

CLINICAL, HEMATOLOGICAL AND BIOCHEMICAL STUDY OF INDUCED ACIDOSIS IN SHEEP

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ABSTRACT : This study was conducted to identify the changes that occur in the hematological parameters and the biochemical picture in the blood and use in the process of diagnosis of acidosis in sheep as an easier way and give us an image of the variables should be treated correctly. Acute acidosis was induced in sheep. The cases were evaluated by clinical signs and monitoring blood parameters. Ten sheep were used in design experiment. The clinical result indicated that the sheep showed signs started with anorexia, depression, increase heart rate, increase respiratory depth and rate, dehydration, abdominal pain with yellowish color diarrhea and acidic odor. The blood examination in current study was carried out to evaluate, hematological parameters of blood. Hematological analysis revealed significant increase ($P<0.05$) in WBC, RBCs, HCT% and HGB concentration, MCV and MCH and in MCHC, but significant decrease ($P<0.05$) in platelets at the first day and back to normal level during the second and third day. Biochemical analyzes of blood showed significant reduction ($P<0.05$) in minerals (Ca, K, Mg, Na and chloride), beside that the Glucose, Urea, Creatinine and Bilirubin were increased significantly but the blood pH recorded a significant decrease ($P<0.05$), while the serum enzymes (AST, ALT) were showed a significant increase ($P<0.05$) except the data, which recorded by ALP was decreased significantly ($P<0.05$). The serum total protein and globulin recorded significant increase ($P<0.05$), while the Albumin recorded a fluctuating result increased in the first 20 hours after that decreased significantly ($P<0.05$). Conclusions the induction of acidosis in sheep caused many internal pathological changes, which in turn have caused the emergence of many clinical signs that vary in severity from mild to acute and appeared many significant and non-significant ($P<0.05$) variable changes in hematological parameters, some biochemicals, minerals, blood pH and the main serum enzymes as well as the serum total protein and these results give us a good image of the internal changes and thus can be used in the process of diagnosis and how to deal with them.

Key words : Hematological, biochemical, acidosis, sheep.

INTRODUCTION

Rumen acidosis is one of important digestive disorders in ruminant, the reduction in productivity and farm benefit that leading to economic losses, beside that the effect on animal welfare, initially caused by the reduction in milk yield and increased losses as a result of animal death (Krause and Oetzel, 2005).

It occurs by sudden change in the diet by ingestion of rapidly fermentable carbohydrates such as wheat which leading to highly increase in production of the lactic acid in rumen (Thomas, 2008).

The production of massive quantities of lactic acid in rumen lead to rapid dangerous changes in rumen, hematological parameters and blood biochemical profile (Sabry *et al*, 2013).

Clinically there are many clinical signs appear during acidosis such as anorexia, diarrhea, increase heart rate, increase respiratory depth and rate, dehydration, oliguria, tachycardia, dyspnea, rumenitis and laminitis are a series

of different pathological changes that may occur as a result of ruminal acidosis have reported by many authors (Radostitis *et al*, 2007; Enemark, 2008).

Hematological and serum biochemical analysis have a major role in diagnosis of rumen acidosis and treatment the infected ruminant correctly (Sabry *et al*, 2013; Zein-Eldin *et al*, 2014). Improving the methods to detect subacute ruminal acidosis and acute ruminal acidosis have many challenges and the procedures like esophageal intubation or rumen cannulation and rumenocentesis which required to measuring the pH of the rumen considered difficult and somewhat dangerous methods to detect acidosis, therefore many researches try to use indirect ways to detect the ruminal acidosis based on clinical signs, Biochemical analysis and blood analysis (Schwartzkopf-Genswein, 2003; Giorgio *et al*, 2013; Dong *et al*, 2011).

However, none of these different ways work alone to detect the ruminal acidosis of ruminant and only a few of the researchers tried to using these methods to evaluate