**Abstract**
A blackbuck was presented with the history of accidental ingestion of cooked rice and clinical signs of distended abdomen, increased pulse and respiration rate, and decreased ruminal pH. A variation in the QT interval was recorded in the ECG findings. The case was diagnosed as acid indigestion and was successfully treated with sodium bicarbonate, antihistamine, vitamin B complex and rumenotorics.

**Introduction**
Grain overload, also known as "Lactic Acidosis" or "Acute Carbohydrate Engorgement", is a condition experienced by ruminants such as cattle, sheep and goats. Wild ruminants such as elk and deer appear to be more susceptible to this condition than traditional livestock species (Brett, 2003). Acidosis is caused by the feeding of highly fermentable carbohydrates, feeding of low fiber diet, poor management practices or a combination of all due to excessive production of lactic acid (Radostits et al. 2000). Degree of acidosis varies from a slight drop in feed intake (mild) to death (severe). Acute form of the disease in ruminants is characterized by indigestion, rumen stasis, dehydration, acidosis, toxaemia, incoordination, collapse and frequently death. It is one of the most important clinical emergencies in small ruminants (sheep and goats) and results in high mortality (Radostits et al. 2000). Here we describe a case report of acid indigestion in Black Buck due to accidental ingestion of cooked rice.

**Methodology**
**Case history**
A Blackbuck which was rescued and rehabilitated for a short period from Rameswaram Reserve Forest area near Proddatur was presented to the Teaching Veterinary Clinical Complex, College of Veterinary Science, Proddatur with the history of excess ingestion of cooked rice on the previous day. Anorexia, dullness, depression and blackish diarrhoea were also reported.

**Clinical observations**
Clinical manifestations were distended abdomen, slight dehydration, congested mucous membranes, slightly increased pulse rate of 88 per minute, increased respiration rate of 38 per minute and a temperature of 104.8°F. After rumenocentesis, approximately 1 mL of ruminal fluid was aspirated for the evaluation of rumen liquor pH and protozoal activity. Ruminal fluid pH was measured immediately with the help of wide range pH indicator paper and protozoal activity was observed under low power microscope. Microscopic examination revealed numerous dead protozoa with no motility. Dung was devoid of any parasitic ova. The ECG was recorded on a bipolar base apex lead system (Radostits et al., 2000), using ElectroCardioGraph (BPL Cardiart 108TDigi). Same procedure was adopted previously to record the normal ECG parameters in adult sheep (Reddy et al., 2013). Mean heart rate was 88 bpm. Mean amplitudes of the P, QRS and T waves were 0.20 mV, 0.74 mV and 0.52 mV. Mean duration of P, QRS and T waves were 0.04 sec., 0.042 sec., 0.08 sec., with QT interval of 0.24 sec. Sodium bicarbonate (NaHCO3) @ 20 g orally followed by 5 g orally twice daily for 3 days and rumenotoric bolus Rumentas (Intas Pharmaceuticals) @ 1bolus orally twice daily for 3 days. An injection of Vitamin B1, B6 and B12 (Tribivet, Intas) was administered @ 3 mL
intramuscularly daily for 3 days. A course of antihistaminic drug (Pheniramine maleate) was also given -- 3 mL intramuscularly daily for 3 days.

Results and discussion
Initially, the ruminal fluid was milky green in colour and pH was found to be around 5. Improvement was noticed on the very next day. But complete recovery was observed after three days. Vital signs were within normal range (6.8-7.2) and rumen liquor pH restored to 6.5. On the basis of history, clinical and laboratory examination the case was diagnosed as rumen acidosis. Following ingestion of large quantity of highly fermentable carbohydrate rich diet, the lactate producing rumen bacteria (Streptococcus species) proliferate and ferment the readily available carbohydrate resulting in excess accumulation of lactic acid in the rumen and its subsequent absorption into blood circulation causes systemic acidosis (Tufani et al., 2013). The heart rate significantly increased, might be due to toxic effects of lactic acid, reduced plasma volume and circulatory failure (Radostits et al. 2000), in accordance with severity of the acidosis and may go up to 155 per min in severe cases. There was significant increase in respiration which was shallow and rapid and increased up to 46 per min. The similar increase in respiratory rates has been reported by Tanwar and Mathur (1983) and Ram et al. (2007) in acidotic goats. This increase in respiration might be due to stimulation of respiratory centre by increased carbon-dioxide (CO₂) tension of blood and decreased blood pH (Huber, 1976). In the present case, decreased QT interval was recorded when compared to the local sheep and goats which might be due to acute onset of acid indigestion (Reddy et al. 2014).

The ruminal fluid of affected animal was milky green in colour and had a sour odour. There was significant decrease in pH of rumen fluid in severe acidosis and at this low pH almost entire rumen protozoal activity ceases and no live protozoal population was observed under low power microscope. The change in the microbial population in the rumen following ingestion of toxic amounts of highly fermentable carbohydrates occurs within 2-6 hours. The number of gram positive bacteria (Streptococcus spp) increased markedly, which resulted in the production of large quantities of lactic acid. The rumen pH fall below 5, destroyed protozoa, cellulolytic organisms, and lactate-utilizing organisms, and severely impaired rumen motility. This low pH further allows the lactobacilli to utilize the carbohydrate and to produce excessive quantities of lactic acid (Tufani et al., 2013).

Conclusion
In conclusion, acidosis can be a problem in all types of ruminants including blackbuck. Acidosis is caused by improper feeding practices. Feeding large quantities of highly fermentable diets like cooked rice, fruits and vegetables should be discouraged to the wild ruminants like deer during their rehabilitation or captivity to prevent lactic acidosis.

References


