EFFECT OF MULTIPLE INTRAVENOUS INJECTIONS OF BUTAPHOSPHAN AND CYANOCOBALAMIN ON THE METABOLISM OF PERIPARTURIENT DAIRY COWS

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Objective: A transient and acute state of negative energy balance and inadequate feed intake occurs in dairy cattle around the time of calving. Numerous adjunct therapeutic agents have been investigated for the treatment or control of fat mobilization syndrome in periparturient dairy cows. The aim of this study was to determine the effects of multiple i.v. injections of 10% butaphosphan and 0.005% cyanocobalamin combination (CatosalTM; Bayer Animal Health, Germany) between one and two weeks antepartum (a.p.) on the metabolism and health of dairy cows.

Experimental design: Forty-five late gestation Holstein-Friesian cows (2nd pregnancy) were allocated randomly to one of three groups with 15 cows/group: group C6 (6 daily i.v. injections of butaphosphan at 10 mg/kg BW and cyanocobalamin at 5 µg/kg BW in the last two weeks of gestation); group C3 (3 daily i.v. injections of butaphosphan at 10 mg/kg BW and cyanocobalamin at 5 µg/kg BW in the last week of gestation); group C0 (equivolume daily i.v. injections of 0.9% NaCl solution). Serum biochemical analysis was performed on jugular venous blood samples that were periodically obtained a.p. and postpartum (p.p.). Health status and milk production were monitored p.p.

Results: There was a large increase in serum cyanocobalamin concentration in Groups C6 and C3 p.p. Multiple daily i.v. injections of CatosalTM before parturition increased p.p. glucose availability, as evaluated by p.p. serum glucose concentration, and decreased peripheral fat mobilization and ketone body formation, as evaluated by p.p. serum non-esterified fatty acid and β-OH butyrate concentrations as well as insulin. The number of puerperal infections in the first 5 days after calving was decreased in Group C6, relative to Group C0.

Conclusions: The major findings of this study were that multiple i.v. injections of cyanocobalamin and butaphosphan (CatosalTM) before calving produced a beneficial effect on the metabolism of dairy cows. Our results are consistent with the hypothesis that high producing dairy cows in early lactation may have a relative or actual deficiency of cyanocobalamin.