Review Article

IJCRR
Section: Healthcare
Sci. Journal
Impact Factor
4.016

EFFECT OF SUPPLEMENTATION OF KADIPATTA AND NEEM LEAF POWDER ON NUTRITIONAL QUALITY OF EGG

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ABSTRACT

Nowadays herbs are used in poultry diet as feed additive. In present trial the effect of supplementing tree leaves on egg quality was studied. One hundred twenty white leghorn layers were selected, divided randomly and subjected to six treatments. Eggs collected were analyzed for nutrient composition and quality. Egg protein content increased and significant differences were found in cholesterol and low density lipoprotein. Neem and/or Kadipatta leaves @0.5% can be used in poultry diet.

Key Words: Neem leaf powder, Medicinal herbs, *Kadipatta* leaf powder

INTRODUCTION

Medicinal herbs have long been used in poultry diet as feed additive replacing antibiotics which leave their residue in animal products. Neem and Kadipatta are used worldwide due to their notable pharmacological activities like hepato-protective, cholesterol reducing property, anti-microbial, antibacterial, antiulcer and phagocytic activity.The present investigation was done to assess the effect of supplementation of leaves of neem and Kadipatta on egg quality. One hundred and twenty white leghorn layers(22 weeks) were selected ,divided randomly and fed six treatment diets as follows; viz., T_1, Control; T_2, 0.5% *kadipatta* leaf powder; T_3, 0.5% *neem* leaf powder; T_4, 0.5% *kadipatta* and *neem* leaf powder (50:50); T_5, 0.5%*kadipatta* and *neem* leaf powder (25:75); T_6, 0.5% *kadipatta* and *neem* leaf powder (75:25 ratio) for 12 weeks. Production performance was studied in 3 different phases viz., Phase I (22-25 weeks) and phase II (26-29 weeks) and phase III during post treatment period (30-33 weeks). At the end of feeding trial a metabolic trial was conducted to know the nutrient utilization. For the egg composition and quality study three eggs were collected randomly for three days per replicate. The data obtained were analysed using Analysis of Variance (ANOVA) and the critical difference (CD) was calculated to determine any significant difference among the treatment means (Snedecor and Cochran, 1994[1]) by using STPR3 analysis software. The average egg production, feed intake and feed conversion ratio in various treatments during phase I and overall period were non- significantly different from each other while highly significant difference ($P \leq 0.01$) was found in phase II. In overall period (22-29 weeks) although the groups were non significantly different from each other, highest egg production was noted in group T_4 in which *neem* and *kadipatta* leaf powder was supplemented in ratio 50:50 followed by T_5 and T_3. Supplementation of *neem and* kadipatta leaf powder in 50:50 ratio caused increase in egg production which may be possibly due to presence of macrominerals i.e. potassium, magnesium, calcium, phosphorus and microminerals such as iron, copper, manganese and zinc in the leaves of *neem* and kadipatta(Atangwho,2009[2] and Bhowmik *et al.* ,2008[3]). Supplementation of *kadipatta* and *neem* leaf powder affected feed nutrient utilization. Increased utilization of dry matter, crude protein, ether extract and crude fibre was noted on addition of *kadipatta* to *neem* leaf powder in different proportion to the basal diet of layer. The values of T_4 group differed significantly from the control group in crude protein and ether extract utilization. In egg quality parameters egg weight was significantly ($P \leq 0.05$) increased in group T_4, T_5 and T_6 respectively, in which *neem* and *kadipatta* leaf powder were supplemented in different combination. The shape index, yolk weight, shell thickness and shell weight were

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Received: 19.12.2015 **Revised:** 23.01.2016 **Accepted:** 02.03.2016

found to be unaffected by supplementation of *neem* and *kadipatta* leaf powder during whole experimental period. Table 1 depicts the nutritional composition of egg of different supplemented groups. The dry matter content of egg of experimental layers showed non-significant differences among the treatment group. Crude protein was observed to be significantly (P≤0.05) increased in the *neem* leaf powder supplemented group. Ether extract was highly significantly (P≤0.01) increased in the supplemented group. Ash content showed non-significant differences among the treatment groups. Egg cholesterol and Low Density Lipoprotein differed significantly (P≤0.05) among the different treatment groups while non-significant differences (P≥0.05) were noted in High Density Lipoprotein and triglycerides value. Das *et al*. (2011)[4] reported that *kadipatta* leaf powder at low concentration 0.2% was effective inhibitor of primary and secondary oxidation products in raw ground and cooked meat patties and has potential as a natural antioxidant in cooked and raw meat system.

CONCLUSIONS

It can be concluded that Neem and Kadipatta leaves @ 0.5% can be incorporated in layer diet to improve egg quality.

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors/editors/publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed. This project was funded through Directorate of research , Govind Ballabh Pant University of Agriculture and Technology, Pantnagar.

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Table 1: Means ± S.E of egg composition traits of laying hens during experimental period

	T1	T2	T3	T4	T5	T6
Dry matter (%)	23.34 ± 0.1	24.81± 0.40	23.78± 0.45	24.50 ± 0.84	24.67 ±0.67	24.34 ±0.0
Crude protein* (%)	44.74a ± 0.2	44.91ab±0.08	45.57c±0.12	45.00ab±0.22	45.28bc±0.05	44.91ab±0.14
Ether extract* (%)	30.75a±0.17	40.25cd±0.17	38.25bcd±0.53	37.65bc±0.10	37.10b±0.21	40.86d±1.15
Ash (%)	4.90 ± 0.01	5.03 ± 0.01	5.03 ±0.085	4.93±0.015	4.89 ±0.065	5.08± 0.11
Cholesterol* (mg/dl)	180.00b±2.00	172.60a±2.40	172.25a±1.27	173.91a±0.60	176.28ab±1.64	179.55b±0.67
HDL (mg/dl)	78.25±1.25	83.00±1.0	82.00±1.0	80.50±1.5	82.25±0.25	79.25±0.75
LDL*(mg/dl)	67.31b±3.03	55.96a±3.17	56.38a±2.61	60.24ab±0.59	61.01ab±1.77	67.04b±0.47
Triglyceride (mg/dl)	172.15±1.05	168.16±1.16	169.34±1.67	165.86±1.48	165.10±1.895	166.31±1.99

Means bearing different superscript in a row differ significantly (P< 0.05)