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Abdülkerim Deniz graduated from the Veterinary Faculty, University of Istanbul, Turkey, in 1991 and completed a doctorate thesis at Veterinary School of Hannover in Germany between 1993–1995. Before joining Bayer HealthCare Animal Health in Turkey as a Technical Service and Regulatory Affairs Manager in 2001, he spent two years at a local veterinary pharmaceutical company as a technical product manager in Turkey (1999–2001). His current position in Bayer Animal Health is Global Veterinary and Customer Services Manager for Baycox® and Catosal® since March 2007. Abdülkerim Deniz published plenty of papers in different scientific veterinary journals.

Effects of prepartum metaphylactic treatment with Catosal® on postpartum metabolic functions in cows

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Introduction

Dairy cows are at risk of metabolic diseases during late pregnancy (3 weeks prepartum) and early lactation (3 weeks postpartum), which is called transition period (1–4). Animals may suffer in the transition period from negative energy balance due to reduced dry matter intake (DMI), unwished body condition score, individual metabolic and hormonal changes or a combination of them.

This paper describes a study on the effects of metaphylactic treatment with Catosal® in the late prepartum period of cows.

Material and method

In the present study, 32 dairy cows with second lactation in the last two weeks of their pregnancy were allocated randomly into two groups. In the treatment group (n=15), Catosal® was applied at a dose rate of 10 ml/100 kg b.w. intravenously for three consecutive days at two weeks and one week (dry-off period) prior to expected calving. Cows in the control group (n=17) received a placebo (injectable water solution) at a dose rate of 10 ml/100 kg b.w. for three consecutive days at the same time points as the Catosal® group. Blood was collected prior the treatments at two weeks and one week before expected calving date and one day and three days postpartum. Daily milk production was monitored up to one month postpartum and milk quality was tested three and two months before calving and one month postpartum. Animals were examined clinically daily for 20 days postpartum.

Results

A significant decrease of blood bilirubin and free fatty acid (FFA) concentration and a significant increase of glucose concentration and a tendency to decrease blood beta-hydroxybutyrate concentration (BHB, keton body) were observed postpartum in the Catosal® group compared to control group (Figs. 1–4). Subclinical ketosis and tendence for clinical ketosis were higher in the control group compared to Catosal® group (Fig. 5). Non of the animals in the Catosal® group had blood BHB concentrations equal or higher than 0.8 mmol/l, while in the control group 27 % of the animals had higher concentrations than 0.8 mmol/l and 13.3 % of the animals higher concentrations than 1,2 mmol/l blood BHB. The percentage of animals with high rectal temperature (≥ 39.6 °C) in the control group (52.9 %) was significantly higher than in the treatment group (13.3 %) in the first 5 days postpartum. This indicates higher incidence of puerperal infections, which needed appropriate antibiotic treatment (Fig. 6). Milk quality in terms of milk lactose and fat concentration one month postpartum was significantly affected by Catosal® treatment. Significant lower fat and higher lactose concentrations in the milk of treatment group were in line with reduced blood FFA and BHB concentrations and matched to the tendency of slightly higher milk production in the treatment group as of day 19 postpartum (Figs. 7 and 8).

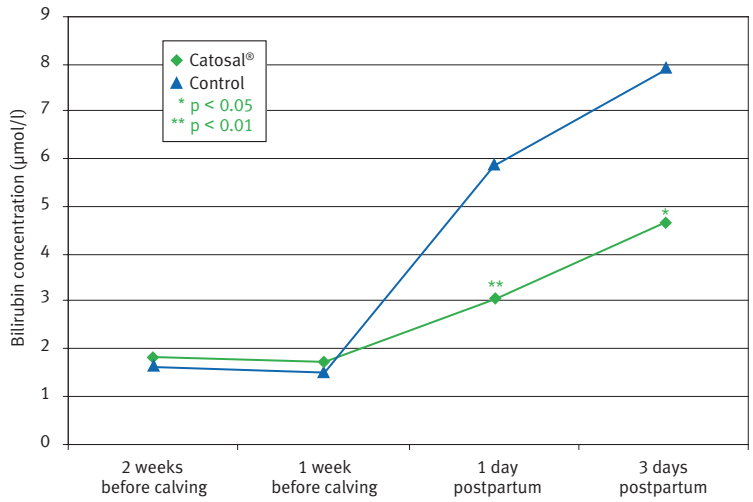

Figure 1: Prepartum treatment effect of Catosal® on postpartum blood bilirubin concentration.

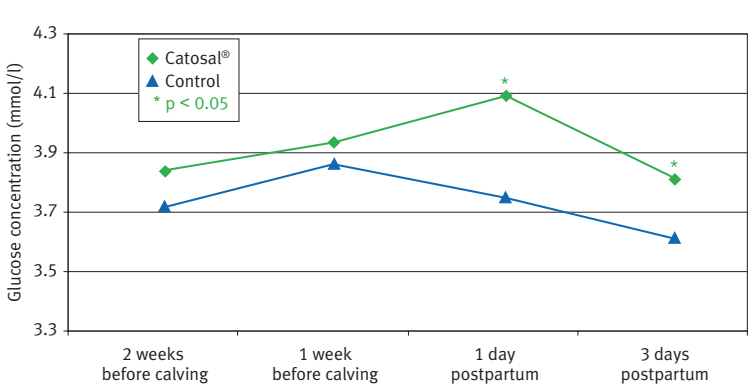

Figure 2: Prepartum treatment effect of Catosal® on postpartum blood glucose concentration.

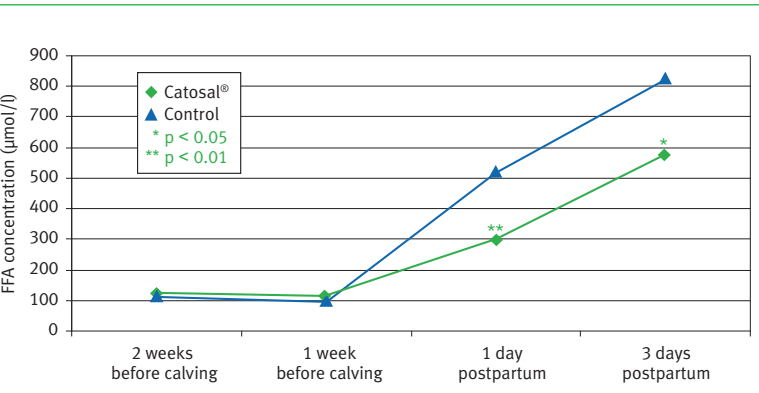

Figure 3: Prepartum treatment effect of Catosal® on postpartum blood FFA concentration.

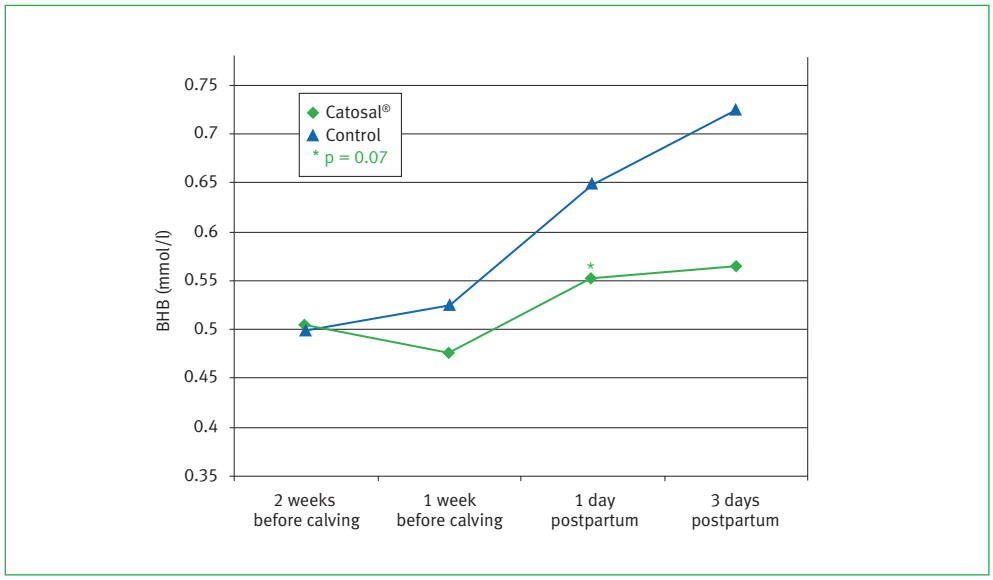

Figure 4: Prepartum treatment effect of Catosal® on postpartum blood mean BHB concentration.

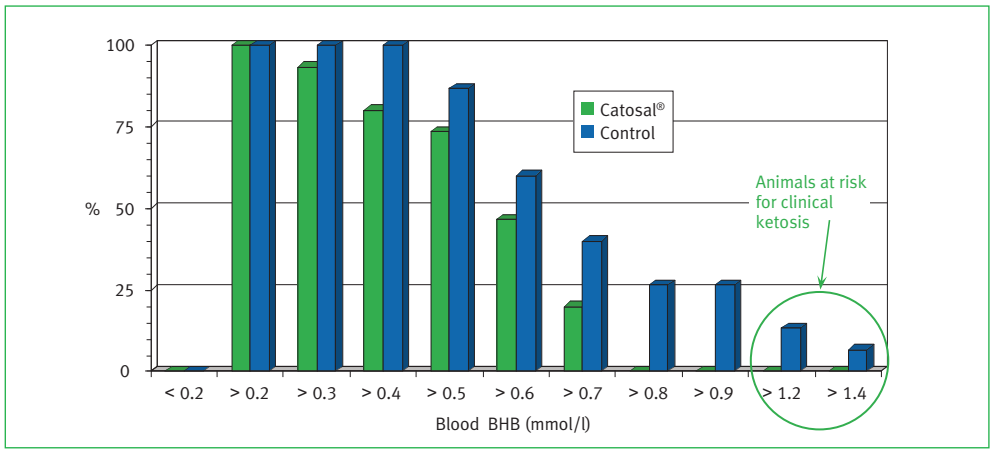

Figure 5: Effect of Catosal® on the percentage of animals exceeding the hurdle of risky blood BHB concentration on day 3 postpartum (incidence of subclinical/clinical ketosis).

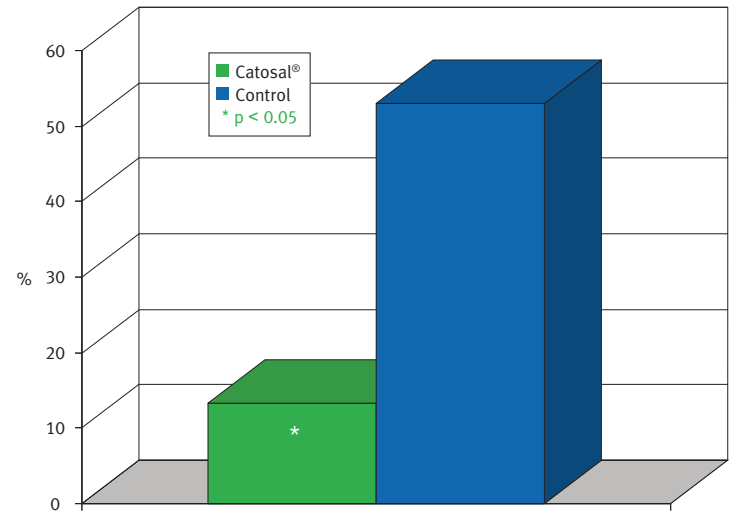

Figure 6: Percentage of animals showing ≥ 39,6 °C rectal temperature within 5 days postpartum (puerperal infection, that needed an antibiotic treatment).

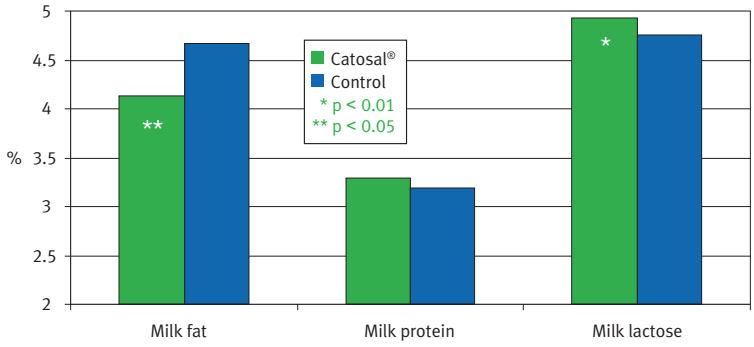

Figure 7: Prepartum treatment effect of Catosal® on milk quality 1 month postpartum.

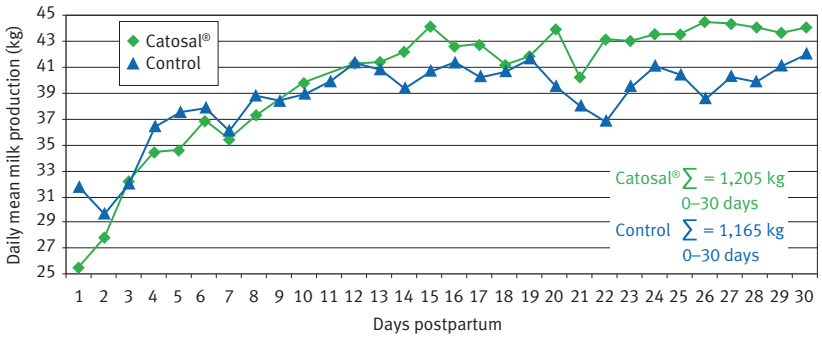

Figure 8: Prepartum treatment effect of Catosal® on daily mean milk production for 30 days postpartum.

Conclusion

Metaphylaxis with Catosal® in transient dairy cows prior to calving decreased significantly blood bilirubin and FFA concentration, increased glucose concentration, and tended to decrease blood BHB concentrations postpartum. That means an improvement of liver function during transition period in dairy cows.

Non of the animals treated with Catosal® had equal or higher concentrations than 0.8 mmol/l blood BHB, while 13 % of the cows in the control group had higher concentrations than 1.2 mmol/l blood BHB three days postpartum, indicating a subclinical ketosis.

More than 50 % of cows in the control group needed an appropriate antibiotic treatment due to high fever (possibly puerperal infection) while it were only 13 % in the Catosal® group. Prepartum metaphylactic treatment with Catosal® decreased the need for antibiotic treatment within five days postpartum.

The present study revealed that application of energy boosting Catosal® prepartum changed the milk fat and lactose concentration one month postpartum. This can be a consequence of decreased blood FFA concentrations and the tendency of higher milk production performance after postpartum transition period (postpartum day 19 onwards) in the Catosal® group.

Catosal® has beneficial effects in transition cows for prevention of metabolic disorders and balances the energy metabolism and improves milk production performance and important milk components during risky period postpartum.

Our results match very well with studies of references 5–11. Recent studies from other scientist group (12–14) are in line with our study results as well.

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