

THE IMPACT OF INTRODUCTION ORGANIC MICROELEMENTS IN LIPOSOMAL FORM ON OXIDATIVE STRESS BIOMARKERS AND ANTIOXIDANT SYSTEM IN TISSUES OF FEMALE RABBITS

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Trace mineral supplementation can affect health, reproductive status, immune function of animals. Traditionally, microminerals have been supplied as inorganic salts in animal feed, but such forms of them does not provide assimilation in the organism and needs of animals in them. Currently, there is much interest in using organic sources of minerals to supply these trace elements, because their bioavailability in organic form increase in hundreds times. Pregnancy is a period of increased metabolic demands on the mother to provide the requirements of a growing fetus. Oxidative stress is generated during normal placental development, but when insufficient supplies of essential antioxidant micronutrients can lead to exaggerate oxidative stress and can be detrimental to the health status of mother.

The paper aimed to investigate the influence of subcutaneous injections of organic microelements in liposomal forms on the performance antioxidant status and oxidative stress markers of female rabbits during the early stage of pregnancy.

Two weeks before fertilization, female from experimental 1 (E 1) and during fertilization, female from experimental (E 2) were subcutaneous injected preparations with Zn glutamate, Mn glutamate, Cr methionine, NaSe with vitamins E, A, D in liposomal form. All group of animals was performed artificial insemination with appropriate hormonally treatment. Rabbits were fertilized intravaginally of 10×10^6 spermatozoa/ doe in 0.5 ml tris-citrate diluents. Blood sampling was done on 14 day of gestation for the determination of activities of antioxidant enzymes such as catalase, ceruloplasmin, and, as well as oxidative stress biomarkers (thiobarbituric acid reactive substances (TBARS) and stable 2,4-dinitrophenyl hydrazine derivates of the oxidative modified carbonyl groups level) were measured in tissues of reproductive system and blood.

The significant increase of activity CAT ($p < 0.05$) in the uterus and ovaries of E 2 compare to other groups of animals we established. Activity of SOD was significantly higher in the ovaries of animals both experimental groups. Accordingly, the increasing the intensity of accumulation products peroxide oxidation in the uterus of rabbits E 2 group was noted ($p < 0.05$). The level of TBARS significantly decreased in the uterus and ovaries of both experimental groups in the early gestation ($p < 0.05$; $p < 0.01$), as compared with the control.

The result of our studies indicate that supplementation organic microelements in liposomal form before 2 weeks and during fertilization provided increase of antioxidant defense system and lower intensity of peroxidation. The results showed that supplementation organic microelements included to liposomal preparations have highly supported by the intensity of metabolism and maintaining antioxidant — prooxidant balance in the reproductive organs, and in particular, in the uterus under the stimulation of ovulation, fertilization and embryo implantation.