

Influence of Functional Feeds on Egg Production, Egg Quality and Serum Lipid Profile*

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Despite the availability of good quality protein, vitamins, minerals and MUFA, liberal availability and low cost, egg consumption in developing countries is very low, mainly due to cholesterol scare. Hence, in order to increase the egg consumption several workers (Basmacioglu *et al.*, 2001 and Narahari *et al.*, 2004) have attempted to reduce the yolk and serum cholesterol levels, by feeding special diets to hens with various degrees of success. Limited work has been taken up to observe the combined effect of flax seed, fish oil, spirulina, vitamin E and organic selenium (selPlex) in layer diets and egg production, egg quality and serum lipid levels.

Materials and Methods

Ninety six white Leghorn Forsgate strain hens, 53 weeks of age, were randomly housed in individual cages in open sided cage layer house, with a floor space of 630 cm² per hen. They were randomly divided in to 16 groups of six birds each. Four groups were randomly assigned to each of the four dietary treatments in a completely randomized design. The four dietary treatments consisted of Control-Standard layer mash containing 17 per cent crude protein, 11 MJ/kg metabolisable energy, 3.4 per cent calcium, 0.7 per cent total phosphorus, 0.75 per cent lysine, 0.36 per cent methionine, 29.2 mg/kg Vitamin E, 0.090 mg/kg selenium and 6.5 μ g/g caroteinoid pigments. The other three dietary treatments were formulated having similar nutrient composition of control except in the

level of vitamin E, selenium and caroteinoid pigments. F.S.E (Flax Seed + Vit. E) - Layer mash containing 150 g ground full fat flaxseed + 200 mg supplemental vitamin E + spirulina 3g/Kg diet, F.O.Se (Fish oil + Org. Se.)-Layer mash containing 20 g Anchovy fish oil + organic selenium (Sel-Plex) to supply 0.2 mg selenium + spirulina 3 g / kg diet and F.S.E + F.O.Se - Layer mash containing 75 g ground fall fat flaxseed +10g Anchovy fish oil + 100 vitamin E + 0.1 mg organic selenium+spirunlina 3 g / kg diet. The experimental feeds were fed to the respective birds *ad lib* from 53 to 58 weeks of age.

The data on body weight gain, feed consumption, mortality, egg production and egg weight were collected. Two eggs from each replicate were collected for assessing their qualities. At the end of the experimental period, blood samples were collected from two hens in each replicate, the serum was separated and the serum samples were used for estimation of total cholesterol (TC), Very low density lipoprotein (VLDL), Low density lipoprotein (LDL) and High density lipoprotein (HDL) cholesterol, as well as Triglyceride (TG) levels, using the procedure of Wybenga *et al.* (1970). All the data pertaining to egg production, egg quality traits and serum lipid profile were subjected to analysis of variance for a completely randomized design for significance according to the methods of Snedecor and Cochran (1989).

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