

**Republic of Iraq**

**Ministry of Higher Education and Scientific Research**

**University of Baghdad/ College of Veterinary Medicine**

**Department of the Vet. Internal & Preventive Medicine**

Clinical and Clinical Pathological Study of Sub-Acute Ruminal Acidosis in Crossbreed Lactating Cows

A thesis submitted

To

The Council of the College of Veterinary Medicine / University of Baghdad

In Partial Fulfillment of the Requirements for the degree of Doctor of philosophy

In Veterinary Medicine Sciences / Internal and preventive Veterinary Medicine

By

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2015 A.D. 1436 A.H.

Abstracts

Theyobjective of this study's was to investigate the clinical, clinical pathological, and biochemical effects of the subacute ruminal acidosis (SARA) in crossbreed lactating cows.

Four hundred and twenty seven cows were examined in this study in Al-Diwaniyah province, aged more than one year, from these Ninety lactating cows, were affected with SARA. Moreover, fifty healthy lactating cows were also examined and considered as control. Both diseased and control cows were subjected to further tests of ruminal fluid, fecal, blood, and milk samples.

Clinical signs that observed on the animals during clinical examination were recorded, however there were different non-significantly P˃0.05 among the pulse, respiratory, and heart rates. Whereas ruminal contractions were had significant dropping P≤0.05.

Results showed that ruminal fluid pH in affected cows with SARA were 5.22, however its 7.00, 6.70, and 5.56 in blood, milk and fecal samples respectively.

Furthermore, it have been shown that ruminal fluid and fecal samples pH were significantly P≤0.05 higher in control group than that in SARA group.

Moreover, non-significant variation detected between pH values of ruminal fluid in relation to drawing methods (rumenocentesis and stomach tubation set).

As well as the total volatile fatty acids (TVFAs) results in the ruminal fluid (116.3 mM/L) and fecal samples (83.9 mM/L) were estimated and were increased significantly P≤0.05, and the mean concentrations of propionic acid and butyric acid in SARA group were (40.7, 15.8, and 28.6, 6.71 mM/L) respectively, and significantly increased more than control group.

In contrast, the results of acetic acid, of ruminal and fecal samples in SARA group were (59.8 and 45.6 mM/L) respectively and significantly P≤0.05 lower than control group, then the ratio of the acetic and butyric acids to propionic significantly P≤0.05 decreased.

The lactate concentrations results in serum and ruminal fluid were significant P≤0.05 and significant high ruminal lactate level (8.42 mM/L) were recorded in affected cows; this was positively correlated with that lactate level of blood (0.82 mM/L).

In addition, the difference observed in the lipopolysaccharide (LPS) concentration in the ruminal fluid and fecal samples (97.772 and 108.823 Eu/ml) respectively, of SARA group which were significantly P≤0.05 higher than control group.

Results showed that milk fat percentage were significantly P≤0.05 decreased in SARA (2.32 %) compared with the control (3.32 %).

Furthermore Significantly P≤0.05 higher values of liver function tests like serum alkaline phosphatase (ALP), sorbitol dehydrogenase (SDH), and gamma glutamyl transferase (GGT) conversely the total serum bilirubin (TSB) and aspartate transaminase (AST) were non-significant P˃0.05 which were observed in SARA dairy cows when compared with control group.

Moreover, the ruminal microflora activity were significantly P≤0.05 variable and diminished in affected cows.

In conclusion, it have been shown that ruminal and fecal pH, LPS, VFAs and lactate can be used as diagnostic tools to identify the SARA.