

## **EFFECT OF DEXAMETHASONE AND TRAINING ON THE HYPOTHALAMIC-PITUITARY-ADRENAL RESPONSE AFTER MILD STRESS CHALLENGE IN DAIRY COWS**

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**Objective of the study:** Recently we have found that about 10% of cows restrained in lateral recumbency (LR) did not show at all a rise in plasma cortisol as a response to the stress challenge. The lack of cortisol response may be due to an unknown previous corticoid treatment or may be due to hypothalamic-pituitary-adrenal (HPA) axis insufficiency. The aim of this study was to investigate the effect of dexamethasone and training on ACTH secretion and adrenal cortisol response in stress challenged cow.

**Methodology:** In a cross over design blinded study, six healthy German HF cows randomly divided into two groups of three cows each were used in two subsequent study periods (4 weeks wash out period). All cows were fitted with indwelling jugular vein catheters one day before the experiment. Animals were either treated with dexamethasone (40 µg/kg BW IV) or sterile normal saline (controls). As stress challenge cows were restrained in LR for 30 min 24 hours (day 1) after treatment, on day 3 and day 5. During LR blood samples were drawn in short term intervals and plasma ACTH, and serum cortisol levels were determined. Evaluation of results was performed by SAS package 9.1 (PROC GLM repeated statement).

**Results:** Compared to results in controls on day 1 mean peak blood ACTH and cortisol concentrations were significantly ( $P < 0.05$ ) decreased after dexamethasone treatment on day 1, 3 and 5. In dexamethasone treated animals mean peak ACTH and cortisol on day 5 was significantly higher than on day 1 and 3. In controls mean peak ACTH and cortisol on day 5 was significantly lower than on day 1 and 3, and on day 3 lower than on day 1.

**Conclusion:** Dexamethasone treatment does suppress the HPA axis response on a stress challenge for at least 5 days in cows. According to ACTH and cortisol results in controls training by reasonable handling to mild and pain free stress challenges like LR does reduce the stress experience in dairy cows.