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THE STATE OF IMMUNITY OF PREGNANT COWS AND THEIR CALVES UNDER TECHNOGENIC CONTAMINATION AND THE ACTION OF THE DRUG "PREGNAVITAN"

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Introduction

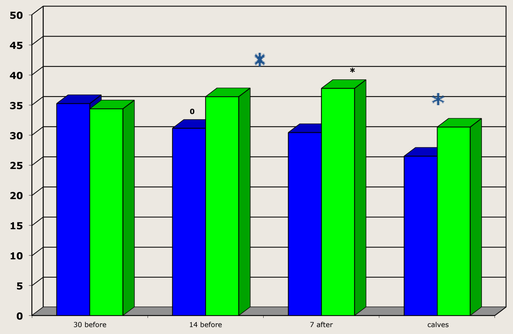
In conditions of ecological and generative disorder there is a problem of inconsistencies of adaptive capabilities of living organisms in relation to the rapid technogenic contamination. This effect on the mother's body in the period of pregnancy is particularly dangerous, which leads to a decrease in immunobiological reactivity and the emergence of immunodeficiency. Thus, the elaboration of immunotropic agents to increase the immune potential and the adaptive capacity of animals during pregnancy are relevant. The purpose of this research was to find out the peculiarities of an immune response in pregnant cows and the calves under technogenic contamination and for the action of “Pregnavitan”.

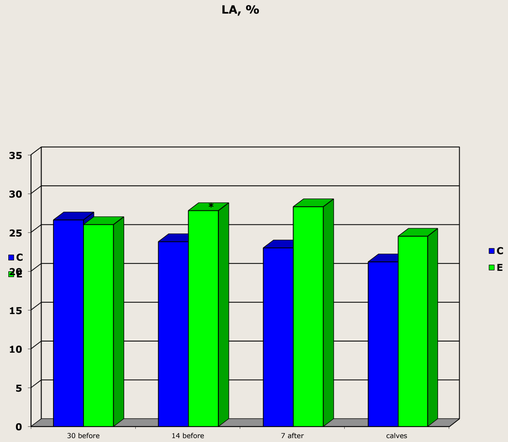
Material & Methods

The study was conducted in one of the farms on the territory of the Chervonograd mining complex in two groups of cows of the last month of pregnancy which were divided into control and experimental groups of 5-7 animals in each and newborn calves. The cows of the experimental group before 30 and 14 days to the predicted calving intramuscularly injected a complex vitamin preparation “Pregnavitan” (Patent for a utility model 99190 Ukraine, IPC (2015.01) A61K 31/00, A61K 49/00, A61K 36/00). The drug contains: tocopherol acetate, squalene, lecithin, L-methionine, L-arginine, sodium selenite, oils of thistle, sea buckthorns and flax seeds in dose of 0.04 ml per kg body weight, cows of the control group - isotonic solution of sodium chloride in dose 10 ml per animal. Blood samples for immunological and biochemical studies were taken from a jugular vein before the early feeding at 30-, 14- and 7 days before calving and those of the calves born from them in 3-daily age.

Results

It is stated a decrease in the activity of cellular and humoral factors for protecting the body of cows with an increase in gestation, as evidenced by a decrease in Serum Bactericidal Activity (SBA) in animals of the control group for 14 days before calving ($P < 0.05$) and tendencies to increase the level of Circulating Immune Complexes. These changes are probably caused by physiological immunosuppression and the influence of ecotoxicants on the body of animals. The two-time parenteral administration of the pregnant cows of the drug caused a probable increase in bactericidal activity of blood serum in cows for 14 and 7 days before calving and in their calves for 3 days of life compared with the animals of the control group. The level of Lysozyme Activity of Serum in the cows of the experimental group for 14 and 7 days before calving was higher ($p < 0.05$) than in the animals of the control group. In this case, a probable increase in phagocytosis indicators and a decrease in the content of Circulating Immune Complexes in the blood of the experimental group for 7 days prior to calving ($P < 0.05$). Positive changes in the population composition of blood lymphocytes are established - an increase in the number of T-lymphocytes (general, active, theophylline-resistant) and in-lymphocytes and increase their functional activity.





Conclusions

The results of the conducted research indicate the positive effect of the preparation of the preparation "Pregnavitan” on the immune function of the body of cows in the last period of gestation and their calves under the conditions of technogenic contamination.

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