

## ANTIOXIDANT VITAMINS AND TRACE ELEMENTS IN RATS AFTER *FASCIOLA HEPATICA* INFECTION AND ZINC TREATMENT

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Fasciolosis is one of the major stress factors, leading to malnutrition and low performance and production efficiency in domestic animals. Recent studies indicate that fasciolosis has led to oxidative stress which is the causative agent in the initiation and progress of lipid peroxidation in the hosts. The antioxidant defences depend on microelements or are microelements themselves. Zinc has been shown to have an antioxidant role in defined chemical systems.

This study was undertaken to investigate the effects of the compound 2Gly.ZnCl<sub>2</sub>.2H<sub>2</sub>O on the antioxidant systems comprising vitamins A, C and E, copper, zinc and selenium contents during various stages of fasciolosis. Forty male Wistar albino rats were used. Rats were divided into four groups: Group I, control; Group II, control and treated with 2Gly.ZnCl<sub>2</sub>.2H<sub>2</sub>O; Group III, *Fasciola hepatica* infected rats; and Group IV, *Fasciola hepatica* infected and treated with 2Gly.ZnCl<sub>2</sub>.2H<sub>2</sub>O. Each rat from groups III and IV were orally infected with 25 metacercariae of *Fasciola hepatica*. A daily dose of 6 mg Zn salt was administered to each animal in Groups II and IV. Treatment was carried out 2 weeks before and 2 weeks after the infection. The control and experimental animals were fed with similar standard fodder for eight weeks. Samples of the livers were taken at 4 and 8 weeks post-infection (wpi) for vitamin and trace element determinations. Vitamin A, C and E levels were determined using HPLC methods and trace elements Zn, Cu and Se by Atomic Absorption Spectrophotometry (AAS).

Fasciolosis caused an imbalance of the concentrations of Zn, Cu and Se in the infected livers in comparison with controls at 4 and 8 wpi. The Zn reduction was the greatest extent in comparison with the other two trace elements. Zn compound application increased the level of Zn almost to the control level and slightly elevated that of Se. Cu level was not influenced by the Zn application. The trace element alterations were better shown at 8 wpi. A, C and E hypovitaminosis were established at 4 and 8 wpi. E hypovitaminosis was higher than the others. The concentrations of the vitamins were found to have altered after Zn application. Vitamin A and E levels returned to within normal limits when Zn was administered to the infected rats. The vitamin C level was slightly positively influenced by Zn application.

In this study the compound 2Gly.ZnCl<sub>2</sub>.2H<sub>2</sub>O supplementation resulted in the reversal of changes in the vitamin and trace element status during the infection. Imbalance of the studied parameters of the antioxidant defences was nearly restored to control values. The results suggest that the oxidative stress could be one of the underlying factors in the pathogenesis of chronic fasciolosis and indicate the possible therapeutic administration of Zn during chronic infection.

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