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## Effects of curry (*Murraya koenigii*) leaves powder supplementation on the bodyweight of broiler chickens

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### Abstract

The present experiment was conducted to study the effects of curry (*Murraya koenigii*) leaves powder supplementation on the performance of broiler chickens at Livestock Farm Complex Unit, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Sardarkrushinagar, Gujarat. The study was conducted on one hundred sixty (160), straight run day old commercial broiler chicks randomly divided into four treatment groups of 40 chicks and each treatment was further divided into four replicates of ten chicks in each. The four dietary treatments were as T<sub>1</sub> (control - standard diet as per BIS, 2007), T<sub>2</sub> (Standard diet + 1.5% curry leaves powder), T<sub>3</sub> (Standard diet + 2.0% curry leaves powder) and T<sub>4</sub> (Standard diet + 2.5% curry leaves powder). Treatment rations were started from 1<sup>st</sup> day up to 42<sup>nd</sup> day. Broiler pre-starter mash was provided during 1<sup>st</sup> week of age, while, starter mash was provided during 2<sup>nd</sup> to 3<sup>rd</sup> week and lastly, finisher ration was given during 4<sup>th</sup> to 6<sup>th</sup> week of age. The observations were recorded for weekly body weights, weekly body weight gain, weekly feed intake, weekly feed conversion ratio, livability, carcass traits, cut-up parts and organ weights. The data generated were analyzed using completely randomized design. The mean body weight was significantly ( $P \leq 0.05$ ) improved in T<sub>2</sub> group T<sub>2</sub> (2402.11±43.08 g) among all treatment groups, followed by T<sub>1</sub> (2304.21±37.57 g), T<sub>3</sub> (2274.06±53.17 g) and T<sub>4</sub> (2270.59±35.55 g) groups. Livability of broilers was not much affected by the addition of different level of curry leaves powder in the diet. The carcass traits were studied at the end of research period (42<sup>th</sup> day). Addition of curry leaves powder at various level has shown significant difference among the treatment groups for carcass dressing percentage. However, 1.5 percent (T<sub>2</sub>) curry powder supplementation group attained higher dressing percentage value (72.78±0.77) followed by control group (71.28±0.54), 2.0 percent curry powder supplemented group (70.99±0.20) and 2.5 percent curry powder supplemented group (69.41±0.77).

**Keywords:** Broilers, phytogetic feed, curry

### Introduction

The overall number of chickens in India are 851.81 million and which has increased 16.81 percent over the previous population, Poultry farming is one of the most active, diverse, and rapidly expanding sectors (Anonymous, 2019) [4]. Production of eggs and meat increased annually at the rate of 6.19 and 6.86 percent, respectively (BAHS, 2023) [6]. India is the third-largest producer of eggs in the world, behind China and the United States (129.60 billion), and the fifth-largest producer of meat (4.78 million tons of broiler meat) during the year 2022-23 (BAHS, 2023) [6]. The nation exported 2, 55, 686.92 MT of chicken products worth Rs. 435.53 crore during the fiscal year 2022-23. The poultry industry is currently expanding between 8 to 12 percent annually, although crop production in the agricultural sector is only increasing between 1.5 and 2.5 percent annually. Despite these improvements, the average per capita availability is still only 95 eggs and 6.25 kg of meat annually, (BAHS, 2023) [6] compared to the ICMR's recommendation of 182 eggs and 11 kg of meat in a year.

To increase the productivity of these birds, we have to formulate the strategy, where herbs and plant extracts used in animal feed, called phytogetic feed additives (PFA), will be helpful. These are also defined as compounds of plant origin incorporated into animal feed to enhance livestock productivity through the improvement of digestibility, nutrient absorption and

elimination of pathogens resident in the animal gut (Athanasidou *et al.*, 2007) [5]. Rigveda, the oldest document of the human knowledge written between 4500 and 1600 B.C mentioned the uses of medicinal plants in the treatment of man and animals.

The profitability of the chicken enterprise has been significantly boosted by antibiotic growth promoters (AGP). Recent research has shown that antibiotic use as a growth promoter in chicken has some adverse effects (Botsoglou and Fletouris, 2001) [8]. However, the majority of antibacterial performance enhancers have been banned because of multiple resistances and cross-resistance (Anonymous, 1994) [1]. Since there are concerns about the public's health due to antibiotic-resistant bacterial strains, food safety is receiving more attention than ever. Therefore, exporters of poultry products are working to develop a replacement for AGP and incorporate other feed additives into the diet of chickens. (Sharifi *et al.*, 2013) [16].

Phyto-genic growth promoters have beneficial actions on the gastrointestinal tract, such as spasmolytic, laxative or against flatulence. Supplementation of turkey feed with extract of oregano feed significantly decreases lipid per-oxidation during refrigerated storage of fresh and cooked meat (Botsoglou *et al.*, 2001) [8]. Herbal medicines have historically been used to treat a variety of diseases, because they are generally inexpensive and have little adverse effects. Similarly curry plant leaves have a wide range of beneficial qualities, including antibacterial, antioxidant, and hepatoprotective effects. Curry leaf has a significant place in conventional Ayurvedic therapy. It originated in South Asia and is well-known for its flavour and aroma in many different cuisines. Curry leaves are also called as home plant in India. It is a little deciduous shrub, and every component of it has medicinal and nutritional value. It has the potential to become a profitable crop in the future, and entire plant has tonic and stomachic effects. (Bhusal *et al.*, 2021) [7].

Curry leaves are natural flavoring agents with a number of important health benefits. The various notable pharmacological activities of the plant include activity on heart, anti-diabetic and cholesterol reducing property,

antimicrobial activity, antiulcer activity, antioxidative property, cytotoxic activity, antidiarrheal activity and phagocytic activity (Disegha *et al.*, 2014) [10]. The chemical composition of the fresh leaves (*Murraya koenigii*) consists of volatile oil. Carbazole alkaloids and triterpene have been isolated from stem bark and roots of *Murraya koenigii* (Disegha *et al.*, 2014) [10]. Curry leaves extracts have demonstrated antibacterial effects particularly on *E. coli*, *Staphylococcus*, *Streptococcus* and *Proteus* as compared to antibiotics such as Gentamycin and Amikacin (Harbi *et al.*, 2016) [11]. The ethanol and methanol extracts of curry leaves were found to be effective against all tested bacterial strains except, *Klebsiella pneumonia* and *Pseudomonas aeruginosa* (Harbi *et al.*, 2016) [11].

## Materials and Methods

The present study was conducted during the years 2022–2023 to determine the effects of curry leaves powder supplementation on the performance of broiler chicken. The parameters that were studied in this study include proximate feed composition, body weight, body weight gain, feed intake, feed conversion ratio, livability, carcass characteristics, and return over feed cost (ROFC).

The duration of work was six weeks and thermal hygrometer was used to record the temperature and relative humidity on daily basis. The average indoor temperature during the experiment ranged from 9.21 °C to 28.9 °C, whereas the relative humidity ranged from 25.10% to 66.21%. One hundred sixty (160), straight run, day-old commercial broiler chicks (Vencobb-430) were used in the experiment. They were randomly separated into four treatment groups, each with 40 chicks, and then into four replicates, each with 10 chicks. Treatment rations started on the first day and continued through the 42<sup>nd</sup> day of experiment. Broiler pre-starter mash was fed during the first week of age, starter mash feed during the second to third week and finisher ration during the fourth to sixth week of age. One hour darkness was provided thereafter in order to adapt them for darkness.

## Results and Discussion

**Table 1:** Average weekly body weight ( $\mu \pm$ S.E.) of broilers in different treatment groups.

Age of broilers	Body Weight(g)				<i>p</i> ≥value
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Day old chicks	45.23±0.21	45.50±0.23	45.13±0.25	44.82±0.26	0.260
1 <sup>st</sup> week	210.64±3.19	216.87±2.53	217.26±2.91	209.30±22.36	0.146
2 <sup>th</sup> week	506.90±11.25	517.46±7.48	504.36±5.77	498.50±7.41	0.427
3 <sup>th</sup> week	887.77±6.06	903.08±13.82	878.00±10.94	876.28±10.34	0.267
4 <sup>th</sup> week	1319.53±9.61 <sup>a</sup>	1371.77±12.63 <sup>b</sup>	1299.54±9.88 <sup>a</sup>	1299.05±8.95 <sup>a</sup>	0.040
5 <sup>th</sup> week	1738.50±64.59	1860.92±38.76	1712.54±42.90	1719.15±34.35	0.083
6 <sup>th</sup> week	2304.21±37.57 <sup>ab</sup>	2402.11±43.08 <sup>b</sup>	2274.06±53.17 <sup>a</sup>	2270.59±35.55 <sup>a</sup>	0.001

For broiler chickens, body weight is an important consideration that directly affects the cost of rearing poultry. Individual birds were weighed weekly until their sixth week of life. The addition of curry leaf powder began with initiation of experiments. The mean body weight (g) at the end of their sixth week (BW<sub>6</sub>) of experiment was significantly (*p*<0.05) highest in T<sub>2</sub> (2402.11±43.08 g) than the T<sub>1</sub> (2304.21±37.57 g), T<sub>3</sub> (2274.06±53.17 g), T<sub>4</sub> (2270.59±35.55 g) groups.

Above findings of present investigation are in agreement with that of Hashita *et al.*, (2011) [17] and Karnani *et al.*, (2018) [13], they used curry leaves powder in their experiment. Hashita *et al.*, (2011) [17] and Karnani *et al.*, (2018) [13] found significant effects of curry leaf powder on chickens. Hashita *et al.*,

(2011) [17], suggested that dietary supplementation of curry leaves has an ability to improve the health, performance and reduce the cost of production of broilers. The better growth performance of the birds might be due to improvement in digestibility of nutrients and their absorption Karnani *et al.*, (2018) [13]. Contrary to this, Moorthy *et al.*, (2009) [15], Jaythilka *et al.*, (2018) [12], found non-significant effects of herbal powder on growth of chickens. Moorthy *et al.*, (2009) [15] and Jaythilka *et al.*, (2018) [12] fed curry leaves powder to the birds, and reported non-significant difference body weight of broiler chicken. This might be due to low level of concentration in the diet.

## Conclusion

In conclusion, the present study investigated the effects of curry leaves powder supplementation on the performance of broiler chickens over a six-week period. The results indicated significant improvements in body weight gain, with the highest mean body weight observed in the group supplemented with curry leaf powder. These findings are consistent with previous studies suggesting the positive impact of curry leaf powder on poultry health and performance. Specifically, the improved growth performance may be attributed to enhanced nutrient digestibility and absorption. However, it is noteworthy that some studies have reported non-significant effects, possibly due to variations in concentration levels in the diet. Overall, the findings underscore the potential benefits of incorporating curry leaves powder into broiler chicken feed to enhance growth and productivity, thereby potentially reducing production costs. Further research could explore optimal dosage levels and potential mechanisms underlying the observed effects.

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