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## Effect of neem leaf powder on body weight of broilers

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#### Abstract

The experiment was conducted at the Livestock production and management unit, MGCGV Chitrakoot-Satna (M.P.) To complete the research work following steps where followed Day old 75 broiler chicks (DOC) of same hatch where produced and reared in deep litter system the chicks were weighed, leg banded and distributed randomly into 5 groups of 15 chicks each as treatment. Chicks of each treatment where further divided into three sub groups of 5 chicks in each in randomized block design (RBD). Chicks of each its sub groups where accommodated comfortable in cage system providing 1 sq. ft/chick. Chicks wear fed standard starter ration up to 1-2 weeks (1-14 days) and then broiler finisher ration up to 3-4 weeks (15-28 days). At T<sub>0</sub> T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> which were supplemented with neem leaves @ 2.0 g 4.0g 6.0g and 8.0g /kg of broiler ration respectively. Weekly observation were recorded for live body weight, weekly gain in weight, weekly feed consumption and feed conversion of chicks for four weeks. Based on the results of the experiment, it may be concluded that feed supplementation with Neem leaf powder significantly influenced the body weight, gain in body weight, feed intake and feed efficiency of broiler chicks. Based on feed intake and feed efficiency, the best performance of broilers was obtained with feed supplementation of 6 g Neem leaf powder per kg of standard ration, followed by 8 g Neem leaf powder. Almost all the treatments were economically superior over the control.

**Keywords:** Broiler chicks, growth performance and neem leaves

#### Introduction

Most scientists think about how a breeder poultry breeding without the use of antibiotics and other medicines, and they are giving the most attention to the original medicines, that some plants and that some plants and extracts improved feed intake and increase the effectiveness of the enzymes may be an effect on the microbes and one of these plants is Neem (*Azadirachta indica*) is usually called Indian Lilac, (Girish, K., Shankara BS 2008) [3].

The parts of neem tree have been reported to contain chemicals like azadirachtin, nimbi, nimbi din, quercetin among others which have antimicrobial, anthelmintic, antioxidant, antifungal, insecticidal, antiprotozoal and spermicidal activities properties, (Elangovan AV, *et al.*, 2000) [2]

The medicinal property of neem leaves in ayurvedic system of medicine is well recognized in Bangladesh, India and Pakistan. In general, neem leaves extract may be used therapeutically to control respiratory problems, constipation and also as health promoter (Biswas *et al.*, 2002) [1]. Aqueous extract of neem leaves extract has a good therapeutic potential as anti-hyperglycemic agent, antibacterial agent and could be used for controlling airborne bacterial contamination in the residential premise (Mishra *et al.*, 2013) [7].

It was shown that neem leaves extract acts as a growth promoter (Landy *et al.*, 2011), improve performance and hematological parameters (Nayaka *et al.*, 2013) and immune response (Nayaka *et al.*, 2012) [8]

Majority of medicinal plants do not have residual effects For the fact that whatever an animal ingests be it in solid or liquid form must report in the blood profile, then blood profile evaluation is important in order to carryout clinical investigations of the health status of the animals or birds. We evaluate the Effect that neem leaf extract on growth, hematology and biochemical profiles and organs weight of broiler chickens to justify its inclusion in the diet of growing broiler chicken, (Tipu *et al.*, 2006) [10].

Neem is one of those trees in the world and which is currently under discussion on a large scale has been found that different parts of the neem tree contain chemicals such as azadirachtin and nimbi and nimbi- din and quercetin and other, (Makeri, H.K., *et al.*, 2007) [6].

The use of neem leaf meal is limited due to the presence of the bioactive compounds (Azadirachtin, limonoids and tannin) that have deleterious effect on nutrient utilization (Lale 2002) [5].

Also the high fiber content in neem leaf meal poses serious intake and digestibility problems in poultry diets (Udedibie and Opara 1998). Therefore the use of leaf extracts could overcome this barrier towards tapping the good nutritional characteristics of Neem leaf meal medicinal properties of *Azadirachta indica* documented include; anti-inflammatory, anti-gastric ulcer, anti-fungal, anti-bacterial, diuretic, anti-helminthes, Immunomodulatory effect and performance in broilers, (Biswas *et al.*, 2002)<sup>[1]</sup>.

The medicinal utilities and wide range of pharmacological activities have been described especially for neem leaf. Neem leaves and its constituents have been demonstrated, exhibition, immunomodulatory, antiinflammatory, antihyperglycaemic, antiulcer, ant malarial, antifungal, antibacterial, antiviral, antioxidant, ant mutagenic and anti-carcinogenic properties. (Subapriya R, *et al.*, 2005)<sup>[9]</sup>.

**Method and Materials**

**Procurement of Day Old Broiler Chicks**

The present experiment was conducted using day –old seventy-five (75) commercial type broiler chicks of the same hatch, purchased from western hatcheries, (P.V.T.) Dehradun, Uttarakhand Throw Amit agency Prayagraj, India, These were reached in the deep litter system Livestock production and Management (Unit), Department of Natural Resource Management (NRM), Faculty of Agriculture, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot – Satna (Madhya Pradesh), India.

The experiment conducted on 15 January 2019 continued till 13 February 2019 for a period of four week

**Allocation of Day Old Broiler Chicks**

Day–old seventy-five (75) broiler chicks were weighed, leg banded and distributed at random into five (5) groups namely T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, and T<sub>4</sub> of Fifteen (15) each, These were further sub divide into three sub groups of four chicks in each cage. The chicks of treatments were fed iso calorie and iso broiler starter ration up to three weeks ad. Lib then shifted to finisher ration up to 4 weeks. Composition of ration was as follows.

Proximate composition of experimental diets

Ingredients percent	Starter ration	Finisher ration
M.E.K.cal/1 kg.	2900	3000
Crude protein %	22	20
Crude fibre %	7.39	8.95
Crude fat%	8.80	8.95

Initial weight of broiler chicks was recorded on arrival and then weekly to ascertain the growth rate and gain in weight. Feed consumption was also recorded weekly for each of three replicates (subgroups) of each treatment throughout the experimental period to find out. Feed efficiency or feed conversion ratio (F.C.R.) of broiler chicks. After completion of experiment three birds from each group were slaughtered to determine dressing percentage. Mortality record of chicks was also maintained. The average minimum and maximum ambient temperature was as follows:

The average minimum and maximum ambient temperature was as follows

	Maximum	Minimum
Temperature	25 °C	15 °C
Relative humidity	100%	94%

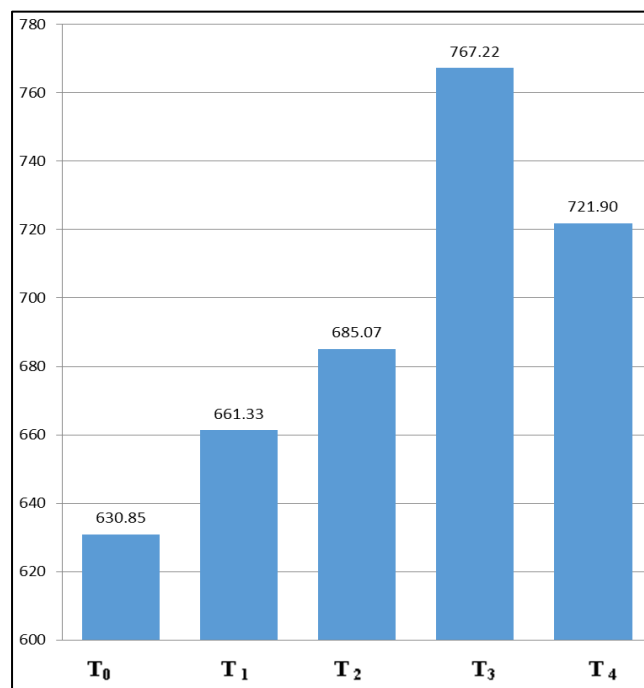
Broilers of all treatments were kept under similar management practices up to four (4) weeks in cage of Livestock Production and Management (Unit), MGCGV, Chitrakoot, Satna, M.P.

During experiment, feeders and water troughs were thoroughly cleaned disinfected, dried and finally mix in lime The feed was disinfected and dried. Water troughs were disinfected with 0.2% potassium per magnate every day. A zero (0) watt bulb was left on for light in each cage during night.

Poultry farm was cleaned and disinfected daily by phenyl. Distribution of feed was done between 5:00am to 8:00 am, 11:00am to 2:00 pm and 4:00 am to 9:30 pm clean water was offered four time day.

**Body weight (g) of broiler chicks**

In treatments T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>, the mean weekly body weight of broiler chicks was 630.85, 661.33, 685.07, 767.22, and 721.90, respectively (Table 1). Irrespective of treatments, the mean body weight of chicks at first, second, third, and fourth week of age was recorded 177.43, 410.40, 801.19, and 1384.08 g, respectively. The results revealed that feed supplementation caused significant increase and growth in body weight of chicks in different treatments in first, second, third and fourth week of age. The differences in weekly mean weight were significant. The differences in body weight between Treatments were also significant. However, T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub>; T<sub>1</sub>, T<sub>2</sub>, T<sub>4</sub>; and T<sub>3</sub>, T<sub>4</sub> were statistically at par. Overall, effect of treatment T<sub>3</sub> (6 g Neem leaf powder with 1 kg standard ration) was significantly superior over all other treatments. There was an increasing trend in body weight with the increase in dose of Neem leaf powder up to 6 g per kg standard ration; however, on further increasing the dose to 8 g per kg standard ration, there was a slight decrease in the body weight. This indicates that 6 g Neem leaf powder per kg standard ration was optimum for growth of Broiler chicks.



**Fig 1:** Average weekly body weight (g) of broilers of different

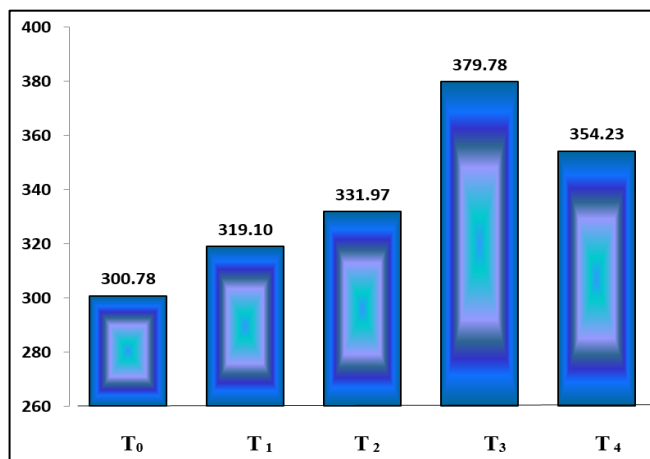
Treatments

Week	Treatment wise weekly body weight of broiler chicks					
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
1	159.13	172.33	179.93	191.13	184.60	177.43
2	382.73	392.27	406.00	442.60	428.40	410.40
3	743.93	769.53	792.27	880.33	819.87	801.19
4	1237.60	1311.20	1362.07	1554.80	1454.73	1384.08
Mean	630.85	661.33	685.07	767.22	721.90	

**Gain in body weight (g)**

In treatments T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>, the mean weekly gain in body weight of broiler chicks was 300.78, 319.10, 331.97, 379.78, and 354.23 g, respectively (Table 4.21). Irrespective of treatments, the mean gain in body weight of chicks at first, second, third, and fourth week of age was recorded 142.04, 232.97, 390.79, and 582.89 g, respectively (Table 4.21). The results revealed that there was a significant effect of different treatments as feed supplementation on average weekly gain in body weight of chicks during first, second, third and fourth week of age. T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub>; T<sub>1</sub>, T<sub>2</sub>, T<sub>4</sub>; and T<sub>3</sub>, T<sub>4</sub> were, however, statistically at par. The differences in weekly mean weight gain were also significant.

It was also noted that with the increase in the dose of neem leaf powder up to 6 g per kg of standard ration an increasing trend in body weight gain was recorded. However, on increasing the dose to 8 g (T<sub>4</sub>), there was a decline in the body weight gain, which indicates that T<sub>3</sub> was the optimum level for body weight gain of broiler chicks.



**Fig 2:** Average weekly gain in body weight (g) of broiler chicks of different

Treatment

Weeks	Treatment wise weekly gain in body weight of broiler chicks					
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
1	124.67	137.53	145.73	155.47	146.80	142.04
2	223.60	219.93	226.07	251.47	243.80	232.97
3	361.20	377.27	386.27	437.73	391.47	390.79
4	493.67	541.67	569.80	674.47	634.87	582.89
Mean	300.78	319.10	331.97	379.78	354.23	

**Conclusion**

Based on the results of the experiment, it may be concluded that feed supplementation with Neem leaf powder significantly influenced the body weight, gain in body weight, feed intake and feed efficiency of broiler chicks. Based on feed intake and feed efficiency, the best performance of broilers was obtained with feed supplementation of 6 g Neem

leaf powder per kg of standard ration, Almost all the treatments were economically superior over the control.

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