

BIOCHEMICAL STUDY OF SOME MINERALS AND PROTEIN IN EMACIATED COWS IN AL-QADISIYAH PROVINCE

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ABSTRACT : This study was investigating in determination level of some of the elements (Fe, Cu, Co, Zn, P, Ca and total proteins) in the cow's blood that showed some of the clinical symptoms of emaciation. The total blood sample were (500) which examined clinically, we found (90) cow suffer from emaciation and (10)cows clinically healthy used as a control group. The blood samples are collected from (90) emaciated cows and (10) samples from the healthy cows (non-emaciated cows). The samples were tested by atomic absorption spectrophotometer for the determination of elements concentration (Fe, Cu, Co, Zn, P, Ca and total protein). The findings revealed a high deficiency in elements and total protein in all the emaciated animals. Furthermore, there are significant differences between the emaciated cows and the healthy cows (control or normal group) at ($p < 0.05$) in elements concentrations and total protein. The results showed concentration of the iron, copper, zinc, cobalt, Phosphor and calcium, besides to the total protein in the emaciated group were (0.67 ± 0.009) $\mu\text{g/mL}$, (0.2 ± 0.065) $\mu\text{g/mL}$, (0.3 ± 0.05) $\mu\text{g/mL}$, (0.03 ± 0.006) $\mu\text{g/mL}$, (2.12 ± 0.09) $\text{mg}/100\text{mL}$, (5.6 ± 0.83) $\text{mg}/100\text{mL}$ and (30 ± 1.2) g/L respectively after making blood analyzer at ($p < 0.05$). However, its values in control group were (1.9 ± 0.05) $\mu\text{g/mL}$, (0.8 ± 0.039) $\mu\text{g/mL}$, (1.1 ± 0.223) $\mu\text{g/mL}$, (0.2 ± 0.01) $\mu\text{g/mL}$, (4.2 ± 0.2) $\text{mg}/100\text{mL}$, (9 ± 1.1) $\text{mg}/100\text{mL}$ and (74.17 ± 3.1) g/L respectively after making blood analyzer at ($p < 0.05$). The emaciation is an important clinical sign and all the emaciated animals showed minerals and protein deficiency at ($p < 0.05$).

Key words : Minerals, cows, minerals deficiency, Al-Qadyissiha province.

INTRODUCTION

The animal body needs essential minerals and protein. The essential minerals are included major minerals and trace minerals (Bhandari *et al*, 2016).

The trace elements are including Cu, Fe, Zn, Co, I, Mg and Se (Gerber and Steinfeld, 2008). Trace elements are very important for general health and it has a great role in the activity of the immune response (Haug *et al*, 2007; Brandão *et al*, 2016). If the trace elements decrease, leading to the occurrence of the diseases (Ellison, 2002). And the effect on animals' performance (Lyons *et al*, 2016; Aubel *et al*, 2011). Cu, Fe, Co and Zn have a great role in growth (Nozad *et al*, 2005; Ipharraguerre and Clark, 2005).

Decreases of the level of Cu, Zn, Co and Fe associated with infection, stress and pregnancy failure. The level of the elements in the blood changes depending type of the animal, type of intake food, type of diseases. The increase of element more than the normal values causes toxicity, while decreases the elements less than normal value called mineral deficiency

(Pereira *et al*, 2018).

Increase or decrease the concentration of the element in the blood leading to pathological conditions (López-Alonso, 2012). Many studies found a relationship between minerals deficiency and many clinical signs including emaciation, loss weight, loss of hair, dryness the skin and pale of the mucus membranes (Sath *et al*, 2013).

Other studies found additional clinical signs associated with minerals deficiency such as anorexia, impaired movement, alopecia, anemia, diarrhea, skin depigmentation, fertility problems, parakeratosis, hyperkeratosis, decreased production, impaired growth and abortion (Tomza-Marciniak *et al*, 2011; Buckley *et al*, 2012).

Our study aims to determine the level of total protein and some elements in the serum of the cows in Al-Qadyissiha province.

MATERIALS AND METHODS

Collection of the samples

This study was carried out from April to September