The Changing of Broilers'Blood Component at Various Environmental Temperatures and Times of Sampling

E. Kusnadi and A. Djulardi
Faculty of Animal Husbandry, Andalas University, Padang
email:e_kusnadi@ymail.com

ABSTRACT

This study was conducted to evaluate the effects of environmental temperatures and ages (time of sampling) on erythrocyte number (Er), hemoglobin concentration (Hb) and hematocrite value (Hm). Ninety 14-d old broilers were used in 3 x 4 completely randomized design in split plot 3 x 4 reared in three environmental chambers (25.55±1.45; 29.29±1.27 and 31.59±1.05°C as T1, T2 and T3 respectively), and four times of sampling (0, 4, 8 and 16 days after factor of treatment environmental temperature as S0, S4, S8 and S18 respectively). The results showed in general that T2 and T3 significantly increased in Er and Hm. The numbers of erythrocyte and presentation of hematocrite of T3S4 were higher and T1S8 were lower than all. The level of hemoglobin of S0, were higher than the others. It was concluded that a high environmental temperature and time sampling could affects the blood component of broilers.

Key words: temperature, time of sampling, blood component, broilers

INTRODUCTION

The global environmental temperature issue that will increase the environmental temperature is one of major concern for poultry producers. The increasing of environmental temperature will affect on industry of animal husbandry. It causes, besides will affect on hormonal system, digestibility of protein, availibility of antioxidant and the increasing of the free radical, the heat stress will affect the biochemistry and component of blood.

Lu *et al*. (2007) reported that feed consumption and body weight gain of broilers reared at temperature of 21°C (from 5 to 8 weeks of age) were 169.9 g/d, and 61.45 g/d respectively, significantly higher than for those reared at 34°C with feed consumption and body weight gain of 93.6 g/d and 22.29 g/d respecticely. However, feed to gain ratio increased from 2.76 at low temperature to 3.92 at high temperature.

Sugito *et al*. (2007) and Kusnadi *et al.* (2009) approved from their experiments that heat stress could reduce growth rate as well as level of the hormone triiodothyronin (T_3) in blood plasma of broiler chicken. As calorigenic factor T_3 has function to increase oxygen consumption for metabolisme through what the increment of growth rate could be gained.

Harlova *et al*. (2002) reported that erithrocyte, leucocyte, hemoglobin and hemotocrite of heat-stressed were significantly lower than control. Similar result was showed by Kusnadi (2008), that blood component of broilers 4 and 6 weeks of age reared at 33.5°C, significantly lower than 28.55°C. Zhang *et al*. (2007) reported that erithrocyte, hematocrit and hemoglobin of broiler reared at low altitude (100 m) were 1770000/mL, 29.73% and 9.49 g/mL, significantly lower than at high altitude (2900 m) of 2860000/mL, 36.49% and 10.45 g/mL respectively. The objective of the present study was to evaluate the effect of environmental temperatures and times of sampling on blood component of broilers.

MATERIALS AND METHODS

Ninety 14-d old broilers with 500 - 600 g of body weight were used as materials. The treatments had two factors, the first factors were three environmental temperatures (25.55±1.45; 29.29±1.27 and 31.59±1.05°C as T1, T2 and T3 respectively) and the second factors were four times of sampling (0, 4, 8 and 16 days after factor of environmental temperature as S0, S4, S8 and S18 respectively). The ration used was commercial feeding from Comfeed Industry. The