EFFECT OF EXCESS SELENIUM ON DROMEDARY CAMEL IN THE UNITED ARAB EMIRATES

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Abstract: Early interest in selenium by nutritionists was first identified in the 1930s as a toxic element, nowadays it is known to be important in livestock and human diet. Its poisonous nature arouses the curiosity of researchers to investigate the impact of this element in human and animal metabolism. However, selenium has become the center of attention due to its physiological functions explained on the basis of its role as an active component of the enzyme glutathione peroxidase (GSH-PX), which is responsible for the animal antioxidant defense by destruction of hydrogen peroxide and lipid peroxides. Selenium metabolism and toxicity has been consistently studied in different species but data investigations on camelidae species are very limited. Our current study is configured to investigate the selenium intolerance in dromedary camel and carry out the symptoms related to continuous selenium supplementation. Investigations showed that camel is potentially sensitive to selenium excess. Several symptoms revealed by their different intensity from 3 batches, resumed in alopecia – abnormal movement and posture, breathing difficulties, prostration, diarrhea, lost of weight and nervous alteration.

Keyword: Camelus dromedarius, selenium, toxicity, United Arab Emirates

1. Introduction

Essential role of selenium for animal has been well established by epidemiological studies. Nowadays, it’s known that trace elements contribute to maintain animal health especially selenium, a key component of several enzymes such as glutathione peroxidase (GSH-Px) by inactivate free radicals (hydrogen peroxide) (Rotruck et al., 1973). Trace minerals are available from several sources- feedstuffs, drinking water and commercial supplement. This element tends to be localized mainly in the protein fraction of plant. In United Arab Emirates, camels’ selenium intake comes mainly from diet, and selenium overdosing which lead to a several sudden death in camel husbandry.

2. Experimental Procedure

This experiment was carried out at the United Arab Emirates, at the farm of nutrition and agriculture Faculty. Twelve healthy young 2-years camels shared into three batches were fed with similar basal diet including Rhodes grass (Chloris gayana) and commercial concentrate. They were supplemented by oral route for 3 months with selenium as sodium selenite respectively 8 mg (17.44 mg sodium selenite), 12 mg (26.16 mg sodium selenite) and 16 mg (34.88 mg sodium selenite). Selenium was given enrobed in date every day at the same time. The experiment began after 15 days of
pretreatment. Body weight was taken every 2 weeks. Blood, was taken via jugular vein in heparinized and non heparinized blood collecting tubes after disinfection of local area. One animal of each batch was sacrificed at day 46 of selenium supplementation and another one at the end of the experiment at day 91. Different organs were taken to evaluate the selenium concentration and histopathology findings.

3. Results

Camels showed a characteristic signs of toxicity at 2 weeks of selenium supplementation in the three batches, starting with alopecia on the neck and enlarged to the abdomen, at the base of the tail and accompanied with hair discoloration (Photo 1).

![Photo 1. Alopecia on abdomen and at the base of the tail](image)

Tears, hypertrophy of lymphoid gland less prominent in batch taking 8 mg and more remarkable in batches having 12 mg and 16 mg (Photo 2).

![Photo 2. Hypertrophy of lymphoid gland in camel supplemented with 12 mg Se daily](image)

After 45 days of supplementation till the end of experiment camels showed loss of appetite which lead to remarkable lost of weight, vesicular stomatitis (Photo 3), repeatable urination, diarrhea, nervous disorder with salivation and respiration become dyspneic.

Supplementation was stopped in batch 3 (16 mg) at day 45 to ovoid camel’s death, and were treated with hepatoprotector. One camel of each batch was sacrificed to carry out the organs lesions and the histopathological finding. Camels shown hydrothorax,