Effect of parenteral administration of Selenium and vitamin E on health status of mammary gland and on selected antioxidant indexes in blood of dairy cows

F. Zigo¹, Z. Farkašová¹, J. Elečko¹, M. Lapin¹, M. Chripková², A. Czerski³

¹ Department of Animal Breeding, University of Veterinary Medicine and Pharmacy, Komenského 73, Kosice 041 81, Slovak Republic
² Department of Pharmacology, Faculty of Medicine PJ Safarik University, Kosice 040 11, Slovak Republic
³ Department of Animal Physiology and Biostructure, Institute of Animal Physiology, Wroclaw University of Environmental and Life Sciences, ul. Norwida 31, Wroclaw 50-375 Poland

Abstract

This study focuses on the effect of parenteral administration of Selenium (Se) and vitamin E on concentration of Se in plasma and the activity of glutathione peroxidase (GPx) in the blood of dairy cows during peripartal period and their effect on the reduction of clinical mastitis. From a 220 individuals Holstein herd in a two-four lactation-gestation cycle the control group (C), 1st (D1) and 2nd (D2) experimental group were selected. Every group consisted of 15 cows in the last phase of the pregnancy. All cows were fed with the diet containing 0.1 mg of Se per kg/DM. The blood samples from vena jugularis were collected approximately 21 days before calving (control sampling), 3 days, 12 days and 21 days after calving. On the day of control sampling and 12 days before calving in D1 group, cows were injected subcutaneously in the sprescapular region with preparation Selevit inj. a.u.v. at the doses of 48.4 mg/head of Se, and 550 IU/head of α-Tocoferol (α-Toc). In D2 group, cows were injected by the same preparation only on 21th day before calving with the same doses of Se and α-Toc. The increase in the concentration of Se in the plasma and activity GPx in blood in D1 group on the 3rd day and 12th day after calving were determined. Increase in plasmatic concentrations α-Toc on 3rd day after calving and reduction of occurrence of clinical mastitis (13.3%) as compared with control group were found.

Key words: dairy cows, glutathione peroxidase, mastitis, selenium, vitamin E