

M52, a natural coccidiostat, improved performance, fecal oocyst shedding and intestinal lesion score of *Eimeria*-infected broilers

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M52 is an all-natural feed additive (Amlan International, Chicago, IL) that features a proprietary blend of select antiprotozoal phytochemicals. Six *in vivo* trials were conducted to evaluate the effects of M52 supplementation on growth performance, fecal oocyst shedding, and intestinal lesion score of broiler chickens challenged with experimental coccidiosis. In these 6 trials, the birds were either challenged with sporulated oocysts of a single *Eimeria maxima* strain or a cocktail of *E. acervulina*, *E. maxima* and *E. tenella* on d14 or 15. Durations of these 6 trials ranged from 20 to 28 days. All the 6 trials included a non-supplemented challenged control and a treatment group receiving supplementation of M52 at 70 g/MT. A meta-analysis was performed to combine the data from all the 6 studies to estimate the common effect of M52 on the performance and health of *Eimeria*-challenged broilers as compared to the challenged control. Data were analyzed by the Random-effects model using version 2.0 Comprehensive Meta-Analysis software, with trial considered a random effect. Parameters for analysis included: weight gain during post-challenge phase (Days 14-20), feed conversion ratio (FCR) post challenge (Days 14-20), cumulative fecal oocyst count (Days 19-22), and coccidial lesion score (Day 20). The meta-analysis revealed that broilers supplemented with M52 at 70 g/MT had significantly greater weight gain (overall: 184 vs 160 g, $P < 0.0001$; post challenge phase: 55.6 vs 50.7 g, $P < 0.005$) and improved FCR (overall: 1.75 vs 1.88, $P < 0.001$; post challenge phase: 2.25 vs 2.73, $P = 0.0001$) than the control birds. M52 treatment also decreased cumulative fecal oocyst count (3.92 vs 4.07 log₁₀, $P < 0.0001$) and reduced coccidial lesion score (1.98 vs 2.55, $P < 0.0001$). In two of these studies, M52 was further tested against multiple most commonly used anticoccidial drugs including chemicals and ionophores. M52 supplementation consistently provided comparable size of benefits to coccidial lesion and feed efficiency in both studies as compared to Salinomycin, Nicarbazine or Maxiban™ (narasin and nicarbazine). Collectively, M52 has potential as an alternative to ionophores and chemical coccidiostats to help prevent coccidiosis while maintaining gut health and bird productivity.

Key Words: coccidiosis, ionophore, chemical coccidiostat, antibiotic alternative, broilers