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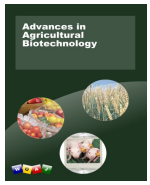

Effects of Orabolin (Ethylestrenol) on Egg Laying Performance and Egg Quality Traits in Second Year Layers.

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ABSTRACT

An experiment was conducted to determine the effects of intake of graded levels of orabolin (ethylestrenol) in second year laying birds. Sixty (60) Brown to Lohmaan breeds of laying birds of 69 weeks old were randomly assigned to four treatment groups of 15 birds per group and three replicates of five birds each per group in a completely randomized design (CRD). Graded dosage levels of orabolin (0ug, 10ug, 20ug and 30 ug) were administered for eight (8) weeks. Statistical analysis of the data collected on egg production and egg quality traits revealed that orabolin at dosage rate of 10ug had significant influence ($P< 0.05$) on egg production better than the control and other treatment groups. No significant differences ($P>0.05$) were observed in egg quality traits (egg weight, shell thickness, yolk and albumen weights) among the treatment groups. It was therefore concluded that orabolin administered at dosage rate of 10ug had significant improvement on egg production performance of second year layers.

1. Introduction

Orabolin (Ethylestrenol) is an oral anabolic steroid with little androgenic effects. It has a chemical structure 18-Nor-17alpha-progn-4-en-17-ol with an effective dosage of 20-50 mg /day (1). Anabolic properties relate to the ability to enhance muscle growth (2). It enhances growth because it promotes feed conversion and efficiency with results in improved egg laying performance in laying birds. (3).

These anabolic androgenic steroids (AAS) were originally developed to treat hypogonadism, a condition in which the testes do not produce enough testosterone for normal growth, development and sexual func-

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tioning. It was also discovered that anabolic androgenic substances could assist in the growth and repair of tissues (4, 5, 6). Among the androgenic effects of anabolics include increase in nitrogen retention, increased erythrocyte mass, enhanced oxygen delivery to tissues, increased lean body mass which culminate into increased strength and endurance (7).

Anabolic action of orabolin has been suggested to be physically relevant to reproduction; it can also play modularly roles in the sexual maturation, ovarian cycle, pregnancy and lactation (8). Putrescine which contains anabolic property promotes whole body growth and neutralizes the toxicity of raw legumes. (9). In turkey, it increases intestinal development and body growth, while in laying birds, putriscine supplemented diet decreases egg shell deformation and increase egg shell thickness (9). But some researchers have reported that anabolic did not improve egg laying performance in hens (10, 9). This study is intended to find the effects of orabolin supplementation on the performance of second year laying chicken as a means of extending the chicken productive age.

2. Materials and Methods

Sixty laying hens aged 69 weeks, in their second laying cycle were used in this study. Fifteen birds were randomly assigned to four treatment groups A, B, C and D. Each group was replicated three times with five birds in each replicate deep litter poultry pen in a completely randomized design (CRD) experiment. On arrival, the birds were weighed, served with water containing vitamin to alleviate the stress encountered in transporting them from the source to the research farm. They were also de-wormed on the third day of their arrival using levamisole.

The experiment lasted 10 weeks, the first two weeks were allowed for adaptation of the birds to their new environment while the following eight weeks were used for the administration of Ethylestrenol. The treatments were administered at dosages of 0ug, 10ug, 20ug, and 30ug per 12g of feed in treatments 1 (control), 2, 3 and 4 respectively. Then the feeds were fed to the birds for a period of eight weeks and the effects were measured. Freshly laid eggs were collected in the morning and evening hours from the first to the last day of the administration of orabolin. The eggs were weighed and hen-day production computed. Two eggs were randomly picked once weekly from the four treatment groups for parameter measurement.

The parameters measured were laying performance and egg quality traits namely: egg weight and shell thickness, albumen weight and yolk weight. The eggs were weighed using Harry's weighing scale, while the shell thickness was measured with the use of micro-screw gauge. The yolk albumen were measured by making a small hole at the pointed end of the egg through which albumen gravitationally flowed out leaving the yolk inside, after which the shell was broken to collect the yolk. Mottler electronic balance was used to measure the albumen and yolk separately. Data collected were subjected to analysis of variance (ANOVA) and separation of means where applicable, were done according to the procedure of SAS (11)

3. Results and Discussion

The results of analysis of variance (ANOVA) of the effects of orabolin on egg production parameters revealed significant differences ($P<0.05$) among the treatments groups (Table i). There was negative linear influence on egg production as the concentration of orabolin increased. The values of egg production were as follows: for 30ug, 16.75; 20ug, 24.50; 10ug, 36.00; and 16.75 for 0ug. Orabolin treatment showed significant difference ($P<0.05$) on the egg weight in treatment D over treatment B and A, while there were no significant differences in shell thickness, yolk weight and albumen weight (Table ii)

Table i: Effect of orabolin on egg production performance

Week	0ug	10ug	20ug	30ug
3	11	15	14	10
4	7.5	20	14	10
5	11	18	13	8
6	7.5	20	14	10
7	8	17	10	7
8	9	19	12	6
9	7	20	9	8
10	6	15	14	6
Total	67	144	98	65
Average	16.75	36.00	24.30	16.25
S.D	0.84	0.28	0.33	0.19

S.D = Standard Deviation

Table ii: Effect of orabolin on egg quality traits.

Treatments	Egg weight (g)	Egg Quality Parameters Shell thickness (mm)	Yolk weight (g)	Albumen weight (g)
0ug(control)A	55.6±1.33b	0.24=0.02	15.65±0.35	45.89±0.01
10ug(B)	51.9±1.33b	0.20±0.00	15.07±0.48	45.42±0.12
20ug(C)	52.9±2.15b	0.20±0.00	14.82±0.27	45.77±0.01
30ug(D)	53.6±1.66b	9.21±0.01	14.94±0.31	45.80±0.06

4. Discussion

The significant effect of orabolin (ethylestrenol) on egg production suggests that the anabolic androgenic substance enhanced egg production in second year laying hens. It implies that orabolin could be used to reactivate the laying potentials of hen already due for culling and extend their laying period at the least cost otherwise referred to as recycling of layers or force moulting. Moulting (12) is evidently, the result of the increase of some hormones and the decrease of others. The procedure is complicated and not yet fully understood. Certain hormones and chemicals, when injected into hens, will precipitate moult.

The present result contrasted the previous works (10) that anabolic did not improve egg laying performance in hens. In another study, (9) reported that orabolin enhanced growth, feed efficiency, and decrease in egg shell formation. However, (13, 14, 15), reported that the action of orabolin is physically relevant to reproduction, that is, modularly role in sexual maturation, the ovarian cycle, pregnancy and lactation.

The study has shown that orabolin does not enhance egg quality traits. This concurs with the works of (9) who reported that orabolin decreased shell formation in laying birds. This could be attributed to the androgenic effect of orabolin which include among others, increase in nitrogen retention, increased erythrocyte mass, enhanced oxygen delivery to tissues, increased lean body mass which culminate into increased strength and endurance (7). These observations are however, inconsistent with the works of (16) who reported that the relationship between growth hormones and genital steroids may stimulate linear growth and at the same time stimulate pituitary growth hormones secretion.

5. Conclusion

There was significant improvement in the performance of birds treated with 10ug of orabolin in 12g of feed; an indication that orabolin significantly improved egg production in second year layers, with mild effect on egg quality traits.

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