



Physiological and Histological Consequences of Growth Stunting in Broiler Chickens

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Abstract | Growth stunting is one of the leading causes of low productivity in poultry and is negatively affecting animal wellbeing. This study aim to determine the effect of growth stunting on body weight at different age points, evaluating changes in blood and biochemical parameters and assessment of histological alterations in the liver of stunted chickens compared to health birds.. For this purpose, a total of 300 broiler chicken were collected with age of either 14 or 28 days over the period of 5 months (May-Oct, 2022). Birds belonging to either of two categories (n=150 normal-growth or n=150 exhibiting growth stunting) were sacrificed and examined. The intestinal lengths (total and small intestine segments) were measured and blood samples were collected to analyze red blood cell (RBC) count, white blood cell (WBC) count, hemoglobin concentration, and packed cell volume (PCV). Additionally, blood serum was separated to determine the concentration of total protein, cholesterol, and glucose which are key biochemical markers that provide insights into protein metabolism, lipid profile, and blood sugar regulation, respectively. Liver tissues samples from were subjected to histological examination. The results revealed a substantial decrease in body weight (160 gm) in stunted birds compared to the normal control group (479 and 1488 gm) at both 14 and 28 days of age, respectively. Furthermore, we observed a significant decrease in cellular and biochemical blood parameters in stunted birds where RBC (1.65 and 1.83) showed a lower ($p<0.05$) count compared to health control (2.24 and 3.76) at both 14 and 28 days of age, respectively. This also applies to HB levels (7.62 and 9.44) in stunted birds compared to healthy birds (9.33 and 12.65) at the ages of 14 and 28 days, respectively. Histological analysis of the liver from stunted chickens showed various changes, including areas of necrosis and fibrosis. Collectively, these findings highlight the detrimental effects of growth stunting, characterized by reduced weight gain, altered blood cell counts, and liver damage. This study provides valuable insights for optimizing broiler management practices to ensure optimal growth and health for enhanced productivity.

Keywords | Broiler, Stunted, Growth, Hematology, Histopathology

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