

PENGARUH SUPLEMENTASI *WATER ADDITIVE* TERHADAP PERUBAHAN PATOLOGIS DAN ULTRASTRUKTUR INTESTINUM PADA AYAM PEDAGING

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Intisari

Tujuan penelitian ini adalah mempelajari pengaruh penambahan *water additive* komersial terhadap perubahan patologis jaringan limfoid dan ultrastruktur intestinum, serta nilai rasio konversi pakan pada ayam pedaging. Lima puluh lima ekor *day old chicken* (DOC) ayam pedaging *Strain Cobb* digunakan sebagai hewan coba selama 35 hari. Sebelum perlakuan (minggu ke-0) 5 ekor DOC diambil secara acak dan dinekropsi untuk diambil jejunum dan dianalisis secara histopatologis. Lima puluh ekor DOC yang tersisa dibagi secara acak menjadi 2 kelompok yaitu K1 (kontrol) dan K2 (perlakuan suplementasi *water additive* 0,2% melalui air minum, dosis 5 hari/minggu) selama 5 minggu. Nilai rasio konversi pakan mingguan dihitung dari perbandingan rata-rata konsumsi pakan dengan rata-rata pertambahan bobot badan mingguan. Pada minggu ke 5, lima ekor ayam diambil secara acak dari setiap kelompok untuk dinekropsi dan mendapatkan sampel jejunum. Sampel jejunum digunakan untuk analisa histopatologis dan ultrastruktur. Hasil analisa rasio konversi pakan menunjukkan tidak terdapat perbedaan signifikan antara kedua kelompok ($P > 0,05$). Analisa histopatologis jejunum DOC yang dinekropsi sebelum perlakuan menunjukkan struktur mukosa normal (tidak terdapat perkembangan *gut-associated lymphoid tissue*). Perubahan histopatologis jejunum kedua kelompok yang dinekropsi minggu ke 5 menunjukkan hiperplasia sel pembentuk GALT, pengukuran tinggi vili jejunum menunjukkan vili kelompok perlakuan lebih tinggi secara signifikan ($P < 0,05$) dibandingkan kelompok kontrol, sedangkan lebar vili tidak terdapat perbedaan signifikan antara kedua kelompok. Berdasarkan hasil yang diperoleh, disimpulkan bahwa suplementasi *water additive* komersial (KimchiStoc[®]) pada ayam pedaging selama 5 minggu menyebabkan hiperplasia sel pembentuk GALT, serta meningkatkan tinggi dan lebar vili jejunum. Oleh karena itu, permukaan absorpsi dan sekresi enzim pencernaan meningkat, sehingga meningkatkan aktifitas fisiologis sistem pencernaan, fungsi sistem kekebalan dan status kesehatan ayam secara umum.

Kata kunci : aditif air minum, jejunum, histopatologis, ultrastruktur

EFFECT OF WATER ADDITIVE SUPPLEMENTATION ON PATHOLOGICAL CHANGES AND INTESTINAL ULTRASTRUCTURE OF BROILER

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Abstract

The objective of this study was to evaluate the effect of supplementation commercial water additive on pathological changes of lymphoid tissue and intestinal ultrastructure, and the value of feed conversion ratio in broiler. Fifty five of day old chicken (DOC) broiler Strain Cobb were used as experimental animals for 35 days. Before treatment (week 0), 5 DOCs were randomly taken and necropsied for histopathological analysis of the jejunal. Fifty remaining DOC were randomly divided into 2 groups: K1 (control) and K2 (treatment of 0.2% water additive supplementation through drinking water, 5 days / week dose) for 5 weeks. The value of weekly feed conversion ratio was calculated from ratio of the average feed consumption with the weekly average weight gain. After 5 weeks, five chickens were randomly taken from each group and necropsied for histopathological and ultrastructure analysis of the jejunal. The results of feed conversion ratio analysis showed no significant difference between the two groups ($P > 0.05$). The histopathological analysis of the DOC jejunal that was necropsied before treatment showed a normal mucosal structure (no development of gut-associated lymphoid tissue). The jejunal histopathological changes of both groups within 5 weeks of treatment showed GALT-forming cell hyperplasia, measurement of jejunal villi height in the treatment group were significantly higher ($P < 0.05$) than that in the control group, whereas villous width there was no significant difference between the two groups. Based on the results, can be concluded that adding commercial water additive (KimchiStoc[®]) in broiler for 5 weeks led to GALT-forming cell hyperplasia, and increased height and width of the jejunal villi. Consequently, the surface of absorption area and the secretion of digestive enzyme increased which ultimately increasing the physiological activity of digestive system, the function of immune system and chicken health status in general.

Keywords : water additive, jejunal, histopathological, ultrastructure