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Dietary supplementation of Tulsi (*Ocimum sanctum*) leaves powder and its effect on growth of Giriraja poultry birds

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ABSTRACT

The present study was conducted to evaluate the effect of dietary supplementation of Tulsi (*Ocimum sanctum*) leaves powder on growth performance of Giriraja poultry birds. A total of 150 day-old chicks were randomly distributed into five treatment groups, each comprising 30 birds, under a Completely Randomized Design (CRD). The dietary treatments included a standard ration supplemented with varying levels of Tulsi leaves powder: T₁ (control), T₂ (0.5%), T₃ (1.0%), T₄ (1.5%) and T₅ (2.0%). All birds were provided ad libitum access to feed and water for a period of seven weeks. Weekly live body weight and body weight gain were recorded and statistically analysed. The results revealed significant improvement in growth performance from the first week onwards. Birds supplemented with 0.5% Tulsi leaves powder (T₂) exhibited the highest final live body weight (1278.87 g/bird) and comparatively higher body weight gain during most of the experimental period. The study indicates that Tulsi leaves powder at 0.5% can favourably influence growth performance of Giriraja poultry birds.

Keywords: Tulsi leaves powder, Giriraja birds, Body weight gain, Poultry feed, Growth performance

Introduction

The poultry sector is an important and rapidly growing component of India's livestock industry, contributing significantly to food security, employment and rural livelihoods. India has emerged as a major global poultry producer, ranking second in egg production and fourth in meat production. As per the latest Basic Animal Husbandry Statistics (BAHS) 2025, India produced 149.11 billion eggs during 2024–25, showing a 4.44% increase over 2023–24, with per capita egg availability reaching 106 eggs per annum. Meat production also increased from 10.25 million tonnes in 2023–24 to 10.50 million tonnes in 2024–25, registering a growth of 2.46%. The DAHD Annual Report 2025–26, released in April 2026, reflects continued government efforts towards strengthening livestock and poultry production, breed development and entrepreneurship. The increasing concerns regarding antibiotic resistance and drug residues have encouraged the use of natural and herbal feed additives in poultry production. Tulsi (*Ocimum sanctum*), belonging to the family Lamiaceae, is an important medicinal herb containing biologically active compounds such as eugenol, flavonoids, phenolic compounds and essential oils, which possess antioxidant, antimicrobial and anti-inflammatory properties. Several researchers have reported beneficial effects of Tulsi supplementation on poultry performance. Sheoran *et al.* (2017) [1] reported that supplementation of holy basil leaves powder improved body weight gain and feed conversion efficiency and enhanced immune-related responses in broilers. Kohri *et al.* (2022) [2] observed improved growth performance and carcass yield with dietary supplementation of Tulsi leaves powder, particularly when combined with synbiotic. Madavi *et al.* (2023) [3] reported that supplementation of dried Tulsi leaves powder at 5 g/kg feed resulted in higher body weight and body weight gain with improved feed conversion ratio in commercial broilers. Similarly, Shaikh *et al.* (2024) [4] reported significant improvement in growth performance with Tulsi leaves powder supplementation. More recently, Barman *et al.* (2025) [5] observed improved growth and economic performance in broilers supplemented with Tulsi leaves powder. These findings indicate the potential of Tulsi as a phyto-genic feed additive for improving growth performance and feed efficiency in poultry.

Materials and Methods

The present study was conducted to evaluate the effect of Tulsi (*Ocimum sanctum*) leaves powder supplementation on the growth performance of Giriraja poultry birds under intensive rearing conditions. A total of 150 day-old Giriraja chicks were used for the experiment and randomly allotted to five dietary treatment groups, with 30 birds in each treatment. The experimental treatments consisted of T₁: control diet without

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Tulsi leaves powder, T₂: basal diet supplemented with 0.5 per cent Tulsi leaves powder, T₃: 1.0 per cent, T₄: 1.5 per cent and T₅: 2.0 per cent Tulsi leaves powder. Tulsi leaves were collected from the PDKV University campus, washed and sun-dried for 4–5 days on clean gunny bags. The dried leaves were dried in a cabinet tray drier at 125 °C for 25 minutes, ground into powder and stored in airtight polyethylene bags. The birds were maintained under management and feeding practices. Weekly live body weight and body weight gain were recorded throughout the experimental period. The collected observations were subjected to statistical analysis using Completely Randomized Design (CRD).

Table 1. Diet Composition and feeding practices

Treatments	Standard Ration (SR)	Tulsi leaves powder
T ₁	SR	Control
T ₂	SR	0.5 %
T ₃	SR	1.0 %
T ₄	SR	1.5 %
T ₅	SR	2.0 %

Table 2. Assignment of birds to treatments

Treatments	Replication			Total
T ₁	10	10	10	30
T ₂	10	10	10	30
T ₃	10	10	10	30
T ₄	10	10	10	30
T ₅	10	10	10	30
				150

Statistical analysis

Treatments	Weeks							
	initial	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
T ₁	40.71	97.81	179.66	296.53	473.81	654.03	923.97	1169.74
T ₂	39.94	102.53	197.28	350.87	555.6	778.79	1026.82	1278.87
T ₃	40.05	99.78	185.13	318.88	511.3	714.13	999.67	1233.98
T ₄	40.1	99.12	179.84	305.9	489.05	691.28	997.81	1141.90
T ₅	40	97.01	170.41	288.68	460.5	643.5	938.85	1166.01
SE(m)±	0.22	0.57	1.33	1.55	1.42	1.41	3.61	1.71
CD @ 5%	NS	1.60	3.73	4.34	3.98	3.95	10.09	4.79
F-test	NS	S	S	S	S	S	S	S

The data collected on live body weight and weekly weight gain were statistically analyzed using the Completely Randomized Design (CRD) method, as outlined by Ample (1975), to determine the significance of treatment effects.

Result and Discussion

Weekly live body weights of Giriraja poultry birds

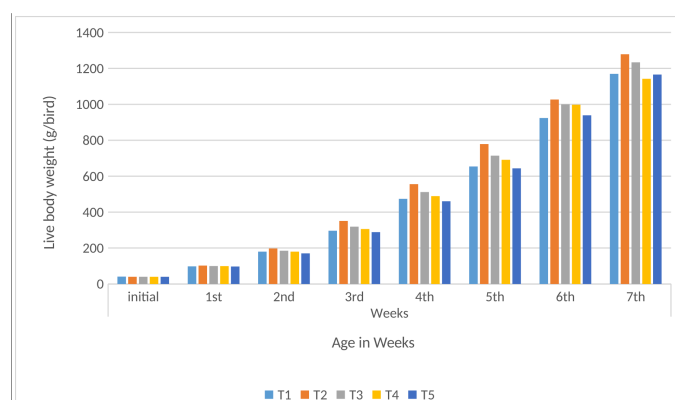
The average weekly live body weight data of Giriraja poultry birds from day-old to seven weeks of age are presented in Table 7. The mean initial body weights of the chicks ranged from 39.94 to 40.71 g/bird among the treatment groups. The highest initial body weight was recorded in T₁ (40.71 g/bird), whereas the lowest was observed in T₂ (39.94 g/bird). The differences in initial body weight were statistically non-significant, indicating that the birds were uniform in body weight at the beginning of the experiment.

At the end of the seventh week, the average live body weights were 1169.74, 1278.87, 1233.98, 1141.90 and 1166.01 g/bird in T₁, T₂, T₃, T₄ and T₅, respectively. The highest final live body weight was therefore observed in T₂ (1278.87 g/bird), followed by T₃ (1233.98 g), T₁ (1169.74 g), T₅ (1166.01 g) and T₄ (1141.90 g). Thus, supplementation of 0.5 per cent Tulsi leaves powder resulted in about 9.33 per cent higher final body weight than the control group, indicating a favourable response to the lower level of Tulsi supplementation. The statistical analysis showed significant differences among treatments from the first week onwards.

The present findings are in agreement with Shende *et al.* (2021) [6], who reported improved final live body weight in broilers supplemented with Tulsi leaves powder. Their study recorded 2033.40 g in

the control group and 2225.87 and 2137.53 g in birds receiving 0.5 and 1.0 per cent Tulsi leaves powder, respectively.

Similarly, Prajapat *et al.* (2018) [7] reported that 0.5 per cent Tulsi leaves powder resulted in the highest live body weight of 1493.64 g/bird at six weeks, compared with 1202.08 g/bird in the control group. Kohri *et al.* (2022) [2] also observed improved live body weight with Tulsi supplementation, with birds receiving 0.5 per cent Tulsi attaining 2261 g/bird compared with 2178 g/bird in the control group.

**Figure 1.** Live body weight (g/bird) response of Giriraja birds to tulsi leaves powder

Further, Shaikh *et al.* (2024) [4] reported that dietary supplementation of Tulsi leaves powder at 1.0, 1.5 and 2.0 per cent improved live body weight, with the highest value observed at the 1.5 per cent level. The

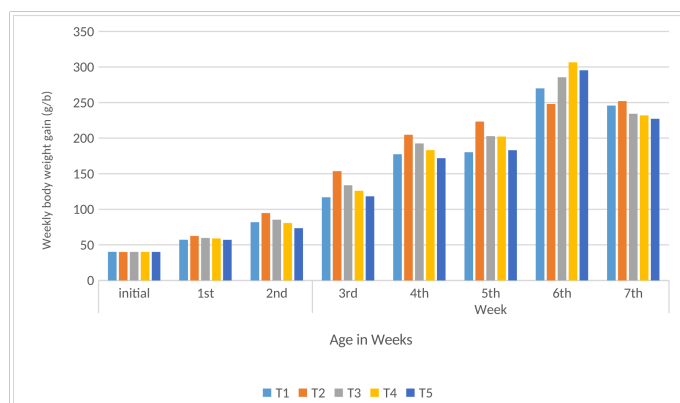
improved body weight observed in the present study may be attributed to the beneficial phytochemical and bioactive constituents of Tulsi, which may support feed utilization and growth. Overall, the present

results indicate that 0.5 per cent Tulsi leaves powder (T_2) was the most effective supplementation level for improving live body weight of Giriraja poultry birds.

Table 6. Average weekly weight gain (g) of Giriraja birds as affected by tulsi leaves powder

Treatments	Week							
	initial	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
T ₁	40.17	57.14	81.85	116.87	177.28	180.22	269.95	245.77
T ₂	39.94	62.59	94.72	153.59	204.73	223.19	248.03	252.05
T ₃	40.05	59.73	85.35	133.75	192.49	202.77	285.53	234.31
T ₄	40.1	59.02	80.72	126.06	183.14	202.23	306.53	231.98
T ₅	40	57.01	73.4	118.28	171.82	183	295.35	227.16
SE(m)±	0.22	0.666	1.392	2.055	2.143	2.158	3.75	4.13
CD	NS	1.86	3.89	5.73	5.99	6.03	10.4	11.5
F test	NS	S	S	S	S	S	S	S

The average weekly body weight gain of Giriraja poultry birds from the first to seventh week is presented in Table 6 and illustrated in Figure 2. A significant difference in weekly body weight gain was observed from the first week onwards, whereas the initial body weight did not differ significantly among the treatment groups. During the first week, the highest body weight gain was recorded in T₂ (62.59 g), followed by T₃ (59.73 g), T₄ (59.02 g), T₁ (57.14 g) and T₅ (57.01 g). From the second to fifth week, T₂ consistently recorded the highest body weight gain, with values of 94.72, 153.59, 204.73 and 223.19 g, respectively. During the sixth week, T₄ recorded the highest gain (306.53 g), followed by T₅ (295.35 g), T₃ (285.53 g), T₁ (269.95 g) and T₂ (248.03 g). In the seventh week, T₂ again showed the highest gain (252.05 g), followed by T₁ (245.77 g), T₃ (234.31 g), T₄ (231.98 g) and T₅ (227.16 g). Overall, T₂ showed comparatively higher body weight gain during most weeks of the experimental period. The results indicate that moderate Tulsi supplementation supported better weekly weight gain, while higher levels did not show a consistent improvement.



The present findings are in agreement with Madavi *et al.* (2023) [3], who reported higher body-weight gain in broilers supplemented with Tulsi leaf powder at 5 g/kg feed. Similarly, Kumar *et al.* (2018) [7] and Kohri *et al.* (2022) [2] observed improved body-weight gain following Tulsi supplementation. Pakrawan *et al.* (2017) [8] also reported higher cumulative body-weight gain in Giriraja birds supplemented with Tulsi seed powder.

Conclusion

The findings of the present study indicate that supplementation of poultry feed with Tulsi (*Ocimum sanctum*) leaves powder at 0.5% inclusion level significantly improved the growth performance of Giriraja poultry birds. Birds supplemented with 0.5% Tulsi leaves powder showed higher weekly body weight gains and final live body

weight compared with the control and higher supplementation levels. The improvement may be attributed to the beneficial phytochemical compounds present in Tulsi leaves, which may enhance digestion, nutrient utilization and overall bird health. Moreover, the 0.5% supplementation level resulted in better feed conversion efficiency, dressing percentage and sensory quality of meat. Higher inclusion levels did not provide additional benefits and showed comparatively lower performance. Therefore, it can be concluded that Tulsi leaves powder, when included in the diet at an optimum level of 0.5%, can serve as a useful natural feed additive for improving growth performance and production efficiency in Giriraja poultry birds.

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Conflict of Interest

The author declares that they have no conflict of interest

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References

1. Sheoran N, Kumar R, Kumar A, Batra K, Sihag S, Maan S, Maan NS. Nutrigenomic evaluation of garlic (*Allium sativum*) and holy basil (*Ocimum sanctum*) leaf powder supplementation on growth performance and immune characteristics in broilers. *Veterinary World*. 2017;10(1):121–129.
2. Kohri A, Shende KA, Dhuria RK, Goklaney D. Effect of Tulsi (*Ocimum sanctum*) leaf and synbiotic powder on growth performance, nutrient utilization, carcass and blood biochemical parameters in broilers. *Indian Journal of Animal Nutrition*. 2022;39(1):63–72.
3. Madavi SG, Rajkumar, Tomar K, Tiwari S, Sahu DS, Yadav SP, Chandra G. Effect of supplementation of Tulsi (*Ocimum sanctum*) leaf powder on growth performance in commercial broiler. *Pantnagar Journal of Research*. 2023;21(2).
4. Shaikh F, Kandalkar YB, Borkar VD, Tanpure MU, Dhage SA. Effect of Tulsi leaf powder (*Ocimum sanctum*) as feed additives on growth performance of broilers. *International Journal of Veterinary Sciences and Animal Husbandry*. 2024;9(3S):282–285.
5. Barman S, Savino N, Vidyarthi VK, Jha KK, Kumar L, Porel S, Singh R, Kanakaraja MG. Performance of broiler chickens fed a diet supplemented with Tulsi (*Ocimum sanctum*) powder at Nagaland, India. *Journal of Scientific Research and Reports*. 2025;31(12):1169–1179.

6. Shende KA, Dhuria RK, Goklaney D, Barolia YK. Effect of dietary supplementation of Tulsi (*Ocimum sanctum*) leaf and ginger (*Zingiber officinale*) powder as feed additives on broiler performance. *Indian Journal of Veterinary Sciences and Biotechnology*. 2021;17(3):97–99.
7. Prajapat UK, Jain D, Dhuria RK, Sharma T, Bothra T, Nehra R, Kumar M. Effect of dietary supplementation of Tulsi (*Ocimum sanctum*) leaf powder and fenugreek (*Trigonella foenum-graecum* L.) seed powder on growth performance in broilers. *Veterinary Practitioner*. 2018;19(1):144–146.
8. Pakrawan AH, Shelke RR, Chavan SD, Kahate PA, Walke RD. Effect of different herbals feed additives on the feed intake and feed conversion efficiency of Giriraja poultry birds. *Asian Journal of Animal Science*. 2017;12(1):1–6.
9. Prajapat UK, Jain D, Dhuria RK, Sharma T, Bothra T, Nehra R, Kumar M. Effect of dietary supplementation of Tulsi (*Ocimum sanctum*) leaf powder and fenugreek (*Trigonella foenum-graecum* L.) seed powder on growth performance in broilers. *Veterinary Practitioner*. 2018;19(1):144–147.

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