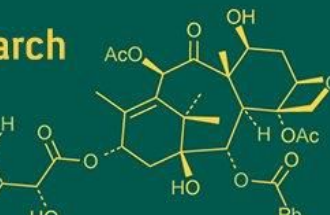
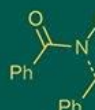
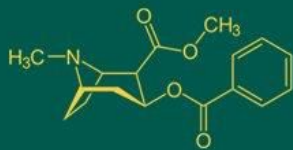


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A study on effect of dietary supplementation of turmeric powder (*Curcuma longa*) on growth performance and economics of Kuroiler chicks

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Abstract

A study was conducted to investigate the effect of dietary supplementation of turmeric powder (*Curcuma longa*) on growth performance of Kuroiler chicks. A total of 120 straight run day-old Kuroiler chicks with uniform body weight from a single hatch were randomly grouped into four dietary treatments viz., T₀-control (standard chick feed as per the BIS 2007), T₁ (basal feed + turmeric powder @ 5.0 g/kg feed), T₂ (basal feed + turmeric powder @ 7.5 g/kg feed) and T₃ (basal feed + turmeric powder @ 10.0 g/kg feed) which consists of 30 chicks in each group, which were further divided into three replications consists of 10 chicks per group. The values of average body weight, body weight gain, feed intake, feed conversion ratio and performance index were recorded on a weekly basis. The mean average body weight, body weight gain and feed intake were significantly ($p \leq 0.05$) higher in the T₂ (TP-0.75%) group followed by T₃, T₁ and least in T₀ group. The values of feed conversion ratio, performance index and energy efficiency ratio were found as best in the T₂ (TP-0.75%) group. The highest proceeds per rupee (1.57) per chick were observed in T₂ (TP-0.75%) supplemented group. From these results, it may be concluded that dietary supplementation of turmeric powder can be used effectively and economically as a natural herbal feed additive @ 7.5 g/kg in feed to improves the overall growth performance of Kuroiler chicks.

Keywords: Turmeric powder, Kuroiler chicks, performance index, feed additive, body weight

Introduction

Poultry has recently become one of the most significant and rapidly expanding agricultural subsectors. The protein and nutritional needs are largely met by this sector. The structure and operation of India's poultry industry underwent an exceptional transformation over the past two decades, evolving from a simple, slow-moving form of poultry farming into a mega-industry with a huge workforce. Feed plays an important role in the poultry industry's profitability. A lot of work has been put towards reducing the cost of feed throughout time in an effort to reduce production costs. Feed additives are a group of nutrient and non-nutrient substances which helps in improving the efficiency of feed utilization and thus reducing the high cost of feed. Numerous herbal remedies have been found in trials to aid birds in coping with stress brought on by a variety of factors. Turmeric (*Curcuma longa*) is a natural herbaceous perennial spice with various medicinal properties Turmeric contained an active component called curcumin which have therapeutic properties included antibacterial, anticoccidial, antifungal, antiviral, antioxidant, hypocholesteremic and hypolipidaemic (Hussein, 2013; El-Khtam *et al.*, 2014 and Qasem *et al.*, 2015) [7, 4, 15]. Curcumin, a polyphenol compound present in turmeric, has been shown to exhibit anti-inflammatory, antioxidant, and antimicrobial properties. Several studies have demonstrated the benefits of turmeric supplementation in poultry, including improved growth performance, enhanced immunity, and reduced oxidative stress. A study by Kumar *et al.* (2020) [6] found that dietary supplementation of turmeric powder improved growth performance and immune response in broiler chickens. Another study by Suresh *et al.* (2018) [18] reported that curcumin supplementation enhanced immunity and reduced oxidative stress in chickens. Liao *et al.* (2019) [12] found that curcumin alleviated inflammation and oxidative stress in chickens

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challenged with lipopolysaccharide. The above significant biological properties of turmeric make it a potential substitute of antibiotics in livestock feed.

Materials and Methods

A total of one hundred twenty straight run day-old Kuroiler chicks were procured from the hatchery of Poultry Farm, Department of Livestock Production Management, Sri Karan Narendra College of Agriculture, Jobner, with uniform body weight from a single hatch were randomly grouped into four dietary treatments which consists of 30 chicks in each group, which were further divided into three replications consists of 10 chicks per group. The experiment was conducted for a period of 8 weeks (56 days). The chicks were reared under strict hygienic conditions in the brooder house. Before housing the chicks, experimental brooder house, equipment's and utensils were cleaned and disinfected thorough 2.5% phenol and subsequently fumigated with formaldehyde gas (40 ml of commercial formalin and 20 g potassium permanganate per hundred cubic feet volume). The chicks (day old) were weighed at the beginning of the experiment and divided into groups randomly. The chicks were vaccinated against NCD (F₁ strain) and IBD on 5th and 12th day of the experiment through intra-ocular route. Standard management practices such as brooding, proper lighting, raking of litter, cleaning of feeders and waterers etc. were followed. The chicks were offered all crumbled chick starter feed *ad-libitum*, purchased from a private poultry feed manufacturing factory according to the BIS (2007) specifications. A total quantity of 2.00 kg of good quality turmeric rhizomes was purchased from the local market and dried properly in sunlight for 7 days. The turmeric rhizomes were grinded to coarse powder and mixed properly at appropriate level in feed as the specified for different treatments *viz.*, T₀-control (standard chick feed as per the BIS 2007), T₁ (basal feed + turmeric powder @ 5.0 g/kg feed), T₂ (basal feed + turmeric powder @ 7.5 g/kg feed) and T₃ (basal feed + turmeric powder @ 10.0 g/kg feed). The chicks were offered clean and fresh drinking water *ad libitum* using chick waterers during the whole

experimental period. Weekly body weight and body weight gain of the chicks was recorded with the help of a digital weighing balance machine till 56 days of age. Weekly record of feed consumption was maintained for each experimental group and their replicates weekly record of the feed offered and feed weigh back was maintained during the experimental period. The feed conversion efficiency was calculated by ratio of total quantity feed consumed to body weight gain (g). Performance Index (P.I) was calculated using formula advocated by Bird (1995) [2] and Energy efficiency ratio (E.E) was calculated as suggested by Kamran *et al.* (2008) [8]. The average cost of rearing was calculated on the basis of cost of raising the chicks, which include-the price of chicks, feed, vaccines, turmeric powder and contractual labour, at the end of experimental period. All the expenditures and income was calculated on the basis of prevailing market rates and rate approved by the college. Data obtain will be subjected to statistical analysis as per Snedecor and Cochran (1994) [17] using one way ANOVA.

Results and Discussion

The initial body weight of day old unsexed chicks in different treatment groups *viz.*, T₀ (Control), T₁ (TP-0.50%), T₂ (TP-0.75%) and T₃ (TP-1.0%) were recorded 46.43±0.44, 46.68±0.44, 45.49±0.43, 46.00±0.44 g and the final body weight of chicks at the end of experiment as 1186.13±11.31, 1203.84±20.03, 1377.56±22.16 and 1259.06±21.95 g, respectively. The results (Table 1) revealed that there was no significant difference in body weight in the first, second and third week of age. On the other hand the body weight of treatment T₂ (TP-0.75%) were found to be significantly ($p \leq 0.05$) higher at fourth, fifth, sixth, seventh and eight week of age as compared to T₃, T₁ and T₀. In the end of experiment the final body weight of chicks under T₂ (TP-0.75%) group was found higher followed by T₃, T₁ and T₀. The present results were in agreed with Nagar *et al.* (2021) [13] and Kusmayadi *et al.* (2019) [11] who reported that dietary supplementation of TP in basal diet of broiler chicks significantly improved final body weight of the broiler chicks.

Table 1: Mean (±SE) weekly body weight (g/chick) of chicks under different treatment groups

Age (Weeks)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50%)	T ₂ (TP-0.75%)	T ₃ (TP-1.0%)
Initial	46.43 ^a ±0.44	46.68 ^a ±0.44	45.49 ^a ±0.43	46.00 ^a ±0.44
1 st	89.94 ^a ±1.49	90.38 ^a ±1.50	91.48 ^a ±1.52	90.60 ^a ±1.50
2 nd	157.12 ^a ±2.53	159.09 ^a ±2.55	165.18 ^a ±2.65	162.36 ^a ±2.61
3 rd	255.78 ^a ±4.45	258.60 ^a ±4.51	269.10 ^a ±4.69	262.02 ^a ±4.56
4 th	400.48 ^b ±4.72	406.10 ^b ±4.78	427.15 ^a ±5.03	411.16 ^b ±4.84
5 th	580.16 ^b ±6.83	590.22 ^b ±6.95	630.60 ^a ±7.43	600.02 ^b ±7.07
6 th	780.21 ^b ±7.44	795.44 ^b ±13.23	880.33 ^a ±14.16	820.10 ^b ±14.29
7 th	983.76 ^c ±9.38	1001.26 ^{bc} ±16.66	1132.12 ^a ±18.21	1040.62 ^b ±18.14
8 th	1186.13 ^c ±11.31	1203.84 ^{bc} ±20.03	1377.56 ^a ±22.16	1259.06 ^b ±21.95

^{a,b,c} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

The current study findings (Table 2) showed that dietary supplementation of 0.75% TP (T₂ group) in diet enhance significantly ($p \leq 0.05$) the weekly body weight gain of chicks. The body weight gain of T₂ (TP-0.75%) group were found to be significantly ($p \leq 0.05$) higher as compared to other treatment groups in fourth, fifth, sixth, seventh and

eight week of age. The similar findings in body weight gain were reported by Thomas *et al.* (2020) [20], Nagar *et al.* (2021) [13] and Kusmayadi *et al.* (2019) [11]. This could be due to variation in breed, quality of feed, turmeric powder and may be environmental conditions.

Table 2: Mean ($\pm$ SE) weekly body weight gain (g/chick) of chicks under different treatment groups

Age (Week)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50%)	T ₂ (TP-0.75%)	T ₃ (TP-1.0%)
1 st	43.51 ^a $\pm$ 2.17	43.70 ^a $\pm$ 1.00	45.99 ^a $\pm$ 1.97	44.60 ^a $\pm$ 1.62
2 nd	67.18 ^a $\pm$ 3.36	68.71 ^a $\pm$ 1.56	73.70 ^a $\pm$ 3.17	71.76 ^a $\pm$ 2.61
3 rd	98.66 ^a $\pm$ 4.94	99.51 ^a $\pm$ 2.27	103.92 ^a $\pm$ 4.47	99.67 ^a $\pm$ 3.62
4 th	144.70 ^b $\pm$ 2.52	147.50 ^b $\pm$ 2.57	158.05 ^a $\pm$ 2.75	149.14 ^b $\pm$ 2.60
5 th	179.68 ^b $\pm$ 1.71	184.12 ^b $\pm$ 3.06	203.45 ^a $\pm$ 3.27	188.86 ^b $\pm$ 3.29
6 th	200.05 ^b $\pm$ 10.01	205.22 ^b $\pm$ 4.69	249.73 ^a $\pm$ 10.73	220.08 ^b $\pm$ 8.00
7 th	203.55 ^b $\pm$ 10.19	205.82 ^b $\pm$ 4.70	251.79 ^a $\pm$ 10.82	220.52 ^b $\pm$ 8.02
8 th	202.37 ^b $\pm$ 10.13	202.58 ^b $\pm$ 4.63	245.44 ^a $\pm$ 10.55	218.44 ^{ab} $\pm$ 7.94

^{a,b} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

The current experiment revealed (Table 3) that the chicks fed the 0.75% TP (T₂ group) had the highest feed intake rate compared to other treatment. The total feed consumption per chick during different experimental groups was calculated to be 3347.58, 3429.17, 3688.77 and 3532.98 g for the T₀ (Control), T₁ (TP-0.50%), T₂ (TP-0.75%) and T₃

(TP-1.0%) groups, respectively. The T₂ group consumed highest amount of feed followed by T₃, T₁ and T₀. The improvement in feed intake fed with TP was in line with findings by Ghos *et al.* (2020) [6] and Pravin *et al.* (2021) [14].

Table 3: Mean ($\pm$ SE) weekly feed intake and total feed consumption (g/chick) under different treatment groups

Age (Week)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50%)	T ₂ (TP-0.75%)	T ₃ (TP-1.0%)
1 st	61.10 ^a $\pm$ 0.58	61.70 ^a $\pm$ 0.02	62.74 ^a $\pm$ 1.00	62.00 ^a $\pm$ 1.08
2 nd	125.06 ^a $\pm$ 1.19	126.24 ^a $\pm$ 2.09	130.30 ^a $\pm$ 2.09	128.54 ^a $\pm$ 2.24
3 rd	228.78 ^a $\pm$ 2.18	229.22 ^a $\pm$ 3.81	236.02 ^a $\pm$ 3.80	232.18 ^a $\pm$ 4.04
4 th	340.50 ^b $\pm$ 3.24	347.98 ^b $\pm$ 5.79	366.94 ^a $\pm$ 5.90	354.21 ^{ab} $\pm$ 6.17
5 th	456.40 ^b $\pm$ 11.10	475.03 ^b $\pm$ 11.55	517.75 ^a $\pm$ 12.59	491.75 ^{ab} $\pm$ 11.96
6 th	594.00 ^c $\pm$ 12.05	620.10 ^{bc} $\pm$ 12.58	694.38 ^a $\pm$ 14.09	650.83 ^b $\pm$ 13.20
7 th	708.11 ^b $\pm$ 13.22	718.79 ^b $\pm$ 13.43	795.30 ^a $\pm$ 14.85	750.37 ^{ab} $\pm$ 14.01
8 th	833.63 ^d $\pm$ 9.82	850.11 ^c $\pm$ 10.02	885.34 ^a $\pm$ 10.43	863.10 ^b $\pm$ 10.17
Total	3347.58	3429.17	3688.77	3532.98

^{a,b,c,d} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

From the above data (Table 4) the average weekly FCR in the first, second, third, fourth and fifth week of age for the treatment group T₀ (Control), T₁ (TP-0.50%), T₂ (TP-0.75%) and T₃ (TP-1.0%) were did not differ significant. In sixth, seventh and eighth week T₂ (TP-0.75%) group recorded significantly ($p \leq 0.05$) best FCR over rest of treatment. The overall feed conversion ratio was found as 2.63, 2.65, 2.48 and 2.60 in T₀, T₁, T₂ and T₃ groups, respectively. Overall

dietary group T₂ (TP-0.75%) found as best FCR followed by T₃, T₀ and T₁ group. The results were closely in agreement with Ali *et al.* (2020) [11] and Pravin *et al.* (2021) [14] reported similar results in terms of improving the in FCR. This may be because the T₂ group performed better than other groups in terms of body weight, body weight gain and feed consumption.

Table 4: Weekly mean ($\pm$ SE) feed conversion ratio (FCR) of chicks under different treatment groups.

Age (Week)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50%)	T ₂ (TP-0.75%)	T ₃ (TP-1.0%)
1 st	1.40 ^a $\pm$ 0.01	1.41 ^a $\pm$ 0.02	1.36 ^a $\pm$ 0.01	1.39 ^a $\pm$ 0.02
2 nd	1.86 ^a $\pm$ 0.03	1.84 ^a $\pm$ 0.03	1.77 ^a $\pm$ 0.03	1.79 ^a $\pm$ 0.03
3 rd	2.32 ^a $\pm$ 0.05	2.30 ^a $\pm$ 0.05	2.27 ^a $\pm$ 0.05	2.33 ^a $\pm$ 0.05
4 th	2.35 ^a $\pm$ 0.03	2.36 ^a $\pm$ 0.03	2.32 ^a $\pm$ 0.03	2.38 ^a $\pm$ 0.03
5 th	2.54 ^a $\pm$ 0.01	2.58 ^a $\pm$ 0.01	2.54 ^a $\pm$ 0.01	2.60 ^a $\pm$ 0.01
6 th	2.97 ^a $\pm$ 0.02	3.02 ^a $\pm$ 0.05	2.78 ^b $\pm$ 0.04	2.96 ^a $\pm$ 0.05
7 th	3.48 ^a $\pm$ 0.03	3.49 ^a $\pm$ 0.05	3.16 ^b $\pm$ 0.05	3.40 ^a $\pm$ 0.05
8 th	4.12 ^{ab} $\pm$ 0.04	4.20 ^a $\pm$ 0.07	3.61 ^c $\pm$ 0.05	3.95 ^b $\pm$ 0.07
Overall	2.63	2.65	2.48	2.60

^{a,b,c} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

The performance index (Table 5) of the birds increased when different treatment viz. T₁ (@ 0.50%), T₂ (@ 0.75%) and T₃ (@ 1.0%) turmeric powder was added. The overall PI was found as 52.11, 52.53, 64.34 and 55.60 in T₀, T₁, T₂ and T₃ groups, respectively. The T₂ (TP-0.75%) group was recorded the higher performance index followed by T₃, T₁

and T₀ group. On performance index the present results were found in agreement with Kassu *et al.* (2016) [9] and Nagar *et al.* (2021) [13]. Better performance index observed may be as a result of combined effects of greater FCR and body weight to the other treatment groups.

Table 5: Weekly mean ($\pm$ SE) performance index (PI) of chicks under different treatment groups

Age (Week)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50 %)	T ₂ (TP-0.75 %)	T ₃ (TP-1.0 %)
1 st	30.98 ^a $\pm$ 1.55	30.95 ^a $\pm$ 0.70	33.71 ^a $\pm$ 1.44	32.08 ^a $\pm$ 1.16
2 nd	36.09 ^a $\pm$ 1.80	37.40 ^a $\pm$ 0.85	41.69 ^a $\pm$ 1.79	40.06 ^a $\pm$ 1.45
3 rd	42.54 ^a $\pm$ 1.64	43.20 ^a $\pm$ 1.66	45.76 ^a $\pm$ 1.76	42.78 ^a $\pm$ 1.64
4 th	61.49 ^a $\pm$ 1.96	61.52 ^a $\pm$ 2.00	68.08 ^a $\pm$ 2.17	62.80 ^a $\pm$ 2.00
5 th	70.74 ^b $\pm$ 0.67	71.36 ^b $\pm$ 1.18	79.95 ^a $\pm$ 1.28	72.53 ^b $\pm$ 1.26
6 th	67.37 ^b $\pm$ 3.37	67.92 ^b $\pm$ 1.55	89.71 ^a $\pm$ 3.86	74.42 ^b $\pm$ 2.70
7 th	58.51 ^b $\pm$ 2.93	58.93 ^b $\pm$ 1.34	79.72 ^a $\pm$ 3.42	64.81 ^b $\pm$ 2.35
8 th	49.13 ^c $\pm$ 1.65	48.27 ^c $\pm$ 1.62	68.04 ^a $\pm$ 2.29	55.28 ^b $\pm$ 1.86
Overall	52.11	52.57	63.34	55.60

^{a,b,c} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

According to the findings (Table 6) of the inquiry, dietary supplementation of 0.75% TP (T₂ group) in feed of experimental birds can increase their energy efficiency ratio. In the end of experimental trial the overall EER was found as 15.03, 14.97, 15.70 and 15.17 in T₀, T₁, T₂ and T₃ groups, respectively. The T₂ (TP-0.75%) group was found to be the

best EER followed by T₃, T₀ and T₁ group. This was favorably compared to earlier results by Suvanated *et al.* (2003) [19] and Fallah *et al.* (2016) [5] which demonstrated that the turmeric is an herb that has the potential to improve livestock and poultry growth

Table 6: Weekly mean ($\pm$ SE) energy efficiency ratio (EER) of chicks under different treatment groups

Age (Week)	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50 %)	T ₂ (TP-0.75 %)	T ₃ (TP-1.0 %)
1 st	25.43 ^a $\pm$ 0.34	25.30 ^a $\pm$ 0.33	26.18 ^a $\pm$ 0.35	25.69 ^a $\pm$ 0.34
2 nd	19.19 ^a $\pm$ 0.40	19.44 ^a $\pm$ 0.41	20.20 ^a $\pm$ 0.42	19.94 ^a $\pm$ 0.42
3 rd	15.40 ^a $\pm$ 0.34	15.50 ^a $\pm$ 0.35	15.73 ^a $\pm$ 0.35	15.33 ^a $\pm$ 0.34
4 th	15.18 ^a $\pm$ 0.23	15.14 ^a $\pm$ 0.23	15.38 ^a $\pm$ 0.23	15.04 ^a $\pm$ 0.22
5 th	14.06 ^a $\pm$ 0.38	13.84 ^a $\pm$ 0.37	14.03 ^a $\pm$ 0.38	13.72 ^a $\pm$ 0.37
6 th	12.03 ^b $\pm$ 0.11	11.82 ^b $\pm$ 0.19	12.84 ^a $\pm$ 0.20	12.08 ^b $\pm$ 0.20
7 th	10.27 ^b $\pm$ 0.09	10.23 ^b $\pm$ 0.17	11.31 ^a $\pm$ 0.18	10.50 ^b $\pm$ 0.18
8 th	8.67 ^b $\pm$ 0.23	8.51 ^b $\pm$ 0.22	9.90 ^a $\pm$ 0.27	9.04 ^b $\pm$ 0.24
Overall	15.03	14.97	15.70	15.17

^{a,b} Means bearing different superscripts differ significantly ($p \leq 0.05$) row wise.

The cost of rearing and proceeds per rupee per chick for various treatment groups up to 56 days of age were presented in table 7. From above table the cost of rearing per chicks was found to be highest in T₂ group (174.33) whereas it was lowest in control group (158.87). The total proceeds per rupee per chick were found to be highest in T₂ (1.57) group followed by T₀ (1.48) and same for T₁ and T₃ (1.46). This improvement might be result from better feed

conversion or decrease in the amount of feed needed to gain weight per unit of body weight. These results were in agreement with findings of Choudhury *et al.* (2018) [3] and Shohe *et al.* (2019) [16] who reported that better gross profit per broiler chicks in 0.75% TP treated group could be attributed to the better growth performance and improved FCR of broilers due to inclusion of turmeric powder in the diet.

Table 7: Cost of production and proceeds per rupee (per chick) under various treatment groups

Parameters	Treatments			
	T ₀ (Control)	T ₁ (TP-0.50 %)	T ₂ (TP-0.75 %)	T ₃ (TP-1.0 %)
Average weight (Kg.)	1.18	1.20	1.37	1.25
Average feed consumption (Kg.)	3.34	3.42	3.68	3.53
Expenditure	Cost of Inputs (Rs./ chick)			
Chicks	35	35	35	35
Feed	108.55	111.15	119.60	114.72
Turmeric	-	2.73	4.41	5.64
Vaccines	4.20	4.20	4.20	4.20
Contractual Labour	11.12	11.12	11.12	11.12
Total cost	158.87	164.20	174.33	170.68
Income	Output (Rs./chicks)			
Sale of chick (live weight) 200/kg.	236	240	274	250
Sale of gunny bags (Rs. 10 per)	0.71 (20 Rs.)	0.68 (20 Rs.)	1.00 (30 Rs.)	0.68 (20 Rs.)
Total income (Rs.)	236.71	240.68	275.00	250.68
Proceeds per rupee	1.48	1.46	1.57	1.46

Conclusion

A research trial was carried out to investigate the impact of dietary supplementation of turmeric powder (*Curcuma*

longa) on growth performance of Kuroiler chicks. . A total of 120 straight run day-old Kuroiler chicks with uniform body weight from a single hatch were randomly grouped

into four dietary treatments viz., T₀-control (standard chick feed as per the BIS 2007), T₁ (basal feed + turmeric powder @ 5.0 g/kg feed), T₂ (basal feed + turmeric powder @ 7.5 g/kg feed) and T₃ (basal feed + turmeric powder @ 10.0 g/kg feed) and Each group having 30 chicks and further each group were divided into three replicates of 10 chicks in each. The mean final body weight and weekly body was found significantly ($p \leq 0.05$) higher in T₂ (TP-0.75%)-1377.56 g followed by T₃ (TP-1.0%)-1259.06 g, T₁ (TP-0.50%)-1203.84g and T₀(Control)-1186.13 group than other treatment groups. The significant effect of dietary supplementation of turmeric powder in mean weekly feed intake and total feed intake was found to be higher in T₂ (3688.77 g), T₃ (3532.98 g) and T₁ (3429.17 g) groups as compared to control group (3347.56 g). The overall FCR T₂ (TP-0.75%) group shown the best FCR value compared to other group. In respect of overall performance index and energy efficiency ratio, T₂ group (@ 0.75% level) shows best results as compared to other treated groups. The cost-benefit analysis showed that the group T₂ fed 0.75 percent turmeric had the higher proceeds per rupee per bird followed by T₀, T₁ and T₃ groups, respectively. With the exception of the cost of the feed and turmeric powder used, all the other input costs were similar in all groups.

According to the results of the current study, turmeric powder added to feed has a synergistic effect on poultry production. The experiment's findings suggest that, under the current conditions, without adding any antibiotic in the diet, the 0.75 percent dietary supplementation of turmeric powder has a high potential as a commercial application for Kuroiler chicks production. With the addition of turmeric powder as natural feed additives improve overall performance of poultry chicks.

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