 3:** Sex wise prevalence of ruminal acidosis affected Goats

The observed data showed that female goats have a higher prevalence than male goats. Similar findings have been observed by Ningadalli *et al.*, (2017) [6]; Rahman *et al.*, (2014) [8] and Jani *et al.*, (2001) [4]. The study also observed gender difference in prevalence of ruminal acidosis, which may be due to the lower number of cases and because of male goats are reared for meat purpose so they are sold at 4 to 6 months of age, most of the reported male cases were kept for breeding purpose and female goats are reared for milk purpose.

Conclusion

It is concluded that ruminal acidosis is a common rumen related problem of goats and can be prevented by using proper feeding schedule and avoiding excess feeding of carbohydrate rich feed. Sudden changes in the diet of goats should always be avoided specially in pregnant goats. The Overall prevalence of ruminal acidosis in goats in the study area was 6.67%, the prevalence of ruminal acidosis in goats with digestive disorders was 11.57%, and the highest prevalence was observed in female goats aged 1to2-years.

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