

STUDI *IN VIVO* EFIKASI *TOXIN BINDER* DALAM PAKAN BROILER YANG TERKONTAMINASI AFB₁ TERHADAP PERKEMBANGAN VILI USUS DAN PENURUNAN KERUSAKAN HATI

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INTISARI

Pakan broiler terdiri dari biji-bijian dengan komposisi terbesar berupa jagung yang menyusun sekitar 50% ransum. Kondisi penyimpanan jagung yang tidak baik rentan menimbulkan kontaminasi aflatoksin B₁ (AFB₁). Aflatoksin B₁ merupakan toksin yang dihasilkan oleh jamur *Aspergillus flavus* yang menurunkan perkembangan dan fungsi kerja organ pada broiler. Penelitian bertujuan untuk mengetahui efek penambahan *toxin binder* pada pakan tercemar AFB₁ terhadap perkembangan vili usus dan kerusakan hati pada broiler. Total 60 *day old chick* (DOC) broiler jantan ditempatkan pada 12 kandang koloni. Setiap perlakuan terdiri dari tiga ulangan, masing-masing ulangan terdapat lima ekor broiler. Jagung tercemar AFB₁ dicampurkan ke dalam ransum hingga homogen. Perlakuan dalam penelitian terdiri atas P0 (kontrol, basal diet, tanpa penambahan AFB₁), P1 (P0 + 4 g/kg kalsium bentonit lokal + 100 µg/kg AFB₁), P2 (P0 + 4 g/kg (kalsium bentonit Eropa+kerolit+saponit) + 100 µg/kg AFB₁), dan P3 (P0 + 4 g/kg kalsium bentonit Eropa+ 100 µg/kg AFB₁). Pakan perlakuan diberikan pada broiler dari hari 22 sampai 35 (fase *finisher*). Data yang diamati meliputi berat hati, histopatologi hati, kadar SGPT dan SGOT darah, panjang dan berta usus halus, panjang vili, lebar vili, kedalaman kripta, luas area vili, dan rasio V/K. Data yang diperoleh dianalisis statistik menggunakan analisis variansi (ANOVA) pola searah. Hasil penelitian menunjukkan bahwa penambahan *toxin binder* pada pakan yang tercemar AFB₁ meningkatkan berat relatif duodenum ($p=0,024$), meskipun P2 tidak berbeda nyata. Berat relatif ileum pada perlakuan P2 lebih tinggi dibandingkan P0 dan P1 meskipun tidak berbeda dengan P3. Perlakuan pakan tidak berpengaruh terhadap panjang vili, kedalaman kripta, dan rasio panjang vili terhadap kedalaman kripta, tetapi berpengaruh terhadap lebar vili ($p=0,013$). Penambahan *toxin binder* cenderung menurunkan luas area vili ($p=0,055$). Nilai SGOT dan SGPT tidak menunjukkan perbedaan antar perlakuan, meskipun perlakuan pakan tercemar AFB₁ dengan penambahan *toxin binder* terlihat tanda kerusakan pada pengamatan histopatologi hati. Berdasarkan penelitian dapat disimpulkan bahwa penambahan *toxin binder* dalam pakan tercemar AFB₁ dapat menurunkan efek negatif terhadap perkembangan vili usus dan kerusakan hati secara kimia.

Kata kunci: kontaminasi aflatoksin, *toxin binder*, pakan broiler, vili usus, kerusakan hati

IN VIVO STUDY OF TOXIN BINDER EFFICACY IN BROILER FEED CONTAMINATED WITH AFB₁ ON THE DEVELOPMENT OF INTESTINAL VILLUS AND THE DEGRESSION OF LIVER DAMAGE

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ABSTRACT

Broiler feed consists of grains with the largest composition being corn which makes up about 50% of the ration. Corn storage conditions that are not good are susceptible to contamination with aflatoxin B₁ (AFB₁). Aflatoxin B₁ is a toxin produced by the fungus *Aspergillus flavus* which reduces the development and function of organs in broilers. The aim of this study was to determine the effect of adding toxin binder to feed contaminated with AFB₁ on the development of intestinal villus and liver damage in broilers. A total of 60 day old chick (DOC) male broilers were placed in 12 colony cages. Each treatment consisted of three replicates, each replicate containing five broilers. Corn contaminated with AFB₁ was mixed into the ration until it was homogeneous. Treatment in the study consisted of P0 (control, basal diet, without the addition of AFB₁), P1 (P0 + 4 g/kg local calcium bentonite + 100 µg/kg AFB₁), P2 (P0 + 4 g/kg (European calcium bentonite+smectite) + 100 µg/kg AFB₁), and P3 (P0 + 4 g/kg European calcium bentonite + 100 µg/kg AFB₁). Treatment feed was given to broilers from day 22 to 35 (finisher phase). The observed data included liver weight, liver histopathology, blood levels of SGPT and SGOT, length and weight of small intestine, villus length, villus width, crypt depth, villus area, and V/K ratio. The data obtained were analyzed statistically using one-way analysis of variance (ANOVA). The results showed that the addition of toxin binder to feed contaminated with AFB₁ increased the relative weight of the duodenum ($p=0.024$), although P2 was not significantly different. The relative weight of the ileum in treatment P2 was higher than P0 and P1 although it was not different from P3. Feeding treatment had no effect on villus length, crypt depth, and ratio of villus length to crypt depth, but had an effect on villus width ($p=0.013$). The addition of toxin binder tended to decrease the villus area ($p=0.055$). Relative liver weight was within the normal range but did not differ between feed treatments. SGOT and SGPT values did not show differences between treatments, although the treatment of feed contaminated with AFB₁ with the addition of toxin binders showed signs of damage on liver histopathological observations. Based on the research, it can be concluded that the addition of toxin binder in feed contaminated with AFB₁ can reduce the negative effect on the development of intestinal villus and chemical damage to the liver.

Keywords: aflatoxin contamination, toxin binder, broiler feed, intestine villus, liver damage