

Plasma Biochemical and Haematological Changes in Steers of Different Temperament during Feedlotting

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Correlations between liveweight gains and temperament during feedlotting (Voisinet *et al.*, 1997) may be an indication that cattle of different temperament suffer different degrees of stress. This paper describes the effect of grouping into feedlot pens, cattle of good, poor and mixed (some good and some poor) temperament on blood parameters that are indicators of stress (Bennett *et al.*, 1989).

One hundred and twenty Brahman x Shorthorn steers, about 2.5 years of age, were allocated by temperament to 12 feedlot pens (10 per pen) in an experimental feedlot. Temperament was assessed by flight speed (FS, m/sec), which was measured by recording the time taken by an animal to cover a certain distance on release from the weighing crate. The mean of three recordings taken monthly prior to feedlot entry was used for allocation to treatment groups. The steers were feedlot fed for 100 days.

Four focal steers representing the range of pen FS were selected from each pen for blood sampling. The animals were sampled by coccygeal venipuncture on days 0 (induction), 21, 45 and 70, and at exsanguination on day 103. Blood was collected into evacuated heparinised tubes, centrifuged and 5mL of plasma were frozen at -20°C until testing. A blood chemistry profile was performed on each sample using an Olympus Reply Chemistry Analyser, but only creatinine phosphokinase (CPK) data are presented here. Due to insufficient sample, CPK was not recorded on day 103. Plasma cortisol levels were determined using the Cortisol System Pack (Boehringer Mannheim). Slides for differential leucocyte counting were prepared at the time of blood collection. Differential slides were stained with May-Grunwald Giemsa stains and 200 leucocytes per slide were counted.

Data were subjected to ANOVA. Differences between means were tested using the LSD procedure ($p=0.05$). Cortisol and CPK values were log transformed prior to analysis. There were no significant differences between treatments for differential smears. At induction, cortisol levels for the poor temperament group were higher ($p<0.05$) than both the mixed and good temperament groups. CPK levels for the poor temperament group were only significantly ($p<0.05$) higher than the good temperament group at induction. However, for both cortisol and CPK, treatment differences were not maintained throughout the trial (Figures 1 and 2). CPK levels on day 45 were higher (for no apparent reason) than at induction (Figure 2).

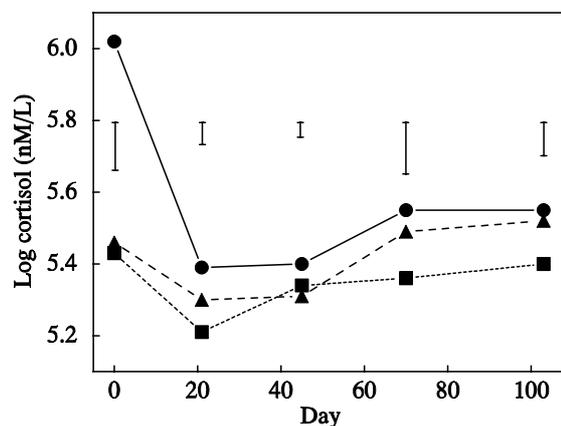


Figure 1. Log cortisol (nM/L) for poor (●), mixed (▲) and good (■) temperament steers. Vertical bars are SE of the means.

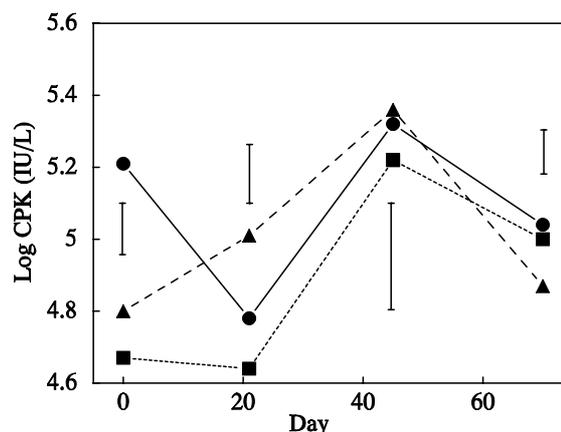


Figure 2. Log CPK (IU/L) for poor (●), mixed (▲) and good (■) temperament steers. Vertical bars are SE of the means.

Cortisol and CPK levels were higher in the poor temperament treatment at day 0, suggesting that the induction process was a stressor for these animals.

Bennett, B. W., R. P. Kershner and C. F. Nockels. 1989. *Agri-Practice* 10:17-28.

Voisinet, B. D., T. Grandin, J. D. Tatum, S. F. O'Connor and J. J. Struthers. 1997. *J.Anim.Sci.* 75:892-896.

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