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The Effect of caponization on the blood physiological value of Taiwan male native chickens (1)

Cheng-Yung Lin (2) Jenn-Chung Hsu (3) and Tien-Chun Wan (4) (5)

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Abstract

The purpose of this study was to investigate the effects of caponization on the packed cell volume (PCV), plasma pH, and plasma physiological values of Taiwanese male native chickens at different ages. For the experiment, the rooster of Taiwan Livestock Meat No. 13 was selected. The chickens were castrated at the 10th week of age and were fed with feed during the growth period (10 ~ 18 weeks of age) and the fattening period (19 ~ 28 weeks of age). Caponized or sham male native chickens were selected at the 14th week in this experiment. The treatment groups were divided into a castrated group and a slip group according to the re-development of the comb. After the chickens were fasted for 12 hours, blood samples were collected from individual chickens every two weeks, while 20 chickens from each treatment group were randomly sampled every time. The results showed that the capons (16 ~ 28 weeks old) had the highest plasma inorganic phosphorus, potassium ion and total cholesterol concentration. Besides, the capons (20 ~ 28 weeks old) had the lowest PCV and plasma pH values. The capons had also the lowest testosterone concentration at the 28th week of age, followed by the slip chickens and the sham group, respectively ($P < 0.05$). Capons and slip chickens have significantly higher plasma calcium ions, total protein, albumin, globulin, triglycerides, low-density lipoprotein, high-density lipoprotein, and blood suppression ($P < 0.05$), compared with roosters, however with a significantly lower concentration of plasma uric acid ($P < 0.05$). In addition, the activities of plasma creatine kinase and alkaline phosphatase were significantly higher in capons whereas the sham group had significantly higher concentrations of plasma creatinine and total hydroxyproline ($P < 0.05$). Furthermore, blood PCV value increased in both capons and slip chickens with increasing age, and peaked at the 20th and 26th weeks of age, respectively. In addition, the concentrations of plasma total calcium in sham, slips and capons, peaked at the 18th week of age and declined at the 22th week of age. Moreover, the concentrations of plasma inorganic phosphorus in sham, slips and capons, were reduced significantly with age. In conclusion, the results of these tests revealed that castration will significantly affect the PCV, plasma pH and certain components between 4 and 6 weeks, mainly due to androgen functions, including erythropoiesis, protein, lipid, bone, and connective tissue synthesis.

Key words: Age, Blood parameters, Caponization, Male native chicken, Testosterone.

Introduction

Capons are male chickens whose testes have been surgically removed. Because of the resultant androgen deficiency, secondary male sexual characteristics (comb, wattle, fighting, mount-bite behavior, and vocalization) are degenerative, and maturity regresses to an immature stage. Capons, commonly known as eunuch chickens, represent a number of locally produced chickens favored by Taiwanese consumers, which use the male Taiwan native chickens or male Taiwan game chickens. In Taiwan, capons are the main source of chicken meat in Hakka residence and have the highest unit price of all chicken species.

(1) Contribution No. 2661 from Livestock Research Institute, Council of Agriculture, Executive Yuan.
(2) Animal Industry Division, COA-LRI, Tainan 71246, Taiwan, R. O. C.
(3) Department of Animal Science, National Chung-Hsing University, Taichung City 402, Taiwan, R. O. C.
(4) Technical Service Division, COA-LRI, Tainan 71246, Taiwan, R. O. C.
(5) Corresponding author, E-mail: tcwan@tlri.gov.tw.