REACTIVITY AND LEVELS OF CORTISOL, GLUCOSE AND INSULIN IN CONFINED LAMBS SUPPLEMENTED WITH CHROME

REATIVIDADE E NÍVEIS DE CORTISOL, GLICOSE E INSULINA EM CORDEIROS CONFINADOS SUPLEMENTADOS COM CROMO

THAYS MAYRA DA CUNHA LEME[1]*, EVALDO ANTONIO LENCIONI TITTO[1], CRISTIANE GONÇALVES TITTO[1], ANA CARINA ALVES PEREIRA DE MIRA GERALDO[1], RAQUEL FERRARI CALVIELLO[1], SAULO DA LUZ E SILVA[1], ALFREDO MANUEL FRANCO PEREIRA[2]

[1]Universidade de São Paulo (USP), Faculdade de Zootecnia e Engenharia de Alimentos, Pirassununga, SP, Brazil.
[2]Universidade de Évora, Laboratório de Biometeorologia e Bem-Estar Animal, Portugal.
*e-mail: thaysmayra@usp.br

Several strategies have been studied to reduce the stress suffered by the animals during handling and all managements that are included in a routine. Among them, the effects of supplementation with chromium in the diet of ruminants have been fairly analyzed by reducing serum cortisol levels. Thus this study was designed to investigate the effects of dietary chromium supplementation on indicators of welfare of confined sheep. Sixty-four crossbred lambs White Dorper x Santa Ines, weaned at sixty days old, were divided into two groups for confinement for sixty days: control group and the group that received supplementation of 2 mg organic chromium daily. Every 14 days, the animals were weighed after fasting for 12 hours. Simultaneously, the reactivity of lambs was evaluated by scoring during the stay in the balance, followed by the flight speed, according to a composite score scale (CSS) consisted of a compilation which integrated the four scores described above, as follows: 1. Quiet and Docile animal (Breathing score = 1 or 2; vocalization score = 0; movement = 1; flight speed = 1); 2. Low reactivity or Alive (Breathing score = 2; vocalization score = 0 or 1; movement = 2; flight speed = 2); 3. Average reactivity or Restless (Breathing score = 2 or 3; vocalization score = 0 or 1; movement = 3; flight speed = 3 or 4); 4. Very Reactive or Disturbed (Breathing score = 3; vocalization score = 1; movement = 4; flight speed = 3 or 4). After evaluating the reactivity blood samples were also collected by jugular venipuncture in tubes with dry vacuum after for evaluation of serum glucose, insulin and cortisol. The model for the analysis of variance included treatment and confinement time as fixed effect and sex as random effect as well as their interactions. In case of significant results ($P<0.05$) the Student t test was adopted for multiple comparisons. There was no effect of Cr supplementation and the feedlot days on the composite score of reactivity of the animals ($P>0.05$). The majority of the animals (75%) showed CSS equal to 2. A significant interaction ($P=0.0046$) between Cr supplementation and feedlot time on blood cortisol was observed. No difference ($P>0.05$) was observed in serum cortisol levels between animals supplemented with Cr or not until the 42 days of feedlot. However, from that period on there was a reduction in the increment of blood cortisol levels ($P<0.05$) in animals supplemented with Cr. Blood glucose levels did not differ between animals supplemented with Cr or not only on day 0 of feedlot ($P>0.05$). During feedlot period on there was an increase in glucose levels ($P<0.05$) in both animals supplemented or not with Cr. No effect of Cr supplementation on insulin levels feedlot was observed, but the effect of feedlot time ($P<0.001$) was found, which was not associated with a linear or quadratic equation. The results obtained in this study allow to conclude that supplementation with organic chromium reduces the increase in serum cortisol and decreases glucose levels of lambs during the feedlot, but does not interfere in the reactivity and in the insulin levels.

Keywords: composite score scale, sheep, temperament.

Acknowledgments: Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP).