

## Effect of Dietary Ascorbic Acid on Performance of Broiler Chickens Exposed to Different Lighting Regime

C.D. Tuleun, P.C. Njoku and A.I. Okwori

<sup>1</sup>Department of Animal Nutrition, University of Agriculture, Makurdi, Nigeria <sup>2</sup>National University Commission, Abuja, Nigeria

### Abstract :

A 2 x 2 factorial experiment was conducted to determine the performance of 400 Anak broiler chicks exposed to two lighting regimes viz. 12 h light:12 h darkness and 24 h light:0 h darkness and fed diets containing two levels of ascorbic acid (0 and 250 mg AA/kg of feed). Each treatment was replicated four times with 25 birds per replicate. Results showed that at the starter phase of growth, chicks on continuous lighting regime recorded significantly ( $p<0.05$ ) higher weight gain than those on limited lighting regime. Addition of ascorbic acid in the diet of chicks in the starter phase significantly ( $p<0.05$ ) improved weight gain. At the grower phase, lighting regime recorded no significant ( $p>0.05$ ) effect on weight gain but addition of ascorbic acid in the diet significantly ( $p<0.05$ ) improved weight gain. There was significant ( $p<0.05$ ) interaction as chicks on continuous lighting regime with ascorbic acid in their diet recorded higher weight gain than other treatments i.e limited lighting with no ascorbic acid in the diet. At the starter phase there was no significant difference ( $p>0.05$ ) between continuous and limited lighting on feed: gain ratio. However, chicks with ascorbic in their diet recorded significantly ( $p<0.05$ ) better feed: gain ratio than those without ascorbic acid. Inclusion of ascorbic acid in the diet significantly ( $p<0.05$ ) reduced feed cost per kilogram weight gain. Ascorbic acid inclusion significantly ( $p<0.05$ ) increased femur weight but not femur ash and tibia length. Continuous lighting and inclusion of ascorbic acid from diets increased incidence of leg abnormality significantly. Inclusion of ascorbic acid significantly ( $p<0.05$ ) reduced the severity of leg abnormality. In conclusion continuous lighting and ascorbic acid in the diet may improve weight gain, feed: gain ratio, reduced feed cost per kilogram weight gain and reduction in the severity of leg abnormality. It may be recommended that under continuous lighting, inclusion of ascorbic acid in the diet may be recommended for balanced growth of the chicks.

### Key Word :

Lighting regimes, ascorbic acid, broiler performance, bone