EFFECTS OF DIETARY CALCIUM LEVELS IN THE PRE-STARTER DIET ON THE PERFORMANCE AND BONE QUALITY IN DAY OLD CHICKS

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Dietary phosphorus (P) absorption under current calcium (Ca) levels (9-10.5 g/kg) in broiler starter diet might be compromised because the chick hatches with minimal yolk P reserve. Two studies (S1 and S2) investigated the effects of Ca level (S1:3-4-6-8-10 and S2: 4-6-8-10 g/kg, standard Ca diet afterwards) at a constant digestible P of 4.6 g/kg, 2800 AME kcal/kg and amino acid (11.5 g/kg dLys) on growth and bone mineralization of chicks. Corn and soybean meal based diets were provided from placement to 4 days of age. A total of 1200 and 4960 one-day-old male Ross 308 broilers were randomly distributed among 40 and 80 experimental units, respectively. Feeding 10 g/kg calcium reduced body weight gain and feed intake in the first two days compared to those fed 4 g/kg Ca. Tibia ash content of chicks fed 8 and 10 g/kg Ca increased from day 2 onwards whereas in those given the 3 and 4 g/kg diets, there was no increase with age. Paradoxical effect of decreasing dietary Ca improving performance but reducing bone ash deposition at 4 days did not affect bone health during grow-out. In fact, only 3 days after eating a normal standard Ca diet the birds fed the low Ca had similar bone ash compared to 10 g/kg Ca chicks and were still gaining more weight at 7 and 14 days of age. The present study suggests that dietary Ca inclusion at 10 g/kg limits performance in the first 4 days after hatch despite improved mineral deposition.