

Effects of a semiochemical on feed conversion index and related indicators on fast-growing broilers housed during forty-two days

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ABSTRACT Consequences of stress in poultry may be assessed through a wide range of parameters. A semiochemical named mother hen uropygial secretion analogue (MHUSA) is known to decrease stress in broilers. Because stress influences their feeding behavior, this trial has been built so as to test the influence of MHUSA on feed conversion index and related indicators. Two hundred forty chicks were placed into 24 similar crates (10 chicks per crate) at 1 d of age. After 35 d, chickens under MHUSA presented similar feed conversion index compared with control. A treatment

effect was observed on both heterophil:lymphocyte ratio and corticosterone (MHUSA < control; $P \leq 0.001$ for both), indicating a lower level of stress under MHUSA. Glucose, total cholesterol, and triglyceride values were comparable among treatments. Live weight and daily weight gain were greater under MHUSA ($P < 0.01$ for both), whereas daily food intake was comparable among treatments. It may be concluded from this study that broilers under MHUSA tend to better assimilate food, leading to a faster growth, because they cope better with stress in their surrounding.

Key words: broiler, stress, semiochemical, feed conversion, welfare

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INTRODUCTION

Consequences of stress in birds may be assessed through a range of parameters. For example, stress affects welfare, because it decreases complexity of both locomotor and resting sequences (Maria et al., 2004). The level of stress may also be observed through blood parameters. Mainly, the heterophil:lymphocyte ratio (HLR) and the corticosterone (CS) concentration are observed to assess stress in poultry (Thaxton et al., 2006). Secondary blood parameters are also known to be influenced in a stressing situation, because stress causes elevation in glucose (GLU) and total cholesterol (CHOL), whereas triglyceride (TRI) concentration is decreased (Mumma et al., 2006). In stressed broilers, one can observe both low growing performances (Siegel, 1995) and weight gain (Zulkifli et al., 2002). The synthetic analog of a semiochemical, named mother hen uropygial secretion analogue (MHUSA), is known to have favorable effects on broilers by lowering HLR and CS concentration, thus decreasing the stress response (Madec et al., 2005, 2006). The native semiochemical is secreted from the uropygial gland of mother hens (*Galus gallus*) when isolated in natural mothering condi-

tions. It has a similar effect compared with the specific appeasing pheromones of the species mainly described in mammals (Moltz and Leet, 1981; McGlone and Anderson, 2002; Pageat and Gaultier, 2003). The native secretion of the hen, composed of fatty acids, is produced continuously from 4 d before hatching until separation occurs (Pageat, 2002). Madec et al. (2006, 2008) showed that both carcass weights and growth rate improved using MHUSA. According to Mumma et al. (2006), stress leads to proteinic catabolism and increases food and water consumption. Authors added that stress has a negative effect on feed conversion. Moreover, according to several studies (Richards, 2003; Maria et al., 2004), the feeding behavior of broilers is disturbed by stress. Thus, because stress influences feeding behavior, we hypothesize that less stressed broilers would tend to better utilize food. Because MHUSA has a potential to decrease stress, it could thus influence feeding efficiency in broilers. The following trial was designed to assess the stress-decreasing effect of MHUSA on the feed conversion index (CI) and other related stress indicators.

MATERIALS AND METHODS

Birds and Housing Conditions

Two identical buildings were used for the study. Each one was divided into 6 identical crates of 120 cm ×

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