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INFLUENCE OF FEED ADDITIVES OF MEVESEL AND METIFEN ON LEVEL OF BULLS LIPID PEROXIDATION IN CADMIUM LOADING

The level of intermediate and final paroduct of lipid peroxidation under conditions of chronic cadmium toxiciti were researched. Established antioxidant properties of feed additives of metifen and mevesel in young cattle under conditions of cadmium stress.

Key words: *cadmium intoxication, antioxidant, cadmium, lipids, malonic dialdehyde, diene conjugates, feed additives.*

Analysis of available domestic and foreign literature gives reason to believe that due to the environmental degradation in the country, the question of toxicity of cadmium today is paid much attention. Question of cadmium toxicity comprehensively is studied. Today, a large number of reports on the important role of lipid peroxidation (LPO) in the development of many toxicosis is accumulated. However, the role of lipid peroxidation under conditions of cadmium stress is not investigated.

Having established that cadmium toxicity in the coming disorder of lipid peroxidation, we concluded that the action of cadmium to inhibit excessive free radical reactions in animals, it is necessary to use drugs with a strong antioxidant effect, it can inhibit lipid peroxidation. With a large number of antioxidants in cadmium toxicosis bulls, we studied the preventive effect of metifen and mevesel. These antioxidants block has free radicals and prevent the development of oxidation stress in animals.

When stress is promising detoxification therapy such drugs that are able to not only to normalize the antioxidant defense system, but also participate in the maintenance of metabolic homeostasis of animals affected by cadmium.

The aim of our research was to establish the preventive action of metifen and mevesel of the bulls body, under conditions of cadmium stress.

Material and methods. Experiments were carried out on 15 bulls of six months age, who were formed in 3 groups, 5 animals in each:

Group 1 - control (C) bulls were fed with forage of cadmium chloride at a dose of 6.0 mg / an. / day;

Group 2 - Research (T1) bulls were fed with cadmium chloride at a dose of 6.0 mg / an. / day with metifen at a dose of 0.28 g / kg of feed.

Group 3 - research (T2) bulls were fed with cadmium chloride at a dose of 6.0 mg / an. / day with mevesel at a dose of 0.36 g / kg of feed.

The experiment lasted for 30 days, and blood for analysis was taken from the jugular vein in 1, 5, 10, 15, 20, and 30 th day of the experiment.

The level of malondialdehyde was determined according to EN Korobeinikova (1989), the level of diene conjugates - with the method of .I.D Steel (1977).

Results and discussion. Lipids and their natural systems are basis for biological membranes, under which they carry out important functions. Oxidation of lipids is accompanied by rearrangement of the double bonds in the conjugated diene system. The reactions of lipid peroxidation clearly reflect the functional status of cellular and subcellular membranes that are essential for the sustenance of the integrity of the body.

The development of a pathological process is preceded by damage to cell membranes, which is manifested primarily with violation of the functional state of the lipid layer. There are numerous of toxicosis, which are characterized by abuse oxidant - antioxidant balance, including cadmium toxicity. From previous studies we found that under cadmium stress in young cattle balance between lipid peroxidation and antioxidant system were disturbed, resulting in the body accumulates a large amount of free radicals, reactive oxygen species, peroxidation products that are harmful to body as a whole and decrease of both enzyme and unfermented antioxidant defense system of the body. Therefore, to correct this balance, we used drugs that have antioxidant properties.

As we have antioxidant and metifen mevesel that are allowed in clinical veterinary practice, mainly in sick animals. However, the literature does not have such data on the use of these drugs in cadmium stress.

Effect of metifen and mevesel and the level of intermediate products of lipid peroxidation in cadmium toxicosis is presented in Table 1.

Table 1

The level of diene conjugates in serum after administration of bulls after using metifen and vitamiks Se in chronic cadmium toxicosis; (M ± m, n = 5)

Time of blood tests (day)	Diene conjugates (mmol/l)		
	Animals' group		
	Control gr. (cadmium)	Researc gr. 1 (cadmium + metifen)	Researc gr. 2 (cadmium + mevesel)
Started values	5,74±0,14	5,79±0,19	5,80±0,18
The 1 st day	6,85±0,21	6,66±0,22	6,62±0,23
The 5 th day	7,06±0,25	6,60±0,20	6,51±0,21
The 10 th day	7,31±0,24	6,55±0,25	6,45±0,22
The 15 th day	7,51±0,28	6,40±0,20	6,20±0,20
The 20 th day	7,72±0,30	6,32±0,21	5,98±0,18
The 30 th day	7,92±0,35	6,15±0,20	5,86±0,19

As it's seen from this table the level of diene conjugates in the blood of bulls who asked metifen on the first day of the experiment was $6,66 \pm 0,22$ mmol / l, which is 15% higher than the initial value and 2% lower than in the control groups of animals. On the fifth day of the experiment the level of diene conjugates in the blood of experimental animals D1 decreased by 7% compared to values in the control group

of animals on the tenth day of the experiment respectively decreased by 10%, and on the fifteenth day of the experiment the level of diene conjugates decreased to 15%. On the twentieth day of the experiment level intermediates peroxidation was $6,32 \pm 0,21$ mmol / l. On the thirtieth day of the experiment the level of diene conjugates decreased to 22% compared to the control group of animals parameters.

The application of mevesel in experimental group of animals D2 contributed more likely to reduce the level of diene conjugates than metifen application. Indicators of diene conjugates in the blood of animals compared to the experimental group D1 during the experiment were lower. Thus, compared with the control group of animals level indicator that studied on the fifth day of the experiment decreased to 8%, on the tenth day of the experiment - to 12%, on the fifteenth day of the experiment - to 17%. Since the twentieth day of the experiment the level of diene conjugates in blood research bulls ranged within physiological norms and values were lower relative measure of control group animals at 23 and 26%, respectively.

Thus, the use of metifen and mevesel by animals in cadmium load prevents the formation of intermediates peroxyl lipid in the blood of animals.

Another important factor is to study the end products of lipid peroxidation - malondialdehyde. Table 2 shows the change of the indicator in the blood of bulls under conditions of chronic cadmium toxicity and the effect of antioxidant agents: metifenu and meveselu.

The animals were fed with cadmium chloride at a dose of 6.0 mg / an. / day animals is uncertain whether the level of malondialdehyde from the first day of the experiment, which compared with the original data, it increased by 12.8%. On the fifth day of the experiment the level of malondialdehyde in the blood of these animals was $0,284 \pm 0,009$ mmol / l. On the tenth day of the experiment the level of lipid peroxidation products continued to grow and twentieth day of the experiment, it increased to 27%, on the thirtieth day - to 33.8% compared to the initial data.

Table 2

**The level of malondialdehyde in serum after administration of bulls and metifen vitamiks Se in chronic cadmium toxicosis;
(M ± m, n = 5)**

Time of blood tests (day)	Malondialdehyde (mmol/l)		
	Animals' groups		
	Control (cadmium)	Research gr. 1 (cadmium+ metifen)	Research gr. 2 (cadmium+ mevesel)
Started values	0,234±0,008	0,230±0,006	0,237±0,009
The 1-st day	0,264±0,008	0,258±0,011	0,255±0,009
The 5-th day	0,278±0,008	0,256±0,010	0,253±0,011
The 10-day	0,284±0,009	0,253±0,008	0,250±0,010
The 15-th day	0,291±0,008	0,249±0,010	0,246±0,009
The 20-th day	0,298±0,009	0,247±0,009	0,241±0,008
The 30-th day	0,313±0,010	0,246±0,010	0,239±0,008

Application metifenu meveselu bulls and experimental groups of animals contributed to the reduction of the end product of lipid peroxidation. When

comparing the two experimental groups with the control, it was found that on the fifth day of the experiment the level of malondialdehyde decreased by 9%, respectively. On the tenth day of the experiment in the blood of bulls experimental group D1 level indicator was $0,253 \pm 0,008$ mmol / l in the experimental group D2 level was $0,250 \pm 0,010$ mmol / l. On the fifteenth day of the experiment malondialdehyde levels continued to decline and the relative magnitude of the control group animals, this index decreased in animals who asked metifen - by 14% in animals who asked mevesel - 15%. In the twentieth and thirtieth day of the experiment in the blood of bulls research groups again noted decrease in malondialdehyde, where he reached the values of the physiological norm.

It should be noted that the use of animals meveselu chronic cadmium toxicosis decrease resulted from better end products of lipid peroxidation.

Conclusions:

- Use of metifen and mevesel under conditions of chronic cadmium toxicity bulls contributed to the reduction of intermediate and end products of lipid peroxidation, namely konjuhativ diene and malondialdehyde;

- In cadmium load of bullocks best effect on inhibition of lipid peroxidation of animals showed no use of feed additions of "Mevesel."

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