Effect of a single-dose parenteral selenium supplement administered to pregnant dairy cows on selenium and iron concentrations and immune status of calves

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Abstract

The study was performed on 21 H-F calves divided into 3 groups of 7 animals each. The first group was composed of calves whose mothers did not receive an injection of Se preparation. The second and third groups consisted of calves whose mothers were administered injections of Se and vitamin E in a single dose of 10 ml and 30 ml, 10 days before the expected parturition date. 24 hours after birth, blood samples were collected from all calves to determine Se, Fe and IgG concentrations and the activity of GSH-Px and GGT. The results of the study indicate that the administration of a single-dose Se supplement to cows in late pregnancy increases Se concentration in calves and promotes passive transfer of immunity from the mother to offspring.

Key words: calves, cows, selenium, IgG, GGT, passive transfer

Introduction

The transfer of immunoglobulins from the mother to the newborn via the colostrum, known as passive transfer, plays a very important role in protecting the infant against infectious factors. The influence of selenium supplements on IgG levels has been widely debated in the literature. According to Awadeh et al. (1998), the administration of selenium supplements to pregnant cows increases IgG concentration in the colostrum and plasma, whereas other authors did not observe such correlations (Rock et al. 2001, Mocini et al. 2011b).

Materials and Methods

The study was performed on 21 H-F calves divided into 3 groups of 7 animals each. The first group was composed of calves whose mothers did not receive an injection of selenium preparation (Se0). The second and third groups consisted of calves whose mothers were administered i.m. injections of a Se and vitamin E supplement containing 0.5 mg of sodium selenite/ml and 50 mg of tocopherol acetate/ml in a single dose of 10 ml (Se10) and 30 ml (Se30) ml, 10 days before the expected parturition date (10±2 days) (Eurovet Ani-