PEMANFAATAN CANGKANG KERANG DARAH (*Anadara granosa*) SEBAGAI *AROMATASE BLOCKER* ALAMI UNTUK MENINGKATKAN PERFORMA AYAM PELUNG [*Gallus gallus gallus* (Linn., 1758)]

INTISARI

Aromatase blocker alami (ABA) merupakan agen alami yang mampu menghambat kerja enzim *aromatase* sehingga testosteron tidak akan diubah menjadi estradiol. Keadaan tersebut membuat kadar testosteron dipertahankan tetap tinggi. Penelitian ini bertujuan untuk menganalisis efek ABA terhadap kadar testosteron (T), kadar triiodotironin (T3), dan tiroksin (T4), rasio T3/T4, performa pertumbuhan, performa suara, dan organ testis ayam pelung [*Gallus gallus gallus* (Linn.,1758)]. Penelitian ini menggunakan 16 ekor ayam pelung jantan dengan umur 40-56 minggu dan bobot badan (BB) ± 3 kg dibagi secara acak menjadi 4 kelompok perlakuan yaitu P0 (kontrol), P1 [bubuk cangkang kerang darah (*Anadara granosa*) 0,9 mg/kg BB sebagai ABA], P2 [Seng Sulfat ($ZnSO_4$) 0,9 mg/kg BB], P3 (testosteron 0,1 mL/hari atau 3 mg/hari). Ayam pelung diaklimatisasi selama 7 hari dan diberi perlakuan selama 56 hari. Pemberian pakan standar dan minum secara *ad libitum*. Perekaman suara ayam pelung dengan menggunakan metode *hagemon touch*, penimbangan ayam pelung, pengukuran jengger, pial, dan lingkar dada (LD) dilakukan setiap 14 hari sekali. Pengambilan sampel darah melalui vena *brachialis* untuk analisis kadar T, T3, T4, dan rasio T3/T4. Pengambilan sampel tersebut dilakukan setiap 14 hari sekali yaitu pada hari ke-0, 14, 28, 42, dan 56. Pada hari ke-56 semua ayam pelung dikorbankan, selanjutnya testis dan otot pektoralis ditimbang, diukur, kemudian organ tersebut dibuat preparat dengan pewarnaan hematoksilin eosin (HE) dan imunohistokimia (IHK). Desain penelitian menggunakan rancangan acak lengkap (RAL) dan data kuantitatif dianalisis menggunakan *analysis of variance* (ANOVA) pada taraf kepercayaan 95% dengan software SPSS versi 15. Hasil penelitian pada kadar hormon T, performa pertumbuhan seperti luas area fasikulus (LAF), jumlah *myofiber* dalam satu fasikulus (JM), luas area *myofiber* (LAM), dan sel yang positif PCNA menunjukkan bahwa pada P3 berbeda signifikan dengan perlakuan lainnya, P1 berbeda signifikan ($p<0,05$) dengan P2 dan P0. Hasil pada performa pertumbuhan seperti BB dan LD menunjukkan bahwa P1 berbeda signifikan dengan semua perlakuan. Hasil kadar hormon T3 dan rasio T3/T4 pada hari ke-56 menunjukkan bahwa P2 berbeda signifikan dengan semua perlakuan. Hasil kadar hormon T4 menunjukkan bahwa P1 dan P0 berbeda signifikan dengan P2 dan P3. Hasil penelitian pada bobot testis (BT) dan diameter tubulus seminiferus (DTS) menunjukkan bahwa P3 berbeda signifikan dengan perlakuan lainnya. Dapat disimpulkan bahwa pemberian ABA 0,9 mg/kg BB (P1) selama 56 hari dapat meningkatkan kadar hormon T, performa pertumbuhan (BB, LD, LAF, JM, LAM, sel yang positif PCNA), dan performa suara (frekuensi suara). Pemberian ABA tidak mempengaruhi kadar T3, T4, rasio T3/T4, dan tidak berpengaruh pada organ testis. Pemberian testosteron 0,1 mL/hari atau 3 mg/hari (P3) selama 56 hari dapat menimbulkan efek samping berupa penurunan BT dan penurunan DTS, serta terjadi atrofi pada tubulus seminiferus.

Kata kunci: *Aromatase blocker* alami, ayam pelung, performa pertumbuhan, performa suara, testosteron, tiroid

UTILIZATION OF BLOOD SHELLFISH (*Anadara granosa*) AS A NATURAL AROMATASE BLOCKER TO IMPROVE PERFORMANCE OF PELUNG CHICKEN [*Gallus gallus gallus* (Linn., 1758)]

ABSTRACT

A natural aromatase blocker (NAB) is a natural agent that is able to inhibit the action of the aromatase enzyme so that testosterone will not be converted into estradiol. This situation keeps testosterone levels high. This study aimed to analyze the effect of NAB on testosterone (T), triiodothyronine (T3), and thyroxine (T4) levels, the ratio of T3/T4, growth performance, voice performance, and testicular organs of pelung chicken [*Gallus gallus gallus* (Linn., 1758)]. This study used 16 male pelung chickens aged 40-56 weeks and body weight (BW) ± 3 kg divided randomly into 4 treatment groups, namely P0 (control), P1 [blood clamshell powder (*Anadara granosa*) 0.9 mg /kg BW as a NAB], P2 [Zinc Sulfate ($ZnSO_4$) 0,9 mg/kg BW], P3 (testosterone 0.1 mL/day or 3 mg/day). Pelung chickens were acclimatized for 7 days and treated for 56 days. Standard feeding and drinking ad libitum. Voice recording of pelung chickens using the hagemon touch method, weighing pelung chickens, measuring combs, wattles, and chest circumference (CC) was carried out once every 14 days. Blood sampling through the brachial vein for analysis of T, T3, T4, and ratio of T3/T4. Sampling was carried out every 14 days, namely on days 0, 14, 28, 42, and 56. On day 56 all pelung chickens were sacrificed, then the testes and pectoralis muscle were weighed, and measured, then the organs were made preparations with staining of hematoxylin-eosin (HE) and immunohistochemistry (IHC). The study design used a completely randomized design (CRD) and quantitative data were analyzed using ANOVA at a 95% confidence level with the software of SPSS version 15. The results of the study were on T hormone levels, growth performance such as fasciculus area (FA), the number of myofibers in one fasciculus (NM), myofiber area (MA), and PCNA-positive cells showed that P3 was significantly different from other treatments, P1 was significantly different ($p<0.05$) with P2 and P0. The results on growth performance such as BW, and CC showed that P1 was significantly different from all treatments. The results of T3 hormone levels and the T3/T4 ratio on day 56 showed that P2 was significantly different from all treatments. The results of T4 hormone levels showed that P1 and P0 were significantly different from P2 and P3. The results of the study on testicular weight (TW) and seminiferous tubule diameter (STD) showed that P3 was significantly different from other treatments. It can be concluded that giving NAB 0.9 mg/kg BW (P1) for 56 days can increase T hormone levels, growth performance (BW, CC, FA, NM, MA, PCNA positive cells), and sound performance (sound frequency). The administration of NAB did not affect the levels of T3, T4, ratio of T3/T4, and had no effect on the testicular organs. Administration of testosterone 0.1 mL/day or 3 mg/day (P3) for 56 days can cause side effects in the form of a decrease in TW and a decrease in STD, as well as atrophy in the seminiferous tubules.

Keywords: Growth performance, natural aromatase blocker, pelung chicken, sound performance, testosterone, thyroid