P3. THE EFFECT OF MAGNESIUM SUPPLEMENTS ON THYROID HORMONE AND GROWTH OF BROILERS

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ABSTRACT

30 white Arbor-Acre broilers (15 males ; 15 females) aged ca 4 weeks weighing between 778±74 g (mean ± SD) were maintained under identical field conditions. The broilers were randomly divided into 3 groups: The control group (G1, n=10) was fed with standard feed (Mg contents 66 mmol/kg dry weight measured by analysis, protein 19%, and fat 4%) and tap water (Mg contents 0.29 mmol/l measured by analysis) as drinking water ad libitum.The Mg-normal group (G2, n=10) and Mg-high group (G3, n=10) were treated with the same food but drinking water was enriched with Mg in form of magnesium-L-aspartate hydrochloride (MAH). MAH was added in 2 concentrations, 4 g/l and 8 g/l respectively, yielding approximately 16 and 32 mmol Mg/l. Water was offered ad libitum for 3 weeks. Mg was supplemented in drinking water in G2, G3 until the end of the experiment. Blood collection was done 4 times with heparinized syringes from wing-vein of unfasted animals at the starting week (W0), at one week (W1), two weeks (W2), and three weeks (W3) after Mg supplementation . Totally 116 heparinized blood samples were immediately centrifuged at 4,500 rpm for 10 minutes, then plasma samples of broiler in each week (W0, W1, W2, W3) were separated and stored at –20°C until measurements. All samples were analysed for Mg and Ca with atomic absorption spectrophotometer from Shimadzu model 680 and T3, T4 were analysed by enzymun-test® T3 and enzymun-test® T4 enzyme-immunological test from Boehringer by using the ES 700. Data were analysed statistically using SPSS for window version 6.1.3. At week three of the experiment, broilers in G3 had higher weight gain than G1 and G2. Feed conversion rate was also significantly better ($P<0.05$) in G3 than G1. Plasma Mg significantly increased ($P<0.05$) during week 1 to 3 as compared to the initial values of week 0 while there was no change in plasma calcium. Hormone T3 was significantly increased and higher ($P<0.05$) in G3 than G1 at week 1 of the experiment. Plasma T3 level declined during week 2 to week 3 but level of T3 in G2, G3 still were higher than G1. Plasma T4 was higher in G2 and G3 than G1 ($P>0.05$) and the T4 level was increased and highest at week 2 and decreased at week 3 of the experiment in all groups of broilers. The results suggest that Mg supplementation can increase the level of T3 and T4 in broilers.This increased thyroid hormone may be one of the factor that improves growth in Mg-treated groups.