

ABSTRAK

PENGARUH PEMBERIAN KOMBINASI HERBAL DAN LISOZIM SEBAGAI ALTERNATIF *ANTIBIOTIC GROWTH PROMOTERS* TERHADAP HISTOPATOLOGI ORGAN AYAM BROILER

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Pelarangan *Antibiotic Growth Promoters* (AGP) berdasarkan UU No. 41 Tahun 2014 memicu pencarian alternatif alami yang aman. Kombinasi herbal dan lisozim berpotensi sebagai pengganti antibiotik untuk meningkatkan performa dan kesehatan ternak. Penelitian ini bertujuan mengevaluasi pengaruh suplementasi campuran herbal (bawang putih, jahe, kunyit, lempuyang) dosis 10 mg/kg dan lisozim 10 mL/L sebagai alternatif antibiotik terhadap gambaran histopatologi usus halus, hati, dan ginjal ayam broiler serta mengevaluasi perubahan panjang vili, lebar vili, dan kedalaman kript. Metode penelitian ini menggunakan 100 ekor DOC yang dibagi ke dalam empat kelompok perlakuan, yaitu kelompok kontrol positif (Tylosin/P1), kontrol negatif (tanpa imbuhan/P2), serta kelompok herbal-lisozim dengan durasi pemberian satu minggu (P3) dan tiga minggu (P4). Pemberian antibiotik dan herbal-lisozim dilakukan sejak hari pertama dan dicampurkan ke dalam pakan dan diberikan dua kali sehari selama 1 minggu dan 3 minggu. Pada minggu ke-1 dan ke-3, dilakukan nekropsi terhadap 5 ekor ayam dari setiap kelompok untuk pengambilan sampel organ hati, ginjal, serta usus halus (duodenum, jejunum, ileum). Sampel kemudian diproses dengan pewarnaan *Hematoxylin-Eosin* (HE). Berdasarkan hasil perhitungan, kelompok (P4) meningkatkan panjang vili pada seluruh segmen usus halus berturut-turut sebesar 2028,92 μm , 1286,71 μm , dan 1163,86 μm jika dibandingkan dengan kontrol yang sebesar 1894,41 μm , 1181,48 μm , 1000,36 μm . Kedalaman kript pada P4 mengalami penurunan di seluruh segmen dengan nilai berturut-turut 149,95 μm , 116,06 μm , dan 148,32 μm jika dibandingkan dengan kontrol yang sebesar 217,52 μm , 142,97 μm , 195,54 μm . Lebar vili atas dan bawah mengalami peningkatan namun belum melampaui kelompok P1 di beberapa segmen usus. Secara histopatologis, duodenum menunjukkan respons adaptif melalui peningkatan sel goblet. Meski ditemukan radang dan nekrosis pada ileum, hati, dan ginjal di fase awal, kondisi tersebut mengalami regenerasi hingga kembali normal pada minggu ketiga. Kombinasi herbal dan lisozim berpotensi sebagai alternatif AGP untuk memperbaiki mikroanatomi usus serta menjaga integritas organ dalam dengan durasi pemberian optimal selama tiga minggu meskipun belum melampaui kelompok antibiotik.

Kata kunci: *AGP, Ayam Broiler, Herbal, Histopatologi, Lisozim*

ABSTRACT

THE EFFECT OF A COMBINATION OF HERBAL AND LYSOZYME AS AN ALTERNATIVE ANTIBIOTIC GROWTH PROMOTERS ON THE HISTOPATHOLOGY OF BROILER CHICKEN ORGANS

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The prohibition of Antibiotic Growth Promoters (AGP) based on Law No. 41 of 2014 has encouraged the search for safe natural alternatives. The combination of herbal compounds and lysozyme has potential as an antibiotic substitute to improve livestock performance and health. This study aimed to evaluate the effect of supplementation with a herbal mixture (garlic, ginger, turmeric, and lempuyang) at a dose of 10 mg/kg and lysozyme at 10 mL/L as an alternative to antibiotics on the histopathological features of the small intestine, liver, and kidneys of broiler chickens, as well as to evaluate changes in villus height, villus width, and crypt depth. This study used 100 day-old chicks (DOC) divided into four treatment groups, namely a positive control group (Tylosin/P1), a negative control group (without additives/P2), and herbal-lysozyme groups with administration durations of one week (P3) and three weeks (P4). Antibiotics and herbal-lysozyme supplementation were administered from the first day, mixed into the feed, and given twice daily for 1 week and 3 weeks. In the first and third weeks, necropsies were performed on five chickens from each group for sampling of the liver, kidneys, and small intestine (duodenum, jejunum, and ileum). The samples were then processed using Hematoxylin-Eosin (HE) staining. The results showed that group P4 increased villus height in all segments of the small intestine, reaching 2028,92 μm , 1286,71 μm , and 1163,86 μm , respectively, compared to the control group values of 1894,41 μm , 1181,48 μm , and 1000,36 μm . Crypt depth in P4 decreased in all segments, with values of 149,95 μm , 116,06 μm , and 148,32 μm , respectively, compared to the control group values of 217,52 μm , 142,97 μm , and 195,54 μm . Upper and lower villus widths also increased, although they did not exceed the P1 group in several intestinal segments. Histopathologically, the duodenum showed an adaptive response through an increase in goblet cells. Although inflammation and necrosis were observed in the ileum, liver, and kidneys during the early phase, these conditions underwent regeneration and returned to normal by the third week. The combination of herbal compounds and lysozyme has potential as an alternative AGP to improve intestinal microanatomy and maintain organ integrity with an optimal administration duration of three weeks, although its effects have not yet surpassed those of the antibiotic group.

Keywords: *AGP, Broiler Chickens, Herbs, Histopathology, Lysozyme.*