The present study aimed to evaluate the efficiency of hypertonic saline solution (HSS) as a novel treatment of acute ruminal lactic acidosis (ARLA) in cattle, focusing on urinary excretion of acids. Twelve cannulated steers were submitted to experimentally induced ARLA by administering sucrose into the rumen. Twenty hours later, the cattle were randomly divided into two equal groups. The first group was treated with 7.5% HSS (5 mL/kg) over 15 min, and isotonic saline solution (ISS; 20 mL/kg) for the subsequent 165 minutes. The control group was administered ISS instead of HSS. Rumen and urine samples were collected at different times during the experiment from the baseline to 64 h post-induction. The induction caused a medium-to-moderate ruminal acidosis, and a moderate degree of systemic acidosis and dehydration. Steers treated with HSS increased by 50% its glomerular filtration rate (1.61 mL/min) compared to ISS group (1.06 mL/min; p<0.03). The overall volume of urine excreted by HSS group was higher than that in ISS group (1.62 L vs 0.7 L; p<0.02). This increase in total volume of urine provided by HSS favored a greater excretion of H+ ions in urine, which was 3.39-fold higher in HSS group (64.3*10^{-7} vs 18.9*10^{-7} Mol) as well as lactate (241.7 vs 181.8 mMol) and P urinary excretion (3.8 vs 1.1 mMol) that reduced the urine pH (5.3 vs 5.7). Only the HSS group decreased significantly blood total lactic acid concentration (20.3 %) throughout the treatment. A positive relationship was found between the excretion of urinary phosphorus and urinary pH (r^2=0.562). The results showed that this novel treatment with HSS enhanced renal excretion of acids and may be recommended as an additional treatment for cattle with lactic acidosis.

**Key words**: steers, ruminal lactic acidosis, hypertonic saline solution