

# Effect of Nutrient Rich Diet on Productive Performance and Egg Quality Traits of Vanaraja Layers (Gallus Gallus Domesticus)

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**Abstract**—This study was designed to determine the effects on laying performance and egg quality resulting from partial substitution of soyabean meal (SBM) with nutrient rich (cereal grains, green moong sprouts, ground nut, flax seed, Sunflower seed and Olive oil) meal in the diet of early phase of laying Vanaraja hens 24 weeks of age. These birds were randomly divided into four groups allocated to three dietary treatments for 5 weeks.

One group of hens were fed with control diet which contained SBM and rest three groups were fed with diet containing wheat and maize as carbohydrate source, protein rich diet containing green gram sprouts (*Vigna radiata*) and ground nut seeds (*Arachis hypogea*) and fat rich diet containing flax seed and Sunflower seed.

Feed intake was recorded daily and egg production was calculated on hen-day basis. Eggs from each group were daily collected to evaluate egg components and quality.

The partial substitution of SBM with nutrient rich diet (cereal grains, sprouts, groundnut, flax seed, Sunflower seed and Olive oil) did not made any adverse effects on growth performance of laying hens,

Ten eggs per replication were collected to evaluate egg quality like (Haugh unit, egg volume, egg weight, albumin and yolk weight, shell weight, shell thickness and shape index).

Diets formulated on carbohydrate rich nutrient showed significant improvement in egg shell thickness and egg weight ( $P < 0.05$ ). Diets formulated on protein and fat rich nutrient significantly influenced albumin and yolk quality ( $P < 0.05$ ).

So in addition to the nutrients already available in the egg if we can incorporate certain health beneficiary nutrient then these eggs will be the choice of food for health conscious people and also can reduce the chances of occurrence of certain diseases without affecting the productive trait

**Keywords:** Egg quality, Nutrient rich meal, Vanaraja layers, Egg production

## 1. INTRODUCTION

Feed represents the major cost of poultry production contributing 60-65% of the total cost of commercial egg production. In poultry feeding, soybean meal (SBM) is usually the main protein source because it has a high protein content, has a balanced amino acid profile, and is a satisfactory source of essential fatty acids (Hammershoj and Steinfeldt, 2005). An increase in world SBM demand due to the increase in poultry production, associated with a stabilization of SBM production, has led to a decrease in availability and an increase in price of this commodity (Laudadio et al., 2011).

Cereal grains are used as food stuff for human and animals since many years. The trend of using sprouted grains in poultry diet is increasing due to many reasons and sprouting is a simple technique to germinate the seeds to improve their nutritive value (Amal et al., 2007). Sprouted grains contain grass juice factor which is a rich source of nutrient and also have been reported to improve the performance of birds and animals (Nutrigrass, 2007). The use of oilseed in rations has stimulated the poultry industry because of its nutritional characteristics. Many studies have shown the benefits of polyunsaturated fatty acids on human health, especially in relation to heart Problems and similar important diseases (Leskanich and Noble, 1997). Apart from from this Protein is a vital nutrient of animal and poultry feeds and along with other major components classes of fats, carbohydrates, minerals, vitamins and water, is substantial for life (Pond et al., 1995; Beski et al., 2015). Proper nutrition is a first step to optimize growth and productive performance in poultry and animals as well as to decrease the adverse effects on the environment (Namroud et al., 2008; Rama Rao et al.,