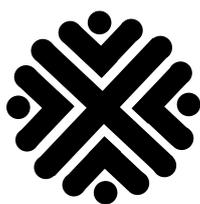


Abstrac

An experiment was conducted to assess the relationship of dietary electrolyte balance and level of calcium (Ca), and this interactive effects on performance, digestibility of Ca and phosphorus (p), immunity and some blood parameters in growing Japanese quails from 14 to 35 d of age. A total of 720 quail chicks were used to construct 9 experiment groups receiving a combination of 3 level of dietary electrolyte balance (DEB) 150, 250 and 350 mEq/kg and 3 level of Ca (0.4, 0.8, and 1.6% of diet) in a completely randomized design with factorial arrangement. Each experiment diet was replicated 4 times, 20 quail chicks in each pen replicate. The birds had free access to the experiment diets and waters throughout the study. The interaction effect of DEB and Ca was significant on performance including feed intake (FI), body weight gain (BWG), and feed efficiency ($P < 0.001$). Dietary treatment of 0.8% Ca and 150 mEq/kg DEB resulted in the greatest BWG and feed efficiency but lowest FI ($p < 0.05$). The interaction effect of dietary treatments was significant on quail response to the sheep red blood cell (SRBC) challenge in which the highest response was obtained with 1.6% Ca and 150 mEq/kg DEB ($P < 0.05$). The experimental diets affect the content of Ca, p, and Na in leg bone ($P < 0.05$). The levels of Ca and DEB had significant effects on carcass attributes, in which the lowest size of kidney and heart and the highest relative weight of thigh and breast meat was observed in diet containing 0.8% Ca and 150 mEq/kg DEB ($p < 0.001$). The experimental factors had interaction effects on biochemical blood variables ($p < 0.05$) except for HDL. The main effect of DEB was only significant on TG and ELP ($p < 0.05$). The lowest levels of AST and ALP in blood were observed in quails fed the lowest levels of dietary Ca ($p < 0.05$). The highest levels of dietary Ca and DEB resulted in the highest amounts of cholesterol and LDL ($p < 0.05$). The serum contents including Ca, p, k were significantly affected by treatments ($p < 0.05$). Deviation from 0.8% Ca of diet at all tested levels of DEB negatively changed the above mentioned variables ($p < 0.05$). The effects of dietary Ca and DEB were significant on blood pH ($p < 0.05$). The pH drop in quails fed 0.4% Ca was significantly increased by 350 mEq/kg DEB. On the other hand, blood pH in quails fed 0.8% Ca and 150 mEq/kg DEB significantly dropped ($p < 0.05$).

In conclusion,

Keywords: Quail, Electrolyte balance, Bone ash, Feed conversion ratio, Calcium,



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