

DYNAMICS OF CALCIUM, PHOSPHORUS AND MAGNESIUM IN COW SERUM FOLLOWING ORAL ADMINISTRATION OF KALCIFOSTILIS SOLUTION DURING AND AFTER PARTURITION

Algimantas Matusėvičius*, Danielius Starevičius, Vytautas Špakauskas, Irena Klimienė, Algis Černauskas, Saulius Petkevičius

Veterinary Academy, Lithuanian University of Health Sciences, Tilžės str. 18, LT-47181 Kaunas, Lithuania

*Correspondence to: A. Matusėvičius, E-mail: amatusėvičius@lva.lt, Tel./Fax: +370 37 363559

Abstract. The present study was undertaken to determine the prophylactic efficacy of a mix of calcium (Ca) and phosphorus (P) salts (Kalcifostilis) administered orally for replenishing of mineral deficit in post-parturient cows. Two experiments were performed to identify the most effective time for Kalcifostilis administration, to evaluate its prophylactic efficacy and to prepare the optimal scheme for use. Kalcifostilis was administered as a single oral dose of 500 ml gel-solution. In the first experiment, 65 pregnant third and fourth gestation dairy cows were divided randomly into 4 experimental (groups 1–4) and control group (group 5). Administration of Kalcifostilis was as follows: group 1 – at parturition (pt) and <6h post pt; group 2 – day before pt, at pt and <6 h post pt, group 3 – <6 h post pt, and group 4 – once daily every second day three doses pt and <6h post pt. In groups 1–2 significantly higher Ca and P levels compared to the controls ($p<0.05$) were observed at pt and post pt (2.12–2.25 and 1.75–1.84 mmol/l). In group 4, Ca and P serum levels were comparable to the physiological norm (1.79–2.04 and 1.29–1.44 mmol/l, respectively), but not prevented mineral deficit as 4 cows from 10 developed paresis. In controls before pt, on pt and day post pt levels of Ca and P in serum were reduced and after 1–6 days post pt returned to physiological norm.

For the second experiment 50 cows of fourth and fifth gestation, which previously had post-parturient paresis were randomly divided into two experimental (groups 1, $n=20$ and group 2, $n=15$) and control group (group 3, $n=15$). Administration of Kalcifostilis was as follows: group 1 – twice at 24h interval 1–2 days before pt and group 2 – at pt and <6h post pt. In group 1, 12 cows of 20 had no post-pt paresis (60% efficiency). Furthermore, in group 2, high prophylactic efficacy of 93.3% was reached because 14 cows of 15 had no post-pt paresis. In group 2, the probability of post-pt paresis was 6-fold lower compared to group 1. In the control (group 3), 13 cows of 15 developed post-pt paresis (87%).

In conclusion, the results showed that Kalcifostilis for the prophylaxis of paresis was most effective when administered on pt day and <6h post pt (efficacy 93.3–100%).

Keywords: pregnant cows, Kalcifostilis, calcium, phosphorus, magnesium.