Influence of a Semiochemical Analogue on Growing Performances and Meat Quality of Broilers

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ABSTRACT Stress in broilers may have severe consequences on the final product quality. A synthetic analogue of uropygial secretion of mother hens was isolated from poultry. This mother hen uropygial secretion analogue (MHUSA) was tested in farm conditions on broilers during 12 wk. The purpose of this trial was to estimate the influence of MHUSA on growing performances, meat characteristics after processing, and stress indicators of broilers. After the 80-d period, birds under treatment were heavier at 3 different weighing ages ($P \leq 0.01$, $P \leq 0.01$, and $P \leq 0.05$ at 21, 63, and 80 d of age, respectively) and had higher filet weights. A strong correlation between filet weight and carcass weight was found ($R^2 = 0.83$). No correlation between abdominal fat and carcass weight or between abdominal fat and filet weight was observed. There was no significant difference among treatments concerning abdominal fat. Corticosterone level was higher for birds under placebo treatment ($P \leq 0.05$). No statistical difference was observed for mixed sexes concerning filet weight lost from 24 h to d 6 postmortem. After the cooking procedure, samples from the MHUSA group were less yellow compared with the control ($P \leq 0.05$). Our conclusion is that the tested semiochemical MHUSA has an influence on live weights, filet weights, and corticosterone levels in Label broilers grown to 80 d of age. Constant exposure to the MHUSA enhances growth without decreasing meat quality.

Key words: broiler, stress, semiochemical, growth, quality

2006 Poultry Science 85:2112–2116

INTRODUCTION

Meat quality is a major issue in the process industry, mainly because consumers are demanding. Today, processing plants need to determine their own meat quality values, such as color, cook loss, or fat content. Described in other productions, pale, soft, and exudative (**PSE**) meat has seldom been related in poultry. These meats show low water-holding capacity, bad textural properties, and reduced protein extractability (Tankson et al., 2001). A relationship does exist among color, pH, and water-holding capacity (Fletcher, 1999; Woelfel et al., 2002). For example, pigs with PSE meat lose 5% more water during cooking compared with a standardized normal meat (Tankson et al., 2001). Mallia et al. (1998) also reported dark, firm, and dry carcasses in broilers. It has been shown that stress in poultry has severe consequences on the final product quality: pH, pigmentation, water-holding capacity, or fat percentage (Fletcher, 1999). Stress-related indicators are known to be heterophil:lymphocyte (**H:L**; Puvaldolpriod and Thaxton, 2000) and the corticosterone level (Post et al., 2003). A secretion from the uropygial gland of mother hens was isolated from poultry (*Gallus gallus*) under natural conditions. This secretion shows a chemical pattern comparable to the calming pheromones discovered in mammals (pigs, horses, dogs, etc.) that have a calming effect on their young (Moltz and Leet, 1981; Mc Glone and Anderson, 2002; Pageat and Gaultier, 2003). The native secretion, composed of fatty acids, is produced continuously from 4 d before hatching until separation occurs. A synthetic analogue [mother hen uropygial secretion analogue (**MHUSA**)] has the same composition as the native substance. Therefore, MHUSA has a potential to reduce stress in domestic chicken, particularly in farming conditions (Madec et al., 2005). The purpose of this trial was to estimate the influence of MHUSA on growing performances and meat characteristics of broilers after processing.

MATERIALS AND METHODS

Birds

A total of 17,600 broilers (strain SASSO T56N) were used in the study. Birds were housed in 2 similar 400-

Received March 17, 2006.
Accepted July 12, 2006.
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