MICRO-AID®
CASE STUDIES

Effects of Micro-Aid® Supplementation During a Mixed Eimeria Challenge in Broilers*

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An experiment was conducted to determine if dietary Micro-Aid® supplementation could ameliorate the immune and growth responses of broilers during a mixed coccidian challenge. A total of 576 two-day-old male Ross 308 broiler chicks were housed in galvanized starter batteries and randomly assigned to 1 of 4 dietary treatment groups (12 replicate cages of 12 birds). Dietary treatments were corn-soybean meal-based and included 1) control diet + sham-inoculated (Ucon), 2) control diet + Eimeria oocyst challenge (Icon), 3) control diet with 250 mg/kg Micro-Aid® + Eimeria oocyst challenge (IMA250), and 4) control diet with 500 mg/kg of Micro-Aid® + Eimeria oocyst challenge (IMA500). On study day 14, birds were orally inoculated with 1.5 mL of tap water containing Eimeria acervulina, E. maxima, and E. tenella (100,000, 40,000, and 30,000 oocysts/dose, respectively), or sham-inoculated with 1.5 mL of tap water. Eimeria-challenged birds exhibited a reduction in growth compared with uninfected birds ($P < 0.001$); however, there were no detectable differences due to dietary treatment among Eimeria-challenged groups. Mucosal thickness in the jejunum was increased ($P < 0.042$) in all infected groups and there were no differences among infected groups; however, Micro-Aid® supplementation included at 250 mg/kg was not significantly different from the uninfected birds. Lymphocytes as a percentage of total white blood cells were increased ($P < 0.014$) in all Eimeria-challenged groups at 7 D post-inoculation compared with uninfected birds, but birds supplemented at 250 mg/kg were not different from uninfected birds. Cecal and duodenal IFN-γ expression increased with infection when compared with sham-inoculated birds. Cecal and duodenal IL-1β expression increased ($P < 0.008$ and $P < 0.039$) due to infection, and IMA250 and IMA500 treatments ameliorated IL-1β expression to levels not different from sham-inoculated birds. These results suggest that Micro-Aid® supplementation may provide some immunomodulatory effects during a mixed coccidian challenge as evidenced by lymphocyte responses, changes in intestinal structure, and alterations in cecal and duodenal inflammatory cytokine mRNA expression.

Oelschlager, M.L. et al. Effects of Yucca schidigera-derived saponin supplementation during a mixed Eimeria challenge in broilers. Poultry Science, Volume 98, Issue 8, August 2019, Pages 3212-3222.