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# MEVESEL AND E-SELENIUM EFFECT ON THE INDICATOR LEVEL OF UNFERMENTED ANTIOXIDANT DEFENSE SYSTEM OF BULLS' ORGANISMS AFTER CADMIUM LOADING

*When fed bullock cadmium chloride at a dose of 0.05 mg / kg body weight level indicators unfermented of serum D bulls during the experiment decreased. The lowest level of performance antioxidant system installed on the twenty- fourth day of the experiment. Established activating effect mevesel and E-selenium on the level of reduced glutathione, vitamin E and selenium in chronic cadmium toxicosis.*

Chronic liver disease is among the most common diseases of the digestive system. Cadmium compounds is one of the heavy metals that are widely used in industry, are among the main environmental pollutants [1]. On admission to animals cadmium causes a number of toxic effects, affecting various organs and systems, including a toxic effect on the liver [2].

Toxicity of cadmium is that it is accompanied by metabolic disorders, physiological function, decreased resistance, productivity and reproductive capacity [3]. According to some authors cadmium ions inhibit the activity of white blood cells, and thus reduce the phagocytic component of the immune response [2, 4].

The interest in this problem is also conditioned by the available literature reports concerning the ability of cadmium in the body cause the development of hypoxic condition [1, 2]. So important is the study of the metabolic effects of cadmium ions and hypoxia and to identify changes in performance unfermented body's antioxidant defense system steers the conditions of cadmium stress and develop an antidote for the treatment of animals in this intoxication.

The aim of our research was to establish a preventive effect mevesel and E-selenium on the body of bulls, under conditions of cadmium stress.

**Material and methods**. Experiments were conducted at 15 six months aged bulls who were formed into 3 groups of 5 animals in each:

Group 1 - control (C), steers fed with food cadmium chloride at a dose of 0.05 mg / kg body weight;

Group 2 - Research (D1), steers fed with food cadmium chloride at a dose of 0.05 mg / kg body weight, along with E-selenium at a dose of 0.05 ml / kg body weight.

Group 3 - Research (D2), steers fed with food cadmium chloride at a dose of 0.05 mg / kg body weight with mevesel at a dose of 0.36 g / kg feed.

The experiment lasted for 30 s days. Blood for analysis was taken from the jugular vein at 1 -, 8 -, 16 -, 24 -, and 30-th day of the experiment.

**Results and discussion**. Table 1 shows the changes in the level of reduced glutathione in the blood of bulls in cadmium stress. As shown in this table glutathione levels at the beginning of the experiment was within the physiological norm values. After feeding with cadmium chloride content of reduced glutathione began to fall and according to the eighth day of the experiment, he was in the control group K1 30,99 ± 0,60 mg%. The lowest level of the indicator was on the twenty-fourth day of the experiment, which according to the initial value it decreased by 8%.

*Table 1*

**The level of reduced glutathione in the blood of calves after feeding meveselu and E-selenium in cadmium load; (M ± m, n = 5)**

| Days of blood research | Renewed glutathione (mg ,%) | | |
|---|---|---|---|
| | Animals' groups | | |
| | Control | D1 | D 2 |
| Started values | 31,95±0,58 | 32,74±0,65 | 33,14±0,55 |
| 1-st day | 34,21±0,62 | 32,84±0,50 | 33,37±0,75 |
| 8-th day | 30,99±0,60 | 32,73±0,65* | 33,54±0,76* |
| 16-th day | 29,95±0,65 | 32,45±0,75* | 33,61±0,55* |
| 24-th day | 29,49±0,55 | 31,56±0,59* | 33,32±0,65* |
| 30-th day | 30,25±0,65 | 32,15±0,65* | 33,27±0,50* |

The degree of probability compared to the control group, P <0.05 - * P> 0.01 - **

The use of E-Se by animals helped to raise glutathione levels in the experimental group of animals on the eighth day in D1 experiment group to 5.6%, the sixteenth day - 8%, and at the twenty-fourth day - 7% relative to the values of the control group animals.

The use of bullock experimental group D2 mevesel in cadmium load, boosted levels of reduced glutathione in the first and eighth day of the experiment, where it was respectively 33,37 ± 0,75 and 33,54 ± 0,76 mg,%. The highest level of reduced glutathione was on the sixteenth day of the experiment, which compared with those in the control group of animals, it increased to 12.2%. Subsequently, the content index in animal blood began to decline somewhat, but in relation to the control group it was higher on the twenty-fourth day of the experiment at 13%.

Thus, the use of mevesel makes the bulls' development of chronic cadmium toxicity contributes to a better adjustment of free glutathione than use E-selenium.

The importance of the antioxidant system include vitamin E, which protects cell membranes from free radical attack and reactive oxygen species. Its content in the blood of animals with chronic cadmium toxicosis presented in Table 2. Feeding toxicant contributed to reducing the amount of vitamin E in the blood of animals throughout the experiment. So, on the eighth day of the experiment the vitamin was 3,3 ± 0,11 mmol / l, which is lower on 19.5% compared to the initial values. On the sixteenth day of vitamin E research has continued to decline and the relative magnitude of blood taken at the beginning of the experiment, the feeding gobies cadmium chloride decreased on 24%, the twenty-fourth day of the experiment

vitamin E decreased to 29%. On the thirtieth day of the experiment the vitamin E in the blood of the control group of animals was 3,1 ± 0,13 mmol / l.

*Table 2*

**The content of vitamin E in the blood of calves after feeding mevesel and E-selenium in cadmium load; (M ± m, n = 5)**

| Days of blood research | Vitamin E (mmol/l) | | |
|---|---|---|---|
| | Animals' groups | | |
| | Control | D 1 | D 2 |
| Started values | 4,1±0,11 | 4,2±0,13 | 4,2±0,12 |
| 1-st day | 3,8±0,14 | 4,2±0,12** | 4,5±0,10** |
| 8-th day | 3,3±0,11 | 3,9±0,10* | 4,6±0,15** |
| 16-day | 3,1±0,11 | 4,2±0,10 | 4,5±0,12** |
| 24-th day | 2,9±0,12 | 3,9±0,10** | 4,3±0,13** |
| 30-th day | 3,1±0,13 | 4,0±0,10** | 4,2±0,12** |

The degree of probability compared to the control group, P <0.05 - * P> 0.01 - **

The use of E-and selenium mevesel boosted vitamin that is studied in the blood of experimental animal groups D1 and D2, which were fed with toxicants. On the eighth day of the experiment found increased content of vitamin E relative values of the control group of animals in the experimental group D1 levels by 18% in the experimental group D2 - 39%, respectively. Most likely increase vitamin watched for twenty-fourth day of the experiment, where appropriate in the blood of experimental group D1 it was 3,9 ± 0,10 mmol / l, and in the D2 group was 4,3 ± 0,13 mmol / l.

Thus, the use of mevesel for animals which developed chronic cadmium toxicosis, correction of vitamin E was held better than the use of E-selenium.

*Table 3*

**The content of selenium in the blood of calves after feeding meveselu and E-selenium in cadmium load; (M ± m, n = 5)**

| Days of blood researches | Selenium (mkg/l) | | |
|---|---|---|---|
| | Animals' groups | | |
| | Control | D 1 | D 2 |
| Started values | 51±0,85 | 48±0,87 | 49±0,95 |
| 1-st day | 45±0,95 | 50±0,65** | 50±0,92** |
| 8-th day | 43±0,95 | 48±0,78** | 51±0,84** |
| 16-th day | 42±0,83 | 47±0,60** | 50±0,75** |
| 24-th day | 40±0,95 | 45±0,81** | 49±0,81** |
| 30-th day | 42±0,85 | 48±0,55** | 49±0,75** |

*The degree of probability compared to the control group, P <0.05 - * P> 0.01 - **

Selenium is a powerful antioxidant that prevents the oxidation of cell membranes, preventing degenerative changes in major biomolecules of cells and thus slows down the processes of aging. Table 3 shows that the development of chronic cadmium toxicity content of selenium in the blood of bulls in the control group of animals was reduced after the first day of the experiment. On the eighth day of the experiment selenium content was 43 ± 0,95 mg / l, the sixteenth day it fell to 17.6%

compared to the initial values. At the lowest content of selenium in the blood of animals which were fed with toxicants was on the twenty- fourth day of the experiment, where it was respectively 40 ± 0,95 mg / l.

The use of E-selenium sick bullock for cadmium toxicosis, accompanied by a moderate increase in the content of selenium in the blood of experimental group animals D1. The selenium content in this group of animals ranged within 45 ± 0,81 - 50 ± 0,65 mg / l. Thus, the use of E-selenium sick animals accompanied by fluctuations in the content of selenium in their blood values within the physiological norm.

Application of mevesel by animals who asked chloride, cadmium, selenium content boosted relative to the initial values for the first and the eighth day of the experiment, where it grew respectively by 11.1 and 18.6%. Since the sixteenth day of the experiment selenium content ranged within 50 ± 0,75 - 49 ± 0,75 mg / l.

## Conclusions

1. Gobies fed with cadmium chloride at a dose of 0.05 mg / kg body weight level indicators unfermented antioxidant defense system of the calves organisms throughout the experiment reduced. The lowest level of performance unfermented antioxidant defense system installed on the twenty fourth day of the experiment.

2. Mevesel and E, selenium, chronic cadmium toxicosis, activates the body's antioxidant system steers and thus restores the balance in the system LPO ↔ AOC;

3. When cadmium toxicosis steers better effect on the performance indicators unfermented antioxidant defense system of the organism exhibits mevesel steers compared with E-selenium.

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