

Effect of different levels of milk thistle seed (*Silibum marianum*) on growth performance, immune response and blood metabolites in Japanese quail fed diet contaminated with aflatoxin B₁

Abstract

An experiment was conducted to determine the toxin-removal ability of *Silybum marianum* (SM) in growing Japanese quails. A total of 540 seven-day old quail chicks were distributed into the Dietary treatments consisted of 3 levels of SM (0, 0.5, and 1%) and 3 levels of aflatoxin B₁ (AFB₁; 0, 250, and 500 ppb) were used as 9 dietary treatments with 4 replicates in a 3 × 3 factorial arrangement of randomized complete design. The use of SM in diet increased feed intake (FI) and body weight gain (BWG) whereas dietary AFB₁ at the rate of 500 ppb decreased FI and BWG ($P < 0.05$). Feed conversion ratio (FCR) increased in birds received 500 ppb of AFB₁. Although dietary AFB₁ decreased the breast meat yield (BMY), thigh meat yield (TMY), and carcass attributes, the use of SM increased these carcass portions ($P < 0.05$). The relative weights of liver, heart, pancreas, proventriculus, gizzard, and intestine were increased whereas the relative size of bursa of Fabricius (BF), spleen, and carcass fat were decreased in birds fed AFB₁ ($P < 0.05$). However, an increment was observed in the size of BF, spleen, and carcass fat of birds fed on SM ($P < 0.05$). Dietary SM decreased the levels of HDL, GGT and ALT in blood while the levels of total protein and albumin have been increased in birds fed SM ($P < 0.05$). On the other hand, dietary AFB₁ elevated the levels of ALT, AST, GGT, glucose, TG in the blood but LDL, albumin and total protein decreased ($P < 0.05$). The concentrations of IgA and IgG were increased in birds received dietary SM whereas those levels were decreased in 500 ppb of AFB₁ group ($P < 0.05$). This study showed that the use of 1% of SM in contaminated diets with AFB₁ may alleviate the negative effects of toxin on bird performance, blood parameters, liver health of growing Japanese quails.

Keywords: Japanese quail, *Silybum marianum*, aflatoxicosis, hepatic enzymes



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