

PENGARUH PEMBERIAN NANOENKAPSULASI EKSTRAK DAUN RANDU (*Ceiba pentandra* L.) DALAM AIR MINUM TERHADAP KINERJA PERTUMBUHAN DAN KARAKTERISTIK USUS HALUS AYAM BROILER

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INTISARI

Tujuan penelitian ini adalah untuk mengetahui efek penambahan ekstrak daun randu dalam air minum dengan teknologi nanoenkapsulasi (NEDR) sebagai fitobiotik terhadap kinerja pertumbuhan dan karakteristik usus halus ayam broiler. Penelitian dilakukan menggunakan rancangan percobaan acak lengkap pola searah. Penelitian tahap pertama dimulai dengan mengekstraksi daun randu dengan metode maserasi dengan pelarut ethanol 70%, kemudian dibuat nanoenkapsulasi dengan penambahan kitosan dan *Sodium Tripoliphosphate* (STPP). Dilanjutkan dengan karakterisasi nanoenkapsulasi ekstrak daun randu dan uji *in vitro* antibakteri dan antioksidan. Penelitian tahap kedua dilakukan *in vivo* pemeliharaan ayam broiler berjumlah 192 ekor sejak umur 0-35 hari. Umur 0-3 hari diberi pakan komersial dengan kandungan nutrisi *Metabolizable Energy* (ME): 3100 kcal/kg; Protein Kasar (PK) 22%; Kalsium (Ca) 1%; Fosfor (P) 0,75%. Umur 4-7 hari diberi pakan campuran komersial dan pakan basal untuk adaptasi. Umur 7-35 hari dimulai perlakuan dengan masing-masing diberi pakan basal bebas antibiotik yang mengandung nutrisi ME 3117,15 kcal/kg; PK 21,22%; Ca 1,17%; P 0,64%. Delapan perlakuan dibuat 4 replikasi dan 6 ayam di setiap replikasi. Perlakuan diberikan ke dalam air minum dengan formulasi sebagai berikut: kontrol positif/ air+tetracycline 100 mg/L (P1), kontrol negatif/ air (P2), air+Ekstrak Daun Randu (EDR) 400 mg/L (P3), air+EDR 800 mg/L (P4), air+EDR 1600 mg/L (P5), air+NEDR 400 mg/L (P6); air+NEDR 800 mg/L (P7); air+NEDR 1600 mg/L (P8). Variabel yang diambil pada penelitian tahap kedua meliputi kinerja pertumbuhan dan karakteristik usus halus ayam broiler. Data dianalisis dengan aplikasi komputer SPSS-16 dengan metode analisis variansi pola searah/ *One-way Analysis of Variance* dan jika terdapat perbedaan nyata maka dilakukan analisis lanjut dengan uji DMRT dan *Orthogonal Contrass Test*. Hasil penelitian menunjukkan pemberian EDR dan NEDR 400 dan 800 mg/L tidak meningkatkan bobot akhir, penambahan bobot badan, konsumsi pakan, rasio vili:kripta, namun meningkatkan panjang vili ($P<0,05$) dibanding kontrol. Pemberian dosis EDR dan NEDR 1600 mg/L menurunkan ($P<0,05$) bobot akhir, penambahan bobot badan, konsumsi pakan, panjang vili dan rasio vili:kripta dibanding kontrol. Pemberian EDR dan NEDR juga tidak mempengaruhi nilai konversi pakan, konsumsi air minum dan rasio konsumsi air minum dibanding pakan, panjang usus, lebar vili, dan kedalaman kripta.

Kata kunci: ayam broiler, daun randu, nanoenkapsulasi, produktivitas, usus halus.

THE EFFECT OF NANOENCAPSULATED KAPOK LEAF EXTRACT (*Ceiba pentandra* L.) IN DRINKING WATER ON PERFORMANCE AND SMALL INTESTINE CHARACTERISTICS OF BROILER CHICKEN

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ABSTRACT

The purpose of this study was to determine the effect of adding kapok leaf extract in drinking water with nanoencapsulation technology (NKLE) as a phytobiotic on growth performance and small intestine characteristics of broiler. The study was conducted by one-way of completely randomized design. The first step of the research was extracting kapok leaves by a maceration method with 70% ethanol, then nanoencapsulation was made with the addition of Chitosan and Sodium Trypoliphospate (STPP). Followed by the characterization of nanoencapsulation of extracts of kapok leaf and in vitro antibacterial and antioxidant test. The second phase of the study was conducted in vivo enlargement of 192 broiler chickens from the age of 0-35 days. Age 0-3 days given commercial feed with Metabolizable Energy (ME) nutrient content: 3100 kcal/kg; Crude Protein (CP) 22%; Calcium (Ca) 1%; Phosphorus (P) 0.75%. Ages 4-7 days were given commercial mixed feed and basal feed for adaptation. Age 7-35 days were treated with each given antibiotic-free basal feed containing ME nutrient 3117.15 kcal/kg; CP 21.22%; Ca 1.17%; P 0.64%. Eight treatments were made 4 replications and 6 chickens in each replication. The treatment was given in drinking water with the following formulation: positif control/ water+tetracycline 100 mg/L (P1), negative control/ water (P2), water+kapok leaf extract (KLE) 400 mg/L (P3), water+KLE 800 mg/L (P4), water+KLE 1600 mg/L (P5), water+NKLE 400 mg/L (P6); water+NKLE 800 mg/L (P7); water+NKLE 1600 mg/L (P8). Variables taken in the second phase of research included growth performance and the characteristics of broiler small intestine. Data were analysed using the SPSS-16 computer application with the One-way Analysis of Variance analysis method and if there were real differences, further analysis was carried out with the DMRT test and Orthogonal Contrass Test. The results showed that KLE and NKLE 400 and 800 mg/L did not affect final weight, body weight gain, feed consumption, villus:crpyth ratio, but increased villus length ($P<0.05$) compared to control. The administration of EDR and NEDR 1600 mg/L doses is known to have the effect of decreasing the final weight, body weight gain, feed consumption, villus height and villus:crpyth ratio ($P<0,05$) compared to control. The administration of EDR and NEDR also had no effect on feed conversion, drinking water consumption and drinking water consumption ratio compared to feeding, intestinal length, villus width, and crpyth depth.

Keywords: broiler chicken, kapok leaves extract, nanoencapsulation, performance, small intestine