

## EFFECT OF 1-ALPHA HYDROXYCHOLECALCIFEROL AS A CHOLECALCIFEROL SUBSTITUTE ON PERFORMANCE AND TIBIAL DYSCHONDOPLASIA IN BROILER CHICKS

P. Ghasemi<sup>1\*</sup>, M. Toghyani<sup>1</sup>, A.A. Gheisari<sup>2</sup>

<sup>1</sup>Department of Animal Science, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran

<sup>2</sup>Isfahan Agricultural and Natural Resources Research Center, Isfahan, Iran

### INTRODUCTION

As an analog of vitamin D, 1alpha-hydroxycholecalciferol (1 $\alpha$ -OH-D3) has been demonstrated to improve the performance and phosphorus utilization of broilers (Snow et al., 2004). 1 $\alpha$ -OH-D3 could replace vitamin D3 in chicken diets and the activity of this form is about 8 times of vitamin D3 based on tibia ash (Edwards et al., 2002). When fed to broilers at 5  $\mu$ g/kg, 1 $\alpha$ -OH-D3 has been shown to reduce the incidence of tibial dyschondroplasia and improve phytate P utilization (Edwards et al., 2002). The objective of this study was to evaluate growth performance and tibial dyschondroplasia incidence in broiler chicks when 1 $\alpha$ -OH-D3 substitute as vitamin D3 in diet.

### Materials and methods

A total of 210 one-day-old Ross 308 broiler chicks were randomly assigned to 15 floor pens containing 14 chicks each based on a completely randomized design. The three dietary treatments consisted of: A (control: basal diet with vitamin D3), B (basal diet with vitamin D3 and 5  $\mu$ g/kg of 1 $\alpha$ -OH-D3) and C (basal diet with 5  $\mu$ g/kg of 1 $\alpha$ -OH-D3 without vitamin D3). Broilers received dietary treatments from 1 to 42 d in three phases: starter (1-14 d), grower (14-28 d) and finisher (28-42 d). Performance parameters (feed consumption, body weight gain and feed conversion ratio) were measured in different periods and overall growth period. Tibial dyschondroplasia incidence was determined at 42 d.

### Results and discussion

The feed intake of broilers in overall growth period (1 to 42 d) in treatment B were significantly increased ( $P < 0.05$ ). The highest body weight at 42 d was observed in treatment B ( $P < 0.05$ ). Dietary treatment had not significant effect on feed conversion ratio but it tended to decrease in treatment B. Incidence of tibial dyschondroplasia were significantly increased in broilers received dietary treatment C ( $P < 0.05$ ). Adding 1 $\alpha$ -OH-D3 to broiler diet improved growth performance, however 1 $\alpha$ -OH-D3 at level of 5  $\mu$ g/kg without vitamin D3 could not prevent from incidence of tibial dyschondroplasia. Researchers suggest that 1 $\alpha$ -OH D3 might improve the growth of broilers by increasing phytate phosphorus utilization (Han et al., 2009).

**Keywords:** Broiler, vitamin D3, 1-alpha hydroxycholecalciferol, Performance, Tibial dyschondroplasia

### References

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The 1st International Conference on New Ideas in Agriculture  
Islamic Azad University Khorasgan Branch  
26-27 Jan. 2014, Isfahan, Iran

