

## **Efficacy of lactobacilli to normalize production of corticosterone induced by unpleasant handling of broilers**

### **ABSTRACT**

A study was conducted to investigate the effect of two *Lactobacillus* strains on hypothalamus pituitary adrenal (HPA) axis activity induced by supposedly unpleasant handling (UH) of broiler chickens. The three treatments were: (1) non-handled chicks fed basal diet (control); (2) unpleasantly handled-chicks fed basal diet (UH-BD) and (3) unpleasantly handled-chicks fed basal diet supplemented with the probiotic, lactobacilli (UH-BDL). Chicks were exposed to UH from days 1 to 21. Treatment UH-BDL received probiotics in their diet for the whole experimental period. Blood corticosterone (CS) concentrations were monitored at 14, 28, 35 and 42 days of age and selected caecal bacterial groups were enumerated in 14-day old birds. Unpleasant handling significantly increased blood CS concentrations at 14 and 28 days of age. Blood CS concentration decreased with age over the course of the experimental period. *Lactobacillus* supplementation did not reduce blood CS concentration in broilers in the UH-BDL treatment. Moreover, the UH treatment did not alter caecal bacterial numbers in the 14-day old broilers while the probiotic numerically increased total anaerobes and lactobacilli. Overall, it seems as if the efficacy of lactobacilli to modulate stress-related high HPA-axis activity depends on gastrointestinal tract microbial alteration. However, *Lactobacillus salivarius* subsp. *salicinius* JCM 1230 and *L. agilis* JCM 1048 were able to re-establish a proper microbial balance in the caecum of the chickens

**Keyword:** Caecal microflora, chickens, hypothalamus pituitary adrenal axis, physical contact, probiotic