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Study on High Dense Feed in Commercial Layers to Alleviate Physiological Stress During Transitional Phase

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Abstract

A study was carried out to review Bureau of Indian Standards recommendations (BIS) for layer pullet feed and study its efficacy of pre-lay feeds on haematology and serum protein. Commercial layer chicks were fed from 0 to 14 weeks of age as per BIS. At 15 weeks, pullets were randomly assigned to each of five pre-lay diets namely, T1 (BIS control), T2–16/2700, T3–18/2700 (%CP / kcal ME/kg); T4–Same as T2+lysine and methionine by 10% higher than BIS and T5 – same as T4 with 2 per cent oil. Significantly higher values of Packed Cell Volume, Haemoglobin, Red Blood Cell count and Heterophil/Lymphocyte ratio obtained in the present study from pullets fed with high dense pre-lay diet indicated that pullets were healthy with a normal metabolic rate. Significantly higher H/L ratio of the control group indicated that birds seemed to be under stress due to nutritional deficiency during the critical pre-lay periods, also haemoglobin level was lower in this group although it was within normal metabolic range. Total serum protein was high in pullets fed with higher pre-lay protein level of 18 per cent. Hence, it is concluded that pullets nearing lay are under metabolic stress and pre-lay diet containing 2700 kcal/kg of dietary energy and 18 per cent CP is advisable for pullets before sexual maturity as against the BIS recommendation of 2500/16 dietary energy and protein level to lower the stress and to make pullets entering into layer house with sufficient nutrient reserves.

Key Words: Transitional phase, physiological stress, high dense feed, commercial pullets, haematology, serum biochemistry

Introduction

There has been considerable interest in recent years in the use of pre-lay diets, which are often used as a way of introducing a transition phase in terms of calcium metabolism and to manipulate body size (Leeson & Summers, 1997). Pre-layer diet has been based on the assumption that the bird's nutrient requirements changes during this critical period of its life when the pullet increases body weight (200-300 g) quite dramatically, which is at about 2-3 weeks before sexual maturity. There are major changes that occur in the bird's metabolism, which relate to ovary and oviduct development, thus making this time the basis for a specialised diet. Haematology and biochemistry assay of livestock suggests the physiological disposition of the animals to their nutrition. Haematological constituents reflect the physiological responsiveness of the animal to its internal and external environments which include feeds and feeding. Hence, concept of pre-lay feed was introduced in the existing traditional feeding system of Bureau of Indian Standard for layers and an experiment was designed and conducted to study the effect of pre-lay feed in the BIS recommendations for layer during transition period (15 weeks to sexual maturity) on haematology and serum protein was studied.

Materials and Methods

An experiment was conducted at the University Research Farm, Madhavaram Chennai-51. 165 day old commercial layer chicks (Bovans') belonging to a single hatch were purchased and they were placed in deep litter in a brooder cum grower house up to 13 weeks of age. On the 14th week, 150 pullets were shifted to cages and randomly divided into five groups of 30 birds per treatment, each with five replicates of six birds per replicate. All 165 birds were provided with a starter diet containing metabolizable energy level of 2600 kcal/kg and protein of 20 per cent from 0 to 8 weeks of age and a grower diet having metabolizable energy level of 2500 kcal/kg and protein of 16 per cent from 9 to 14 weeks of