EFFECT OF HIGH CONCENTRATION OF CHOLECALCIFEROL IN DEFICIENT CALCIUM AND PHOSPHORUS BROILER DIETS ON PRODUCTIVE PERFORMANCE AND CARCASS QUALITY

By

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ABSTRACT

Hany Ali Thabet Motawea: Effect of High Concentration of Cholecalciferol in Deficient Calcium and Phosphorus Broiler Diets on Productive Performance and Carcass Quality. Unpublished Ph.D. Thesis, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2010.

Two experiments were conducted to investigate the effect of using extra levels of cholecalciferol in deficient calcium and phosphorus broiler diets on productive performance, some blood constituents, carcass quality and some bone quality characteristics to determine the best level of cholecalciferol could be included deficient calcium and phosphorus broiler diets.

For first experiment two hundred and seventy unsexed day – old of Hubbard broiler chicks were used and randomly distributed into 5 treatments, the control diet (T1) was formulated according to the manual guide of Hubbard broiler chicks which containing Calcium 1%, available phosphorus 0.5% and 3000 I.U cholecalciferol (CC) at the starter period and for other period grower (Ca 1%, Av. P 0.5%) and finisher (Ca 0.9%, Av. P 0.45%) with the same level of cholecalciferol, and tested diets of were containing the half of Calcium and available phosphorus requirements with graded levels of cholecalciferol 5000 (T2), 6000 (T3), 7000 (T4) and 8000 (T5) International unite (IU).

For second experiment two hundred and sixteen unsexed day – old of Hubbard broiler chicks were used and randomly distributed into 4 treatments, control diet (T1) was the same in first experiment, and tested diets were containing the half of calcium and available phosphorus requirements with graded levels of cholecalciferol 3000 (T2), 7000 (T3) and 8000 (T4) International unite (IU).

Results of the 1st experiment showed that birds fed deficient calcium and phosphorus diets with extra levels of CC up to 6000 I.U

tend to consume more diets compared with birds fed control diet or birds fed deficient calcium and phosphorus diets with levels of CC 7000 or 8000 I.U with significant differences ($P<0.01$). In the same trend were the values of feed conversion ratio, the best vales were observed at control diet and at 7000 or 8000 I.U with significant differences ($P<0.01$).

Also, birds fed control diets and deficient calcium and phosphorus diets with levels of 7000 or 8000 I.U weighing heaver than those fed deficient calcium and phosphorus diets with levels of 5000 or 6000 I.U and the differences between treatments were significant ($P<0.05$). In the same order, body weight gain in birds fed control diet or deficient calcium and phosphorus diets with levels of 7000 and 8000 I.U were significantly ($P<0.05$) higher than those fed deficient diets with levels of 5000 and 6000 I.U.

Blood calcium and phosphorus in birds fed control diet and/or deficient calcium and phosphorus diets with 8000 I.U. were higher than those fed deficient calcium and phosphorus diets with levels of 7000, 6000, and 5000 I.U. Also, the levels of Alkaline phosphatase appear to be in the same trend.

Tibia breaking strength of birds fed control diet and deficient calcium and phosphorus diets with 7000 or 8000 I.U. was higher than birds fed deficient calcium and phosphorus diets with levels of 5000 and 6000 I.U with significant differences ($P<0.05$).

Addition of extra levels of CC in deficient calcium and phosphors broiler diets led to increase the calcium retention% compared with control diets, the same order was observed in phosphorus retention% but in clear manner at 7000 and 8000 I.U not less.

Results of the 2nd experiment showed that birds fed deficient calcium and phosphorus diets with level of CC 3000 I.U. didn't match control or deficient calcium and phosphorus diets with level of CC

7000 and 8000 I.U. in all productive performance parameters with significant differences.

The same trend was observed in plasma Calcium, Phosphorus and Alkaline phosphatase activity.

Finally, it could be concluded that, using the half levels of calcium and phosphorus requirements with extra levels of cholecalciferol up to 7000 I. U. in broiler diets had no adverse effect on productive performance, carcass quality, bone quality characteristics and assist to reduce ration cost as well as, phosphorus pollution.

Key Words: Deficient calcium - Deficient phosphorus - Cholecalciferol – Productive performance – Bone quality – Broiler.

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