EFFECT OF HERBAL POWDERS AS FEED ADDITIVES ON THE PERFORMANCE AND SERUM CHOLESTEROL LEVEL IN BROILER CHICKEN

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ABSTRACT

A feeding trial with one hundred and eighty straight run commercial broiler chicks was conducted to study the effects of supplementation of five different herbal powders at 0.5% level as feed additives on the performance as well as serum cholesterol level. The chicks were randomly allotted to six dietary treatment groups, viz: T0 (Basal diet), T1 (Basal diet plus 0.5% Manthra arvensis powder), T2 (Basal diet plus 0.5% Ocimum sanctum powder), T3 (Basal diet plus 0.5% Emblica officinalis powder), T4 (Basal diet plus 0.5% Azadirachta indica leaves powder) and T5 (Basal diet plus 0.5% Spathantea paniculata leaves powder) with three replicates of ten chicks each and reared on deep litter system under standard management condition up to 42 days of age. Significantly (P<0.05) higher body weights were recorded in Azadirachta indica (T4) supplemented group at 5th and 6th weeks compared to control group (T0). Significantly (P<0.05) lower serum cholesterol levels were also recorded in Emblica officinalis (T3) and Azadirachta indica (T4) supplemented groups compared to control group (T0).

Key words: Herbal powder, feed additives, performance, serum cholesterol, broiler chicken.

The main objective of adding feed additives in poultry ration is to boost the performance by increasing their growth rate, better feed conversion efficiency, and to lower mortality. During the past years the interest in the potential use of herbal feed additives has considerably increased. The prohibited use of antibiotic growth enhancers also necessitates considering alternatives that may help to support the immune function and health status in poultry birds. Therefore, an attempt was made to evaluate the effect of some herbal powders as feed additives in commercial broiler ration.

MATERIALS AND METHODS

One hundred and eighty numbers of day-old Vancob broiler chicks were randomly allotted to six dietary treatment groups (n=30 each) viz: T0 (Basal diet), T1 (Basal diet plus 0.5% Manthra arvensis leaves powder), T2 (Basal diet plus 0.5% Ocimum sanctum leaves powder), T3 (Basal diet plus 0.5% Emblica officinalis fruit powder), T4 (Basal diet plus 0.5% Azadirachta indica leaves powder) and T5 (Basal diet plus 0.5% Spathantea paniculata leaves powder) with three replicates of ten chicks each. The chicks were reared on deep litter system under standard management condition with ad libitum feed and water for 42 days of age. Feed intake and body weights for the groups were recorded weekly and corrected appropriately for mortality to derive weight gain and feed conversion ratio (FCR). At the end of 42 days, blood samples were collected from two birds in each replicate for estimation of serum cholesterol. Prior to blood collection from brachial vein, the birds were fasted for 12 hours and gently restrained to minimize the stress of handling. Total serum cholesterol was estimated by using commercial cholesterol kit (CHOD/PAP method) from Crest Biosystems, India as per the protocol supplied with the kit. The data thus obtained were analyzed statistically as per standard method.

RESULTS AND DISCUSSION

1. Body weight: Significantly (P<0.05) higher body weights were recorded in Azadirachta indica (T4) supplemented group at 5th and 6th weeks compared to control group (T0) (Table 1). The increase in body weights in Azadirachta indica leaf powder supplemented group
might be due to increased immune status of birds, resulting better feed conversion, as reported by other workers. Moreover, Azadirachta indica leaf powder can be safely incorporated in the broiler ration at 1.3 g/kg without causing adverse effect on the hematobiochemical parameters. The body weights of broilers in other herbal powder supplemented groups were also higher compared to control group, although the differences were statistically non-significant (Table 1). The results of the present study were supported by the findings of other workers.

2. Feed Conversion Ratio: Cumulative FCR at the end of 5th week was lowest in Emblica officinalis (T1) supplemented group compared to other groups, although other treatment groups showed the variable results compared to control group and the differences were statistically non-significant (Table 1). Fruit of Emblica officinalis is an important natural source of ascorbic acid, minerals, amino acids, tannins and phenolic compounds. The better FCR recorded in Emblica officinalis (T1) supplemented group might be due to the hepatoprotective activity which resulted into improvement in the liver function. Moreover, vitamin C content in Emblica officinalis fruits alleviates the adverse effects of stress by decreasing synthesis and secretion of corticosteroids.

3. Mortality: There were no significant differences in mortality among the treatment groups; although lowest mortality was recorded in Emblica officinalis (T1) supplemented group (Table 1). The lower mortality recorded in the present study might be due to antioxidant effect of Emblica officinalis. It was reported that supplementing broiler diet with ajinomoto powder at 0.5% or higher level could act as an anti-stress agent in broiler chicken production.

4. Serum cholesterol: Significantly (P<0.05) lower serum cholesterol levels were recorded in Emblica officinalis (T1) and Azadirachta indica (T3) supplemented groups compared to control group (T0) (Table 1). It is mentioned that the dietary supplementation of Emblica officinalis (amla) significantly reduced the blood cholesterol level in Yanera's chicks. This finding was also in agreement with other works, using different feed cases. The total serum cholesterol levels were also lower in other supplemented groups compared to control group, but the differences were statistically non-significant. Similar trend of results were also reported by other workers.

CONCLUSION

The overall result of the present study indicates that the Emblica officinalis and Azadirachta indica powders can be used as feed additives at 0.5 per cent level for enhancement of growth performance as well as to reduce serum cholesterol for quality broiler meat production.

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