Hematological Responses of Broilers to Diets Supplemented with Black Soldier Fly Larvae

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Abstract:

The growing demand for sustainable and cost-effective protein sources in poultry production has increased interest in insects as alternative feed ingredients. Black Soldier Fly (Hermetia illucens, BSF) larvae are rich in protein and fat, making them a promising option for broiler diets. This study evaluated the effects of dietary BSF larvae inclusion on the hematological and biochemical blood parameters of broiler chickens. Birds were divided into a control group (CG) and three experimental groups receiving 2.0% (EG1), 3.5% (EG2), and 5.0% (EG3) BSF larvae. Hematological parameters, including red and white blood cell counts, hemoglobin concentration, and hematocrit, remained within physiological limits across all groups, indicating normal erythropoietic and immune activity. A slight increase in mean corpuscular hemoglobin concentration (MCHC) and minor decreases in leukocyte and platelet counts may reflect adaptive physiological responses. Biochemical indicators showed stable liver, kidney, and metabolic functions. Moderate significant variations in direct bilirubin, alanine aminotransferase, creatinine, gamma-glutamyl transferase, and magnesium suggested mild metabolic adjustments rather than pathological effects.

Overall, the inclusion of BSF larvae in broiler diets maintained normal physiological status and homeostasis. These findings confirm that BSF larvae can be safely used as an alternative protein source in poultry nutrition without adverse effects on health or metabolism.

Keywords:

Black Soldier Fly, broilers, alternative protein, hematology, poultry nutrition.