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Epidemiological Study on Ruminal Acidosis in the Goat Population

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Abstract

An epidemiological analysis on goats was done to investigate the incidence of ruminal acidosis in Jaipur from March 2021 to August 2021. For the history of digestive diseases, 948 goats were presented at the outdoor Veterinary Clinical Complex (VCC) of the Post Graduate Institute of Veterinary Education and Research (PGIVER) Jaipur. Rumen fluid was collected, and the existence of ruminal acidosis was established by utilizing a digital pH meter to measure the pH of the rumen fluid. 428 of the 948 goats tested positive for digestive problems, while 62 tested positive for ruminal acidosis. Ruminal acidosis was seen in 6.54 percent of goats overall, and 14.48 percent of goats with digestive problems.

Key words : *Goat, acidosis, PH, prevalence, Jaipur*

Introduction

India has the world's biggest goat population (1). It is believed that there are around 920 million goats in the globe, with India having 154 million goats and China having 150.7 million goats (2). Goats are an essential source of income and sustenance for small marginal farmers and landless rural communities. Diseases, inadequate nutrition, breeding policies, and management are the key restrictions impeding livestock productivity in the majority of countries. Rumen functional health is a crucial condition for productive behavior, which includes cattle health and animal welfare (3). The majority of health issues in goats are rumen-related, and among rumen diseases, ruminal acidosis is a fairly prevalent ailment in ruminants that can arise for a variety of causes such as diet changes, feeding habits, bad management methods, and so on.

Ruminal acidosis is a frequent metabolic disease in goats caused by rapid feeding of a large amount of highly fermentable meal, resulting in a shift in rumen pH less than 6. The ruminal mucosa is damaged by the pH drop, allowing fluid from the circulation to enter the rumen, producing severe dehydration (4) and exacerbating metabolic acidosis (5).

Clinically, this condition can cause mild to severe symptoms, including death. Clinical observations such as ruminal movement, temperature, pulse, respiration rate, heart rate, and rumen fluid analysis can be used to make a diagnosis. It is regarded as one of the most serious clinical crises in small ruminants, with a significant fatality rate (6). Because the literature on the frequency of ruminal acidosis in clinical cases and its type of occurrence with regard to age, gender, and breed was limited, the current study presents the prevalence of ruminal acidosis in goats from March 2021 to August 2021 in Jaipur.

Materials and Methods

From March 2021 to August 2021, a total of 948 goats were tested for this investigation. For screening, goats were presented in the outside of the Veterinary Clinical Complex (VCC) of the Post Graduate Institute of Veterinary Education & Research (PGIVER) Jaipur for a history of digestive diseases. Goats were screened based on a history of excessive grain or fermented feed consumption, anorexia, indigestion, abdominal distension, diarrhea, dehydration, laminitis, and so on.

A total of 428 goats displaying indications of digestive issues were chosen for the study out of 948 goats evaluated. Rumen fluid from 428 goats was collected, and the existence of ruminal acidosis was established by measuring the pH of the rumen fluid with a digital pH meter.

Results and Discussion

428 of the 948 goats tested positive for digestive problems, while 62 tested positive for ruminal acidosis. From March 2021 to August 2021, the total incidence of ruminal acidosis in goat was 6.54 percent, and the prevalence of digestive problems was 14.28 percent (Table-1).

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Table-1 : Overall prevalence of ruminal acidosis in goats.

Goat	No. examined	No. affected	Prevalence (%)
Total screened	948	62	6.54
With digestive disorders	428	62	14.48

Age wise prevalence : To determine the age-specific prevalence of ruminal acidosis, goats of various ages were investigated and classified into three groups. The highest frequency of ruminal acidosis was seen in goats between 1 and 2 years of age, at 17.4%, followed by goats older than 2 years of age, at 8.53%, and goats less than 1 year of age, at 7.54%. (Table-2).

Table-2 : Age wise prevalence of ruminal acidosis in goats.

Age group	No. examined	No. affected	Prevalence (%)
<1 years	53	4	7.54
1-2 years	293	51	17.4
>2 years	82	7	8.53

Gender wise prevalence : There were 131 male goats and 297 female goats among the 428 animals investigated. Ruminal acidosis was found in 13.74% of males and 14.81% of females. (Table-3).

Table-3 : Gender wise prevalence of ruminal acidosis in goats.

Gender	No. examined	No. Affected	Prevalence (%)
Male	131	18	13.74
Female	297	44	14.81

Breed wise prevalence : The prevalence of ruminal acidosis was investigated in several goat breeds. The non descript breed has the highest incidence (24.60%), followed by the Jamunapari breed (12.74%), the Barbari breed (10.37%), and the Sirohi breed (7.4%). (Table-4).

Table-4 : Breed wise prevalence of ruminal acidosis in goats.

Breed	No. examined	No. Affected	Prevalence (%)
Non-Descript	126	31	24.60
Jamunapari	102	13	12.74
Barbari	106	11	10.37
Sirohi	94	7	7.40

The overall prevalence of ruminal acidosis is highly correlated with the findings of (7,8,9) observed a considerably greater frequency of ruminal acidosis, with an overall prevalence of ruminal acidosis of 10.74 percent. Panchsheel (10) discovered a greater rate of ruminal acidosis (11.12%) in goats in Bidar, Karnataka. Many researchers have also observed varied rates of ruminal acidosis prevalence in goats (11,12,13). The current study's findings confirmed the occurrence of ruminal acidosis in goats from Jaipur, albeit the prevalence rates differed from earlier researchers' findings. These discrepancies might be related to variances in eating patterns, management approaches, and environmental factors at each location.

Differences in prevalence rate estimation may also be explained by differences in research design and technique. In the current investigation, no significant variation in age-related prevalence of ruminal acidosis was found, which is consistent with the findings of (11), who found no significant difference between various age groups of goats suffering from ruminal acidosis. (8) found a greater frequency in the 1-2 year age group when compared to other age groups. The current investigation found no significant difference in gender prevalence, which is consistent with the findings of (11). (7) found a greater frequency of ruminal acidosis in female goats.

Ruminal acidosis was more prevalent in nondescriptive goats (18.81%) than in Jamunapari (11.25%), Barberi (8.98%), and Sirohi (6.12%). The current study's findings are consistent with those of (11), who found no significant variation in ruminal acidity between goat breeds. (7,8), on the other hand, found a greater frequency of ruminal acidity in indigenous goat breeds.

The lack of a significant difference in the prevalence of ruminal acidosis in goats by age, gender, or breed was attributed to the fact that the occurrence of ruminal acidosis is dependent on feeding habits, management practices, and environmental conditions, and thus all age groups, both genders, and all breeds are equally susceptible to ruminal acidosis (6).

Conclusions

In the present study it was concluded that ruminal acidosis is caused by improper feeding practices. The Overall prevalence of ruminal acidosis in goats of Jaipur was 6.54% while in goats having digestive disorders, the prevalence was 14.48%.

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