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**Abstract:** A dose-response assay in a central composite design platform was conducted to investigate the responses (performance, immunity, and meat quality) of quail chicks to dietary tryptophan (Trp), melatonin (MEL), and N,N -dimethylglycine (DMG) exposed to aflatoxin B 1 (AFB 1). A total of 1,275 quail chicks were randomly allotted to 85-floor pens consisting of 17 treatments with 5 replicates and 15 birds per each pen. Dietary MEL and DMG had a different effect on growth rate and interacted with dietary Trp and AFB 1 during the first 4 wk of age, while their effect disappeared at the last week of the experiment. Dietary Trp and AFB 1 were only significant on the gain of quail chick after d 28 of the assay. During the second and third weeks of age, the reduction in feed intake caused by AFB 1 attenuated by dietary MEL and DMG and dietary Trp profoundly affects feed intake in the last 2 wk of the experiment. Dietary MEL and DMG were effective on feed conversion ratio (FCR) during the second and third weeks of age. AFB 1 decreased breast meat yield (BMV) and thigh meat yield (TMY), but the inclusion of either MEL or DMG removed the adverse effects of AFB 1. Dietary Trp increased BMV, but it did not affect TMY. Increasing dietary Trp linearly increased the Lactobacillus bacteria (LAB) population, and AFB 1 negatively impacts the LAB population. The inclusion of dietary DMG removed that negative effect on LAB. Although AFB 1 decreased the antibody production against SRBC-antigen, increasing dietary Trp in intoxicated quails increased the plasma antibody in SRBC-challenged birds. At low levels of dietary Trp (0.15–0.19%), the addition of DMG increased malondialdehyde (MDA) production while increasing Trp reversed this adverse situation. In conclusion, these supplements may interact with AFB 1 in younger chicks, and dietary Trp and AFB 1 have a significant impact on the growth performance of quail chicks during the fifth and sixth week of age.

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