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EFFECT OF NEEM (*Azadirachta indica*) LEAF POWDER ON EGG COMPOSITION PARAMETERS OF COMMERCIAL LAYERS*

R. P. PATIL[1] ; ASHOK KUMAR[2] ; ANIL KUMAR[3] ; JYOTI PALOD[4] ; S. KAUSHAL [5] ; R. A. PATOO[6] AND P. R. SHINDE[7]
Department of Livestock Production Management
College of Veterinary and Animal Sciences,
G. B.P.U.A.&T, Pantnagar, U.S. Nagar, Uttarakhand (263145)

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ABSTRACT

A study was conducted on 120 commercial layers (BV3OO) of twenty two weeks old to investigate effect of neem leaf powder (NLP) supplementation on egg composition traits. The experimental birds were randomly divided into four treatment groups viz. groups T1 (control), T2 (0.1% NLP), T3 (0.2 % NLP) and T4 (0.3% NLP). The above mentioned percentages of NLP were supplemented in daily feed up to 8 weeks period. At the end of phase I (22-25 weeks), phase II (26-29 weeks) and overall period (30-33 weeks) the egg composition parameter was analyzed. Egg composition traits (crude protein, crude fat and ash) during phase I, phase II and overall period were found unaffected by supplementation of neem leaf powder. The present study conclusively indicated that neem leaf powder supplementation through feed can be unaffected egg composition parameters in commercial layers.

Key words: Commercial layers, Neem leaf powder (*Azadirachta Indica*), Egg composition

Various feed additives or growth promoters have been developed to improve growth rate, egg traits and to reduce the production cost. They increase the cost of production and have adverse effects from long term usage. Hence scientists are now focusing on herbal products that can serve the purpose and have no side effects (Narahari *et al.,* 2009). Neem is well known in India and has been recognized for its medicinal properties since ancient times. It has attracted worldwide prominence due to its vast range of medicinal properties like antibacterial, antifungal, antiprotozoal, hepatoprotective and various other properties without showing any adverse effects (Kale *et al.,* 2003). Neem leaf and its constituents have been demonstrated to exhibit immunomodulatory, anti-inflammatory, anti-hyperglycaemic, anti-oxidant, and anti-carcinogenic properties (Bhowmik *et al.,* 2010). These plants appear to improve animal productivity owing to one or more of their biological actions such as improving digestive functions, providing nutrients, reducing bacterial and worm load, reducing effects of stress and enhancing production in lactating animals (Shabir, 1999). Keeping above characteristic of neem in consideration, the neem leaf powder has been incorporated in present study as feed additive to study its effect on egg composition parameters of commercial layers.

MATERIALS AND METHODS

The study was conducted at Instructional Poultry Farm, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (U.S. Nagar), Uttarakhand. The study was conducted for a period of 12 weeks which consisted of 8 weeks feeding trial and next 4 weeks post treatment period. One twenty laying hens of 22 weeks were

divided randomly into four groups (T1, T2, T3 and T4), each group having three replication which consisting of ten birds each. These corresponded to control (T1) and three treatment groups (T2 0.1 per cent, T3 0.2 per cent and T4 0.3 per cent neem leaf powder). At the end of phase I (22-25 weeks), phase II (26-29 weeks) and overall period (30-33 weeks) the egg composition parameter was analyzed. The chemical composition of the egg (crude protein, crude fat and ash) was determined by proximate analysis (AOAC, 1995). At the end of each phase consecutively for three days three eggs per pen per day were collected randomly and allowed for egg content analysis. The eggs were first boiled and then the shell and shell membranes were removed carefully. There were no remains of shell and shell membranes. The boiled eggs were chopped, taken on previously weighed aluminum foil and kept in hot air oven at 100 ± 2°C for 24 hours and dried until no weight change was observed. Then the egg samples were kept in moisture free bags for further chemical analysis of proteins, fat and total ash. All the observations recorded in this study were subjected to statistical analysis using one way ANOVA technique described by Snedecor and Cochran (1994). Differences between group means were considered significantly at (Pd”0.05).

RESULTS AND DISCUSSION

The values of egg composition traits of laying hens are presented in table 1 during phase I, phase II and overall period. The values of total ash recorded for T1, T2, T3 and T4 groups were 4.82±0.09, 5.05±0.14, 4.78±0.23 and 4.81±0.19 per cent during phase I, 5.25±0.17, 5.22±.23, 4.99±0.07 and 4.90±0.19 per cent during phase II and 5.03±0.09, 5.13±0.13, 4.89±0.14 and 4.86±0.18 per cent, respectively during overall period. The values did not differ significantly among themselves. The values of crude fat recorded for T1, T2, T3 and T4 groups were 43.07±0.91, 43.41±0.51, 44.32±0.32 and 42.78±0.81 per cent during phase I, 43.52±0.52, 43.22±0.28, 44.32±0.32 and 43.30±0.58 per cent during phase II and 43.30±0.36, 43.31±0.37, 44.32±0.32 and 43.04±0.65 per cent, respectively during overall period. There was no significant difference in crude fat among different treatment groups due to neem leaf powder supplementation. The values of crude protein recorded for T1, T2, T3 and T4 groups were 44.77±.81, 45.21±1.11, 43.77±.29 and 44.27±.61 per cent during phase I, 45.22±0.81, 45.55±0.89, 44.14±0.75 and 43.85±0.87 per cent during phase II and 45.00±0.78, 45.38±0.99, 43.96±0.50 and 44.06±0.67 per cent, respectively during overall period. The values did not differ significantly among themselves due to neem leaf powder supplementation. Egg composition traits during phase I, phase II and overall period were found unaffected by supplementation of neem leaf powder. The effect of neem leaf powder supplementation on egg composition traits has not been observed in the literature.

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

Traits	Period	T1	T2	T3	T4
Total ash (%)	I Phase	4.82±0.09	5.05±0.14	4.78±0.23	4.81±0.19
	II Phase	5.25±0.17	5.22±0.23	4.99±0.07	4.90±0.19
	Overall	5.03±0.09	5.13±0.13	4.89±0.14	4.86±0.18
Crude fat (%)	I Phase	43.07±0.91	43.41±0.51	44.32±0.32	42.78±0.81
	II Phase	43.52±0.52	43.22±0.28	44.32±0.32	43.30±0.58
	Overall	43.30±0.36	43.31±0.37	44.32±0.32	43.04±0.65
Crude protein (%)	I Phase	44.77±0.81	45.21±1.11	43.77±0.29	44.27±0.61
	II Phase	45.22±0.81	45.55±0.89	44.14±0.75	43.85±0.87
	Overall	45.00±0.78	45.38±0.99	43.96±0.50	44.06±0.67

CONCLUSION

A study was conducted on 120 commercial layers (BV3OO) of twenty two weeks age to investigate the effect of neem leaf powder (*Azadirachta indica*) supplementation on egg composition parameters. The experimental birds were randomly divided into four treatment groups' viz. groups T1-control, T2-0.1 per cent, T3-0.2 and T4-0.3 per cent neem leaf powder. The above mentioned percentages of neem leaf powder (NLP) were supplemented in feed daily up to 8 weeks period. The egg composition parameters studied after end of phase I (22-25 weeks), phase II (26-29 weeks) and overall period (30-33 weeks) were found to be none significantly affected by neem leaf powder supplementation. The present study conclusively indicated that neem leaf powder supplementation through feed can be unaffected egg composition parameters in commercial layers.

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