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## Biochemical analysis of urine in sub-clinical ketosis of goat

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### Abstract

The aim of the present study was to analyze the urine for Rothera's test and urine Ph in sub-clinical affected goat. Six healthy goats were kept as healthy control group and twenty four sub-clinical ketotic goats were considered for the study. Out of twenty four sub-clinical ketotic goats only six animals were positive for Rothera's test while healthy goats were negative for Rothera's test. No animal showed any higher urinary pH level than the upper limit of normal range of urinary pH of goat.

**Keywords:** Goat, sub-clinical ketosis, Rothera's test, Urine pH

### Introduction

Goats are also at risk of developing metabolic condition termed as ketosis. Various blood, urine and milk tests can be performed for the diagnosis of this metabolic condition. Rothera's test is effective in diagnosis of clinical ketosis (Smith and Sherman, 2009) [4]. Hence an attempt was made to study the role of two urinary tests viz. Rothera's test for ketone bodies and urine pH in the diagnosis of sub-clinical ketosis in goat.

### Materials and Methods

#### Experimental design

The study was carried out in and around Guwahati city, Assam (26.1833° N, 91.7333° E) at Goat Research Station, Assam Agricultural University and few private farms for a period of one year (July 2014 to June 2015). The study procedure compiled with Institutional Animal Ethics Committee guidelines, Assam Agricultural University. Animals were selected based on the history of gestation and lactation.

#### Collection of sample

Urine sample were collected in sterile container as per procedure described by Smith and Sherman (2009) [4] and kept the sample in the ice box to minimize the loss of acetoacetic acid through evaporation for estimation of ketone bodies and pH.

#### Detection of urinary ketone bodies

The presence of ketone bodies in urine was tested by Rothera's test. (Nelson and Cox, 2008) [1]. Five ml urine was saturated with ammonium sulphate, followed by addition of 3 drops of sodium nitroprusside solution. The equal volume of liquor ammonia was added. The development of permanganate colour in the resultant solution was considered to be indicative of presence of ketone bodies.

#### Urinary pH

The urinary pH was determined by using Digital pH meter (Oakton Pvt. Ltd.).

### Results

#### Urinary ketone bodies

Out of 24 goats in the diseased group only 6 animals were positive for Rothera's test while in healthy control group was negative for Rothera's test.

### Urine pH

The Mean $\pm$  SE values of urine pH were ranging from 7.61 $\pm$ 0.005 to 7.572 $\pm$ 0.05 in the diseased animal. While in healthy animal it was recorded from 7.62 $\pm$  0.07 to 7.51  $\pm$  0.05 which was in normal range from 7.5 to 8.5 as per Paarah *et.al.*, 2013 <sup>[3]</sup>

### Discussion-

The ketone bodies generally appear in urine when they are present in higher concentration in plasma. Kaneko *et al.* (2009) <sup>[2]</sup> entioned that about 80 to 90% of ketone bodies are generally reabsorbed in renal tubules. So in the present study the urinary ketone bodies were not observed in all the goats with sub-clinical ketosis that is might be due to less ketone bodies circulating in blood, which is insufficient to yield urinary ketone bodies. In healthy control group no detectable ketone body was present throughout the study period

Variation in the level of pH in urine was observed in different animals. However no animal showed any higher urinary pH level than the upper limit of normal range of urinary pH of goat. In the present investigation no significant difference in the urinary pH were recorded between the diseased group and healthy control group. This might be due to the fact that urinary pH alters appreciably only if the concentration of ketone bodies is very high in urine that occurs in clinical ketosis

### Conclusion

Biochemical analysis of urine for Rother's test and urinarr pH in sub-clinical ketotic goat does not play important role in diagnosis of sub-clinical ketosis in goat.

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