Influence of novel intravenous complex solution of Ca, Mg and phosphates on blood biochemical parameters of healthy and paretic cows

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Abstract

The article describes the dynamics of changes in blood concentrations of the active substances present in the solution after its infusion to healthy cows in comparison to NaCl solution as well as the response of paretic cows to treatment with the new complex solution. Cows received a dose of 400 ml of A1 solution (containing 8.4 g of Ca²⁺) intravenously. In healthy cows the average calcium concentration in blood serum prior to the test was 2.52 ± 0.08 mmol/l while 15 min. after the infusion the concentration rose to 3.10 ± 0.08 mmol/l (p < 0.05) and magnesium concentration rose from 0.61 ± 0.05 to 1.39 ± 0.08 mmol/l (p < 0.05). This experiment showed that elevated concentration of non-organic phosphates persisted 1 hour after infusion (p < 0.05).

In the second phase of efficacy evaluation of the novel preparation A1 on paretic cows the intravenous injection of 1 ml/kg of body weight of A1 solution increased calcium concentration up to almost normal level (p < 0.05). The level of magnesium in serum 1 h after injection was statistically significantly higher by 63% (p < 0.05) and reached the physiologically normal concentration. 1 h after the infusion of test solution the level of phosphate was higher by 13% (p > 0.05). The rise was statistically not significant. Even though A1 solution undoubtedly produced an increase in glucose concentration in the blood serum, due to wide dispersion of individual measurements and high standard deviation the increase (p > 0.05) in glucose concentration was found insignificant. Most of the treated paretic cows rose within 1-6 h after infusion of 400 ml of solution A1. No relapses were observed. A combination of different salts of calcium and magnesium, non-organic phosphates and glucose with analeptic substance mixed in one solution (A1 solution) administered at a dose of 1 ml/kg of body weight raises concentrations of essential macronutrients in blood serum of cattle and promotes improvement of paretic cows condition.

Key words: complex Ca, Mg, phosphate and glucose solution, treatment, parturient paresis, cows

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