

## **PENGARUH PENAMBAHAN *TOXIN BINDER* DALAM PAKAN TERKONTAMINASI MIKOTOKSIN TERHADAP MORFOLOGI USUS DAN KERUSAKAN HATI BROILER**

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### **INTISARI**

Jamur dengan spesies *Aspergillus flavus*, *Aspergillus ochraceus*, dan *Fusarium oxysporum* menghasilkan metabolit sekunder berupa aflatoksin B<sub>1</sub> (AFB<sub>1</sub>), okratoksin A (OTA), dan trikotesena (T-2 *toxin*). Mikotoksin pada pakan akan berpengaruh terhadap kesehatan organ usus dan organ hati broiler. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan *toxin binder* dengan kandungan bentonite, *yeast*, dan alga dalam pakan terkontaminasi AFB<sub>1</sub>, OTA, dan T-2 *toxin* terhadap kesehatan organ usus dan kerusakan hati pada broiler. Total 80 *Day Old Chick* (DOC) dibagi kedalam 16 pan, setiap pan diisi 5 ekor broiler. Terdapat 4 perlakuan yang terdiri dari P0 (kontrol, basal diet, tanpa penambahan AFB<sub>1</sub>, OTA dan T-2), P1 (P0 + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2), P2 (P0 + 4 g/kg *toxin binder* mycofix + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2), P3 (P0 + 4 g/kg *toxin binder* mycosorb + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2). Perlakuan pakan diberikan pada umur 11 sampai 35 hari. Data yang diamati meliputi berat usus, panjang usus, histologi vili, berat hati, warna hati, dan histopatologi hati. Data yang diperoleh dianalisis statistik menggunakan analisis variansi (ANOVA) pola searah. Hasil penelitian menunjukkan bahwa pakan terkontaminasi mikotoksin tidak berpengaruh terhadap morfologi usus broiler, akan tetapi berat jejunum pada broiler pada pakan terkontaminasi broiler lebih tinggi dibandingkan perlakuan pakan terkontaminasi mikotoksin dengan penambahan *toxin binder* ( $p=0,041$ ). Perlakuan pakan tidak berpengaruh terhadap panjang vili, lebar vili, dan kedalaman kript, akan tetapi rasio panjang vili dengan kedalaman kript (V:K) pada broiler dengan pakan terkontaminasi mikotoksin cenderung lebih rendah ( $p=0.056$ ). Kontaminasi mikotoksin dalam pakan menyebabkan multi folikel limfosit pada histopatologi hati. Berdasarkan penelitian dapat disimpulkan bahwa penambahan *toxin binder* dengan kandungan bentonite, *yeast*, dan alga pada level 4 g/kg mampu menurunkan pengaruh toksisitas mikotoksin.

Kata kunci: broiler, mikotoksin, *toxin binder*, vili usus, kerusakan hati

## EFFECT OF TOXIN BINDER ADDITION IN MYCOTOXIN CONTAMINATED FEED ON INTESTINAL MORPHOLOGY AND LIVER DAMAGE OF BROILERS

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### ABSTRACT

Mycotoxins are secondary metabolites of fungi with the species *Aspergillus flavus*, *Aspergillus ochraceus*, and *Fusarium oxysporum*. Those fungi produce aflatoxin B<sub>1</sub> (AFB<sub>1</sub>), ochratoxin A (OTA), and trichocene (T-2 toxin). Mycotoxins in feed affected on the intestinal organs and liver health of broilers. This study aimed to determine the effect of the addition of toxin binders containing bentonite, yeast, and algae in feed contaminated with AFB<sub>1</sub>, OTA, and T-2 toxin on the intestinal development and liver damage in broilers. A total of 80 Day Old Chicks (DOC) were divided into 16 pans, 5 broilers each pan. There were 4 treatments consisting of P0 (control, basal diet, without addition of AFB<sub>1</sub>, OTA and T-2), P1 (P0 + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2), P2 (P0 + 4 g/kg toxin binder mycofix + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2), P3 (P0 + 4 g/kg toxin binder mycosorb + 100 µg/kg AFB<sub>1</sub> + 200 µg/kg OTA + 100 µg/kg T-2). The treatments were given at the age of 11 to 35 days. The observed data included intestinal weight, intestinal length, villi histology, liver weight, liver color, and liver histopathology. The obtained data were statistically analyzed using one-way analysis of variance (ANOVA). The results showed that mycotoxin-contaminated feed had no effect on the broiler intestinal morphology, but the weight of jejunum on contaminated feed was higher than contaminated feed with the addition of toxin binder ( $p=0,041$ ). The treatment had no effect on villus length, villus width, and crypta depth, but the ratio of villus length to crypta depth (V:K) with contaminated feed tended to be lower ( $p=0,056$ ). Mycotoxin contamination in feed caused multiple lymphocyte follicles to appear on liver histopathology. Based on the study, it was concluded that the addition of toxin binder with bentonite, yeast, and algae at the level of 4 g/kg can reduce the effect of mycotoxin toxicity.

Keywords: broilers, mycotoxin, *toxin binder*, intestinal villi, liver damage