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Impact of curry leaves (*Murraya koenigii* L.) on broiler feed efficiency

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Abstract

The study aimed to investigate the effect of dietary supplementation of curry leaves (*Murraya koenigii* L.) powder on growth enhancement in broiler chickens. A total of 48 day-old broiler chicks were randomly divided into 4 groups with 12 birds in each group and further divided into 4 sub-groups of 3 birds each as replicates. The birds were reared under standard management practices and fed broiler starter and finisher rations with various treatments of curry leaves powder supplementation. The treatments included a control group (T0) without supplementation, T1 with 5g of curry leaves powder per kg of feed, T2 with 7.5g of curry leaves powder per kg of feed, and T3 with 10g of curry leaves powder per kg of feed. The data was recorded for weekly feed consumption and FCR calculation. The results showed that the growth performance of broilers was positively influenced by the dietary addition of curry leaves powder. Treatment T3 with 10g of curry leaves powder per kg of feed showed the best growth performance compared to other treatments, with the highest average weekly body weight and weight gain. These findings suggest that the supplementation of curry leaves powder can be beneficial for growth enhancement in broiler chickens.

Keywords: Broilers, Curry leaves powder, feed consumption, F.C.R

1. Introduction

Curry leaves, also known as *Murraya koenigii*, are a popular ingredient in Indian cuisine and are known for their unique flavor and aroma. However, they also possess several medicinal properties and are commonly used in traditional medicine for their health benefits. In recent years, the role of curry leaves in broiler feed intake and feed conversion ratio has gained significant attention in the field of poultry nutrition. Several studies have shown that incorporating curry leaves into broiler feed can have a positive impact on their growth performance, feed intake, and feed conversion efficiency.

The acetone extract of the fresh leaves of *M. koenigii* on fractionation gives three bioactive carbazole alkaloids named as mahanimbine, murrayanol and mahanine, which has shown mosquitocidal, antimicrobial and topoisomerase I and II inhibition activities [1]. Anti oxidative property Mahanimbine and koenigine, two carbazole alkaloids, isolated from the leaves of *M. koenigii* showed antioxidant activity. Koenigine also showed a high degree of radical scavenging properties [2].

For reducing microbial load in meat products and curry leaves extract may be used as a potential source of antioxidants to protect against oxidative rancidity [3]. A study determined levels of antioxidant vitamins alpha-tocopherol, beta-carotene and lutein in fresh curry leaves available locally by reversed phase gradient HPLC [4].

Mortalities and sudden deaths were minimized via herbal supplementation. Feeding the herbal extract has significant positive effects on broilers general performance as feed efficiency is increased by 11% and on mortality and sudden death cases [5]. The EOC, a feed additive of natural origin, may be considered as a potential growth promoter in broiler production. The oil in the EOC was extracted from different herbs growing in Turkey [6].

The point of this examination was to assess the capability of expanding levels of curry leaves as feed added substance in the oven eats less carbs, utilizing higher consideration levels than in recently distributed trials.

An experiment was carried out to evaluate the effect of incorporating different levels of curry leaves, as well as different combinations of the ingredient in a powdered form, into the diets of broilers. The purpose of the experiment was to examine the impact on the broilers' serum biochemical parameters and immune responses.

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2. Methodology

2.1.1 Materials

The experiment was carried out in the Department of Animal Husbandry and Dairy SHUATS's small nutrition lab in Prayagraj, India. This examination's influence was evaluated in terms of Broiler development, feed consumption, and feed change proportion exhibits

2.1.2 Experimental birds

An all-out no. 48 day-old broiler chicks which were partitioned arbitrarily into four gatherings with four sub bunches including three chicks. They were taken care of starter apportion up to 3 weeks age (1 to 21 days) and afterward broiler finisher proportion up to 3-4 weeks age (22-28days). They were housed in cages in separate pens and given commercial food and water as needed. They were kept in a small animal laboratory in battery-style cages. Floor space for broilers was set at 0.75 square feet. Each was managed under the same circumstances. Weekly records of feed intake and F.C.R kept. Statistics were used to analyze the data 0.75 square feet. Each was managed under the same circumstances. Weekly records of body weight and weight gain were kept. Statistics were used to analyze the data.

2.1.3 Experimental design

The details of experimental design have been described in table 01

2.1.4 Collections and preparations of ingredients:

The essential curry leaf powder (*Murraya koenigii*) leaves taken from the plant and leaves were naturally dried under sun for 3 days and powder was made by grinder to make fine powder and the powder was mixed in the broiler ration. The ration was supplemented as per dietary regimes of treatment. Broiler starter ration contained CP 22% and ME:2900 KCL and broiler finisher ration contained CP 19% ME:3000 KCL was fed atlibum to the birds.

2.1.5 Parameters studied

1. Weekly feed intake

The differences in feed intake attained at the start and end of the week were used to compute the average weekly feed intake the relevant time period for each replication.

2. Weekly feed conversion ratio

The differences in F.C.R attained at the start and end of the

week were used to compute the average F.C.R the relevant time period for each replication.

Table 1: Details of Dietary treatments

Groups	Dietary treatments
T ₀ (control)	Standard broiler chicken diet
T ₁	Standard broiler chicken diet + curry leaf powder @5g/kg feed
T ₂	Standard broiler chicken diet + curry leaf powder @7.5g/kg feed
T ₃	Standard broiler chicken diet + curry leaf powder @10g/kg feed

3. Results and Discussion

From the perusal of data on weekly average feed intake per broilers after five weeks of age, contained in Table 2. It may be noted that mean feed intake per broiler, irrespective of weeks, at first, second, third and four weeks of age respectively. The differences in the average feed intake of broilers, both due to treatments and weeks were significant (Table. 2)

Table 2: Average weekly means feed intake of broiler chicks (g) in different treatments

Treatments	W1	W2	W3	W4	Mean
T ₀	243.3	493.47	991.25	1478.75	801.69
T ₁	242.72	499.12	954.75	1497.5	798.52
T ₂	221.22	462.07	973.74	1526.65	795.92
T ₃	205.97	448.55	943.58	1544.25	785.58
Mean	228.30	475.80	965.83	1511.78	

Table 3: ANOVA for data on weekly feed intake per broiler

Treatments	W1	W2	W3	W4	Mean
T ₀	1.84	1.56	1.99	1.91	1.82
T ₁	1.8	1.48	1.88	1.8	1.74
T ₂	1.76	1.52	1.67	1.76	1.67
T ₃	1.62	1.46	1.58	1.75	1.60
Mean	1.75	1.50	1.78	1.80	

From the perusal of data on weekly average FCR per broiler contained in (Table 4). It may be noted that the mean average FCR per broiler, irrespective of weeks, at first, second, third, fourth and fifth week of age was kg respectively. The differences in these were non- significant, which indicate a significant effect of age on the FCR of broilers in all treatments.

Table 4: Average weekly mean (FCR) or feed efficiency per broiler in different treatments

Source	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab.5%	Result
Replication	3	583.58	194.5	0.287	3.86	NS
Treatment	3	3863998	12879	1905.91	3.86	S
Error	9	6082.11	675.79	-	-	
Total	15	3870664				

Table 5: ANOVA for data on weekly feed conversion ratio of per broiler

Source	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab. 5%	Result
Replication	3	0.231	0.077	14.261	3.86	S
Treatment	3	0.106	0.035	6.576	3.86	S
Error	9	0.048	0.005	-	-	
TOTAL	15	0.387				

4. Discussion

The addition of the essential oil mixture to the diet did not

impact the overall meat yield or the weights of internal organs like the liver, pancreas, proventriculus, gizzard, and small

intestine. However, it did lead to a notable reduction in mortality rate at 21 days ^[7]. The groups that received supplementation with herbal liver stimulants exhibited a significant increase in feed consumption ($p < 0.01$) and showed improved feed conversion efficiency ($p < 0.01$) ^[8]. The supplementation of the herbal extract (HE) had a marked impact on the feed intake of the treated chicks. Additionally, the HE supplementation resulted in improved meat quality, as demonstrated by a significant decrease in the occurrence of white stripping (WS) and WS along with wooden meat cases, particularly at 34 days of age, which is the day of slaughter. In conclusion, feeding the broilers with the herbal extract had substantial positive effects on their overall performance, feed efficiency, and meat quality ^[9].

Feeding the broilers, a diet containing herbal ingredients led to an increase in weight gain and a decrease in the feed conversion rate. Additionally, the herbal diet was shown to reduce the microbial population in the cecal content and meat, which may contribute to improved growth and hygiene in chicken meat ^[10]. The supplementation of an herbal mixture containing AFC had a positive impact on the body weight, feed conversion ratio, digestibility, and blood profile of broiler chickens ^[11].

5. Conclusion

The mean feeds intake per broiler chicks during first week of age in T₀, T₁, T₂ and T₃ was 243.3g, 242.72g, 221.22g and 205.97g respectively. The differences in the feed intake of broilers between the treatments were found non-significant. The mean feeds intake per broiler chicks during first week of age in T₀, T₁, T₂ and T₃ was 243.3g, 242.72g, 221.22g and 205.97g respectively. The differences in the feed intake of broilers between the treatments were found non-significant. The mean average FCR per broiler at four weeks of age in T₀, T₁, T₂ and T₃ was 1.91, 1.8, 1.76 and 1.75kg respectively. The differences in the average FCR per broiler between the treatments were found non-significant.

It can be inferred that the addition of curry leaves powder to the diet of broiler chickens resulted in an improvement in their body weight and weight gain. Among the different treatments, a mixture of 10 grams of curry leaves powder per kilogram of feed (T₃) was found to be the most effective based on the results of body weight and weight gain measurements.

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