Effect of the source of magnesium fed during pregnancy and lactation on performance of sheep

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The aim of this study was to assess the effect of the inclusion of different source of magnesium (Mg) in concentrate fed during pregnancy and lactation on the performance of Rasa Aragonesa ewes (n=116) and their lambs. The concentrates fed to the ewes were commercial concentrates for pregnancy (88.5% DM, 18.0% CP, 30.7% FND and 13.4% FAD) and lactation (88.8% DM, 19.5% CP, 32.5% FND and 13.3% FAD). Magnesium was incorporated in the concentrate as caustic MgO (C), caustic semicalcined MgO and $MgCO_3$ (Mg2), caustic semicalcined MgO and calcined dolomite (Mg3) or caustic semicalcined MgO and $Mg(OH)_2$ (Mg4). At mating, ewes were randomly distributed in four treatments. During pregnancy, the source of Mg had no effect on live weight (LW; 66 kg) and body condition score (BCS; 3.7), however, affected sodium (Na), potassium (K), calcium (Ca) and Mg concentrations in plasma. During lactation, the source of Mg affected LW ($P<0.001$) and BCS ($P<0.05$). Ewes of Mg2 treatment lost 4 kg LW, Mg3 and Mg4 ewes lost 2 kg and C ewes maintained LW. After the 45 days of lactation, Mg3 and Mg4 ewes had greater BCS than Mg2 and C ewes (3.2, 3.2, 2.9 and 2.8, respectively; $P<0.001$). Treatment affected Na, K, Ca and P concentrations in plasma. Regarding lambing, the source of Mg did not affect birth rate (111 lambings), the number of lambs per lambing (160 lambs, 58.6% simple and 41.4% twins), lamb birth weight (3.6 kg) or mortality (4.4%). However, the source of Mg affected the lambs' weight gains during lactation as Mg4 lambs had greater weight gains than C, Mg2 and Mg3 lambs (259, 227, 220 and 222 g/d, respectively; $P<0.05$). Consequently, Mg4 lambs were heavier at weaning than C, Mg2 and Mg3 lambs (14.5, 13.1, 13.0 and 12.6 kg, respectively; $P<0.05$). In conclusion, the source of Mg in the concentrate had relevant effects only in lactation, with greater LW and BCS of ewes and daily growth lambs in Mg4 treatment.

Source of Se supplementation affects milk and blood serum Se concentrations in dairy cattle

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The aim of the present study was to evaluate three different selenium (Se) sources: sodium selenite (NaSe), selenium-yeast (SeYeast) and L-selenomethionine (SeMet) in their potential to affect blood and milk Se levels. A feeding trial was set-up with 26 high producing Holstein Friesian cows. After a two week pre-treatment period without Se supplementation, cows were divided in four homogenous groups and received either no supplementation (Ctrl) or 0.3 mg per kg dry matter intake (DMI) of either NaSe, SeYeast or SeMet for the next 7 weeks. Cows were given maize and prewilted grass silage *ad libitum*, a mixture of soybean-meal and rapeseed-meal to equalize energy and protein intake and a balanced concentrate. Milk and blood serum samples were taken during the pre-treatment period (week 0) and at week 3 and 7 after the start of supplementation. Blood serum Se as well as milk Se concentration was analysed. Se source only marginally affected milk production and composition. The mean blood serum Se was around 30µg/l at week 0 across all groups and 39 and 23µg/l for Ctrl, 63 and 57µg/l for NaSe; 71 and 71 µg/l for SeYeast; 68 and 69µg/l for SeMet at week 3 and week 7, respectively. Milk Se on average 16 µg/kg at week 0 more rapidly increased at week 3 for SeMet (61 µg/kg) than SeYeast (45 µg/kg) and NaSe (26 µg/kg). At week 7 milk Se was significantly different between SeMet (75 µg/kg); NaSe (46 µg/kg) and the Ctrl (21 µg/kg), whereas Se Yeast (63 µg/kg) was not significantly different from SeMet or NaSe. In conclusion, the type of Se source clearly affects the increase in milk Se content after supplementation.