

ABSTRAK

PENGARUH PEMBERIAN LISOZIM TERHADAP GAMBARAN HISTOPATOLOGI DAN MORFOMETRI VILI INTESTINUM TENUE PADA AYAM BROILER (*Gallus gallus domesticus*) SELAMA 3 MINGGU PEMELIHARAAN

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Penggunaan *antimicrobial growth promoter* (AGP) pada ayam broiler berisiko meningkatkan kejadian *antimicrobial resistance* (AMR), sehingga diperlukan alternatif yang lebih aman, seperti lisozim. Lisozim termodifikasi merupakan enzim antimikroba alami yang dimodifikasi melalui perlakuan panas, pH rendah, dan enzimatis untuk meningkatkan aktivitas antibakterinya. Penelitian ini bertujuan mengevaluasi pengaruh pemberian lisozim termodifikasi terhadap gambaran histopatologi intestinum tenue, hepar, dan ginjal serta morfometri vili intestinum tenue ayam broiler. Penelitian menggunakan 100 ekor ayam broiler *day old chick* (DOC) yang dipelihara selama tiga minggu dan dibagi secara acak ke dalam empat kelompok, yaitu kontrol positif (K+) yang diberi AGP tylosin, kontrol negatif (K-) tanpa AGP dan lisozim, kelompok L10A yang diberi lisozim termodifikasi dosis 10 mL/L air minum hingga minggu ke-2, serta kelompok L10B yang diberi lisozim termodifikasi dosis 10 mL/L air minum hingga minggu ke-3. Pengamatan dilakukan pada minggu ke-1 dan minggu ke-3 melalui pemeriksaan histopatologi intestinum tenue, hepar, dan ginjal menggunakan pewarnaan Hematoksin-Eosin (HE), serta analisis morfometri vili meliputi tinggi vili, lebar vili, kedalaman kript, dan rasio *villus height* (VH) terhadap *crypt depth* (CD) menggunakan perangkat lunak Image Raster 3. Hasil penelitian menunjukkan bahwa sebagian besar kelompok perlakuan tidak memperlihatkan lesi histopatologi berat dan beberapa kelompok menunjukkan perbaikan kondisi jaringan pada minggu ke-3. Kelompok lisozim termodifikasi juga menunjukkan nilai morfometri vili dan rasio VH:CD yang cenderung lebih baik pada beberapa segmen usus dibandingkan kelompok kontrol. Pemberian lisozim termodifikasi berpotensi mendukung kesehatan saluran pencernaan, hepar, dan ginjal melalui aktivitas antimikroba dan imunomodulator serta dapat dipertimbangkan sebagai alternatif AGP pada ayam broiler.

Kata kunci: *Ayam Broiler, Histopatologi, Intestinum Tenue, Lisozim, Morfometri*

ABSTRACT

THE EFFECT OF LYSOZYME SUPPLEMENTATION ON HISTOPATHOLOGICAL FEATURES AND SMALL INTESTINAL VILLUS MORPHOMETRY IN BROILER CHICKENS (*Gallus gallus domesticus*) DURING 3 WEEKS OF REARING

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The use of antimicrobial growth promoters (AGPs) in broiler chickens may increase the risk of antimicrobial resistance (AMR), thereby necessitating safer alternatives such as lysozyme. Modified lysozyme is a natural antimicrobial enzyme modified through heat, low pH, and enzymatic treatments to enhance its antibacterial activity. This study aimed to evaluate the effects of modified lysozyme administration on the histopathological features of the small intestine, liver, and kidneys, as well as villus morphometry in the small intestine of broiler chickens. A total of 100 day-old chick (DOC) broilers were reared for three weeks and randomly assigned into four groups: positive control (K+) supplemented with tylosin AGP, negative control (K-) without AGP and lysozyme, L10A supplemented with modified lysozyme at a dose of 10 mL/L drinking water until week 2, and L10B supplemented with modified lysozyme at a dose of 10 mL/L drinking water until week 3. Samples were collected at weeks 1 and 3. Histopathological examinations of the small intestine, liver, and kidneys were performed using Hematoxylin-Eosin (HE) staining. Villus morphometry analysis, including villus height, villus width, crypt depth, and villus height (VH) to crypt depth (CD) ratio, was conducted using Image Raster 3 software. The results showed that most treatment groups did not exhibit severe histopathological lesions, and several groups demonstrated improved tissue conditions at week 3. Modified lysozyme groups also showed better villus morphometry values and VH:CD ratios in several intestinal segments compared to the control groups. Modified lysozyme administration has the potential to support digestive tract, liver, and kidney health through its antimicrobial and immunomodulatory activities and may be considered a safer alternative to AGPs in broiler chickens.

Key words: *Broiler Chicken, Histopathology, Lysozyme, Morphometry, Small Intestine*