

THE EFFECT OF VITAMIN AND MINERAL SUPPLEMENTS ON THE STATE OF THE ANTIOXIDANT SYSTEM IN RABBITS

N. Roll, S. Tsehmistrenko

Bila Tserkva National Agrarian University
Soborna Ploshcha, 8/1, Bila Tserkva 09100, Kyiv Region, Ukraine

Effective use of animals in livestock intensification requires a deep understanding of the physiological processes in animals and poultry, as well as changes that occur in the body under the influence of various environmental factors and operating conditions. According to modern concepts POL - an indicator of resistance and its adaptive capacity. Regulation of excessive lipoperoxidation by using antioxidant system (AOS), which consists of antioxidants and major groups of enzymes: superoxide dismutase (SOD), catalase tissue (CAT) and ceruloplasmin (CP). AOS provides neutralize free radical cells and the maintenance of cellular homeostasis. However, animals can develop oxidative stress as a result of influence of various endogenous and exogenous factors on the balance between AOS and LPO.

The aim of research was to study the activity of antioxidant system functioning in the body of the New Zealand breed rabbits in age aspect and for feeding vitamin-mineral supplements.

The study was conducted in New Zealand rabbits breed in LLC "Hrehut 's. Kozhanka, Fastovsky district of Kiev region. According to the principle analogues (age and weight) was formed two groups of animals 45 days old, 5 goals in each - control and research. Animal control group fed a standard feed, balanced nutrition for all parameters, with free access to feed and water. The animals of the experimental group in addition to the basic diet was administered vitamin and mineral supplements that contain Potassium, Phosphorus, Sodium, Calcium, Copper, Zinc, Manganese, Iron, Iodine, Cobalt, Selenium, vitamins A, D₃, E, K₃, B₁, B₂, B₃, B₄, B₅, B₁₂.

Materials research for the heart, brain and muscle longest back which were selected after slaughter in 45-, 60-, 75- and 90-th day of life. The activity of antioxidant defense system determined by conventional methods superoxide dismutase, catalase and ceruloplasmin content. Range SOD activity in the brain and back muscles longest animals in the control group ranged 0,83-1,83 cu/g.

However, animal research group observed a gradual decrease in activity of the enzyme. Thus, the brain of rabbits on the 90-th day of life SOD activity was less than 4.6 times, and the longest muscle in the back of 1.9 times compared to the control. It

should be noted that at the heart of rabbits, which were fed additional vitamin and mineral supplements, the 45- and 60-th day life SOD activity was higher by 56 % and 25 % respectively. SOD activity is closely connected with the activity of catalase, which protects the body from highly toxic oxygen radicals. Catalase catalyzes the splitting of the hydrogen peroxide to form water and oxygen. Found that heart rabbits experimental group on the 60-th day of life catalase activity was significantly lower at 25 %.

Instead, the brain and the longest back muscle of animals that consumed feed-additive vitamin catalase activity was slightly higher compared with the control group and was within 2,43-5,14 cat/g and 16,82-18,87 cat/g respectively. Found that in heart tissue of rabbits experimental group from 45-th to 90-th day life ceruloplasmin contents were not significantly different and ranged from 0,27-0,41 mg/g tissue. In the brain of rabbits were fed feed additive from 45-th to 75-th day of the experiment observed reduction of ceruloplasmin.

However, in rabbits 90-days old showed a significant increase in the content of ceruloplasmin 4.5 times compared to the beginning of the experiment. Probably a significant rate increase can be seen as a compensatory response caused by the activation of lipid peroxidation and destruction of cell membranes. It should be noted that the longest back muscle animal research groups from 45-th to 75-th day of the experiment marked increase ceruloplasmin content. However, the 90-th day indicator decreased to the level of $0,33 \pm 0,07$ mg/g tissue.

Consequently, studies the activity of enzymes of antioxidant system and ceruloplasmin content in the organs of New Zealand rabbits breed, which in addition to the basic diet fed vitamin and mineral supplements have allowed more deeply and fully evaluate the progress peroxidation processes.

Keywords: RABBITS, ANTIOXIDANT SYSTEM, HEART, BRAIN, LONGEST BACK MUSCLES.