

IMMUNO-PHYSIOLOGICAL RESPONSES OF COWS PARENTERALLY SUPPLEMENTED WITH SELENIUM AND VITAMIN E

RESPOSTAS IMUNO-FISIOLÓGICAS DE VACAS SUPLEMENTADAS, VIA PARENTERAL, COM SELÊNIO E VITAMINA E

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The intensive production system imposes severe challenges to dairy animals. Even with the adoption of biotechnology and modern breeding and milking practices, infection of the mammary gland is a persistent problem in the dairy business. Mastitis can be caused by numerous microorganisms, with citation of over 137 agents in the literature. However, bacteria are most common cause. Metabolic disorders, health and nutrition are also related to mammary gland health. In particular, the deficiency of selenium and vitamin E can suppress the immune system and increase susceptibility to disease. The aim of this study was to evaluate the effect of parenteral administration of selenium and vitamin E on the somatic cell count in milk and blood and immunological parameters of Holstein cows with a history of chronic mastitis. A total of 53 lactating cows were assigned to two groups: batch control - with parenteral administration of a placebo, and batch treated - with parenteral supplementation of 6.0 mL of a solution composed of selenium and vitamin E every 21 days, totaling five collection periods. The dosage of the commercial product used supplied 22.5 mg of sodium selenite and 1,500 IU of Vitamin E (water-soluble acetate). The experimental design was completely randomized with measures repeated in time. The California mastitis test (CMT) results were analyzed by the PROC GENMOD of the SAS program (2003) using the Chi-square test and considering the Poisson distribution in the model, with 318 observations. The Spearman correlation test was performed between somatic cell count (SCC) and California mastitis test (CMT) results in each collection period. Milk samples were collected for the determination of SCC and CMT results. Blood samples were also collected from 46% of the treatment and control groups and 42% of the treated animals for determination of complete blood count and analysis of immunoglobulins. No significant difference was found for SCC between the different treatments ($P > 0.05$). But this variable was significantly affected by days in lactation (DiL). SCC increased with more days in milk (10×10^5 vs. 35×10^5 cell/mL for control and 15×10^5 vs. 39×10^5 cell/mL for treated ($P < 0.05$), in DiL 0-110 and longer than 400 days, respectively. For the California mastitis test variable, there was no significant difference between treatments, but there was significant correlation of CMT and SCC to mammary quarters in the control ($r = 0.41$ to 0.79 , $P < 0.05$) and treated groups ($r = 0.55$ to 0.65 , $P < 0.05$) in the collection intervals. Overall, there was a significant correlation between SCC and CMT results for mammary quarters ($r = 0.30$ to 0.45 , $P < 0.05$). The blood and immunological parameters were not affected by treatments. It can be inferred that in individuals with a history of high somatic cell counts, the parenteral use of selenium and vitamin E produced no effect on the reduction of somatic cell count or changes in leukogram and immunoglobulins.

Keywords: SCC, CMT, immunological, milk quality, blood.

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